

**Cognitive Coping Strategies and Motivational Profiles
of Ultra-Endurance Athletes.**

by

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DECLARATION

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of MSc is entirely my own work and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged with the text of my work

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Date *10/1/04*

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ABSTRACT

Mental skills have been shown to be effective in helping endurance athletes cope with the challenges of their sport. The purpose of this research was to examine ultra-endurance triathlete's cognitive coping strategies, while also exploring their motivational profiles.

Using a phenomenological qualitative research methodology, guided by a grounded theoretical approach, 10 elite deca-ironmen, 8 male and 2 female, took part in interviews and completed two questionnaires, *Motivations of Marathoners Scales* (Masters, Ogles & Jolton, 1993) and *Athletes Skill and Coping Inventory-28*, (Smith, Schultz, Smoll & Ptacek, 1995). The researcher was provided the profitable opportunity for gathering extensive and informative material by living and working with the participants during the deca-ironman 2002 world championships, for a duration of seventeen days. Text units (sentences or phrases) were descriptively coded into meaningful themes and categories. Both constant comparison and deviant case analysis (Strauss & Corbin, 1998, *Basics of Qualitative Research Techniques and Procedures for Developing Grounded Theory* California: Sage) guarded against narrow and premature interpretation of data.

Qualities required to complete the deca-ironman emerged from the data, these include a strong mental focus, intrinsic motivation, high levels of self-efficacy and the ability to withstand pain and boredom while overcoming fatigue. Deca-ironmen use cognitive coping strategies used in mainstream sporting disciplines, such as goal setting and self-deception to overcome adversities presented in ultra-endurance, along with certain strategies that are unique to this group, for example meditation. Unique motivations emerged both in the pilot and main studies demonstrating some ultra-endurance athletes are motivated by a unique motivational climate, where athletes persevere due to external pressures placed by dedications made to either charities or individuals.

Some qualities are inherent in the individual but others have to be developed through participation in high-level endurance events. Training in these unique strategies will assist in better performance. It is hoped findings from this research will assist future ultra-endurance athletes to improve personal performance levels.

CHAPTER 1

“...You can just do it, just take it one step further, the mind will pack up before the body which is true – if the mind can push that little bit further, your body will almost certainly go.” (Chay Blyth 1971, p. 116).

1.1 Introduction

In modern sport, the benefits of incorporating psychological interventions into athletes mental and physical training programmes for performance enhancement, has been increasingly recognized by both athletes and coaches. However, this is not an original concept. Over thirty years ago, an anthropological report carried out by Watson (1973), found that Tibetan monks trained in the art of *lung-gom* (swiftness of foot), had for generations unwittingly incorporated dissociation into their long distance runs. Watson reported that one monk traveled over 300 miles in thirty hours, averaging over 10mph through rough terrain in conditions involving altitude and sub-zero temperatures. These monks, whose training involves intensive deep breathing exercises, while living in complete darkness and isolation for thirty-nine months, run incredible distances while chanting a mantra. According to Watson, they maintain a harmonious rhythm between their breathing and the mantra throughout the run, using dissociative strategies by continuously focusing their sight on a skywards, distant object.

Although modern day athletes have the advantages of technological advances in running or cycling equipment, individuals who finish endurance events such as the “ironman” are also highly specialised individuals. Triathletes possess high mental and physical capacities to overcome the numerous adversities inherent in training for, and completion of, such multi-phase triathlon events involving swimming, cycling and running. However, the intensity and duration which the sample group investigated in the present investigation have to endure, is ten times that of a regular ironman competition.

While an ironman triathlon demands that participants consecutively swim 2.4 miles, cycle 112 miles and finish by running 26.2 miles, with only brief transition periods between segments, the individuals explored in this thesis have all taken part in the “deca-ironman”. The deca-ironman is one of the world’s toughest and most challenging ultra-

endurance disciplines, which involves competitors completing ten Ironman distances with continuous effort. Although it is perhaps difficult to conceive, these participants have to swim 2.4 miles, followed by cycling 112 miles, while completing their ordeal with a 26.2 mile run. Not only do the triathletes investigated in this thesis have to complete these distances within the cut-off time of fourteen days, the event locations did nothing to ease the pressures. The swim was held in a 50 metre pool, while the cycle and run involved cycling anti-clockwise and running clockwise around a 1.9 km track, which was 95% flat, with 5% slight slope or hill. Individuals who partake in the deca-ironman race are a special breed of high caliber sportsmen and women who require the combined assets of exceptional focal qualities and finely tuned physical fitness levels.

Research over the last three decades has investigated numerous aspects of endurance athlete's characteristics in a variety of sporting disciplines, inclusive of cognitions and psychological strategies used by runners and marathoners. However, the area of ultra-triathletes and their cognitions, to a large extent, seems to have been ignored by researchers from the social sciences in the past.

One relevant study, carried out by Bull (1989), gave us a detailed account of a sports psychologist's role as a consultant, for an ultra-runner who ran 500 miles across desert terrain. However, since then, research involving psychological coping strategies of ultra-endurance runners and triathletes appears to have been generally side-stepped. Following an extensive literary search, the author found no studies representing cognitive strategies or motivational profiles of individuals who take part in ultra-triathlons specifically, and more importantly, no related research concerning extreme endurance events such as the deca-ironman. Additionally, the sparse published research available proves to contain minimal qualitative methodological content. Qualitative research carried out by sport psychologists such as Acevedo, Dzewaltowski, Gill and Noble (1992), Acevedo and Hollander (2000), Dale (1996, 2000), Rauch, Tharion, Strowman and Shukitt (1988), suggests that ultra-endurance athletes display unique psychological orientations and strategies, demonstrating that not only are ultra-endurance athletes' motivational strategies unique to the individual and the environment, but that strategies they incorporate are not usually utilised by traditional sports such as basketball or soccer. These unique concepts cannot be properly examined or explored through the limitations

of quantitative, numerically guided formats. The most beneficial method of achieving accurate and phenomenological results is through qualitative methodology, which is the main approach implemented for this present research investigation.

A sample of qualitative papers investigating various endurance athletes' concepts influenced the author in their approach of tackling the research question posed for this paper. Acevedo and Hollander's (2000) investigation involving long distance swimmers, demonstrated that time spent carrying out detailed qualitative research reaps plentiful rewards as it permits greater scope to gain additional informative insight through its irrepressible and non-regimental approach. Furthermore, the value of incorporating interviews to aid understanding and explaining an athlete's behavior has been demonstrated by Krane, Greenleaf and Snow (1997) and Dale (1994).

Although the advantages of qualitative approaches are only recently emerging as recognized progressive and appropriate methodologies for the area of the social sciences, there still remains a void for qualitative research investigating endurance disciplines such as ultra-athletes, and more specifically in this instance, ultra-triathletes. Dale (2000) suggested that future research should "utilize alternative interview methodologies such as the phenomenological interview as a means of learning more about the experiences of the athletes. Such qualitative methodologies offer the possibility of gaining real insight into the experience of those being interviewed" (p. 39). Finally, succinctly portrayed by Hollander and Acevedo (2000), who recognised the lack of ultra-endurance research, clarified "more research is needed to understand the psychological nuances of the successful ultra-endurance athlete" (p. 13). At this stage of the thesis it should be noted for clarification purposes, that references made to 'ultra-triathletes' refers to the sporting discipline of ultra-triathlons specifically, while any references to 'ultra-endurance athletes' refers to individuals involved in various other ultra-endurance sporting activities.

1.2 Need for the research

There are numerous benefits to be gained from carrying out in-depth investigation exploring the cognitive strategies and motivations of ultra-endurance triathletes, such as the deca-ironmen sample used in this study.

Firstly, in comparison to investigations involving cognitive aspects of marathoners etc , as previously mentioned, research concerning ultra-triathletes coping cognitions are limited at best. There has been relatively extensive amounts of research involving marathoners cognitions including coping and pain (Malika & Thierry, 2001), associative techniques used by marathoners (Okwumabua, Meyers, Schleser & Cooke, 1983), cognitions of marathoners (Schomer, 1986), usage of associative technique to ally pain (Pollock, 1977, Forbes, 1986), plus cognitive aspects of runners being investigated by authors such as Johnsgaard (1985). However, research investigating the specific area of triathletes has remained narrowly focused, investigating participant's mood states (Rehor & Knuckley, 2001), personalities (Egloff & Gruhn, 1996), the effects of mental training packages (Thellwell & Greenless, 2001), physiological (e.g. Mayers & Noakes, 2000) and ultra-triathletes nutritional requirements (e.g. Eberle, 2000). Furthermore, following extensive research by the author, there have been no in-depth investigations concerning cognitive strategies or motivations of deca-ironman athletes specifically. It is hoped that the present investigative findings can begin to fill the void for knowledge surrounding this area. Insight into ultra-triathletes cognitive coping strategies is clearly vital to provide sports psychologists, athletes and coaches alike with information which will aid sportsmen and women in achieving peak performance potentials in endurance sporting situations.

Secondly, in 1998, Patrick and Hrycaiko recognised the need for future research "to investigate of a mental training package on an athletes' endurance performance" (p 294). It is anticipated that this research can act as a stepping stone for intervention package development and implementation to improve future endurance athlete's performance levels.

1.3 Purpose of the research

The purpose of this investigation was two-fold. Primarily this thesis explores mental strategies ultra-triathletes use to achieve successful completion of the deca-ironman race. This incorporates mental strategies used to maintain progressive endurance activity plus coping strategies used to overcome variables such as fatigue or pain, plus internal and external adversities faced during such an ordeal. Secondly, a further purpose

is to gain an understanding of the motivational profiles of these ultra-triathletes. The investigation not only asks how individuals can complete circuits such as the deca-ironman, but also questions what drives these athletes to continuously endure tough training regimes on a daily basis.

The specific aims of this investigation are to explore the

- 1(a) Mental strategies used by athletes to perform successfully in the deca-ironmen event
- 1(b) Motivational profiles of athletes who compete in the deca-ironmen event
- 1(c) Adversities experienced and strategies used to cope with them

The specific objectives of this study include the following

- 1 Observe and report on deca-ironman competitors
- 2 Identify motivational profiles of the individuals who have taken part in the deca-ironman
- 3 Ascertain the core mental skills utilised by participants of the deca-ironman
- 4 Clarify any unique or differing motivational and mental skill strategies used by the participants, when compared to past research involving participants from other endurance sporting disciplines

1.4 An overview of the deca-ironman challenges

To provide a succinct overview of the overall purpose of this investigation, a diagrammatic representation of the deca-ironman event and what it entails can be seen in Figure 1.1. This section describes the processes and influences involved in endeavouring to achieve deca-ironman completion. The process can be most beneficially understood if the reader corresponds the written explanations with Figure 1.1, which is colour coded for ease of understanding. The blue areas are classified as preparatory phases, while the green incorporates the interactions occurring during the actual event. The pink areas are detrimental aspects which most probably lead to the failure, i.e. not completing the race, while finally, the gold section at the top of the figure depicts a triathlete's success in

finishing the deca-ironman circuit. Additional insight into these concepts are presented and discussed further in chapter 4 and 5 of this thesis.

Pre-deca

Prior to the deca-ironman, athletes are required to work on five concepts, two of which involve physical actions, while the other three concern mental abilities. The first and most important, underlying factor which potential deca-competitors must have is the personal drive and ability to endure the tough training and demanding requirements of ultra-endurance activity in general.

With regard to specific mental preparation requirements for the deca-ironman, potential deca-triathletes need strong mental abilities to complete an event of deca-ironman calibre, which can be enhanced by taking part in mental training programmes. On a practical front, athletes must gain high levels of physical fitness plus experientially gain knowledge concerning customising equipment, for example discovering what equipment suits the athlete's needs for the three disciplines involved and what "spare" running shoes, wetsuits, etc. the athlete needs to organise for the race. Additionally, the athlete needs to decide on whether they want to bring a support crew to assist them during the event.

When one has decided they are prepared mentally and physically, the decision to take part in the deca-ironman can occur.

During the deca

There are numerous variables which can alter an individual's bid for deca-ironman completion, which are now explained.

The deca-ironman is a tactical race, and when one enters its parameters, it is almost like one enters a battlefield. On entering the deca-ironman, all competitors will, on occasion, most probably encounter various adversities which present themselves continuously, but to varying degrees throughout the race. These adversities, presented in the results chapter, can be from internal or external sources, some of which are predictable and can be relatively easily counteracted, and others which are not so easy to cope with or overcome.

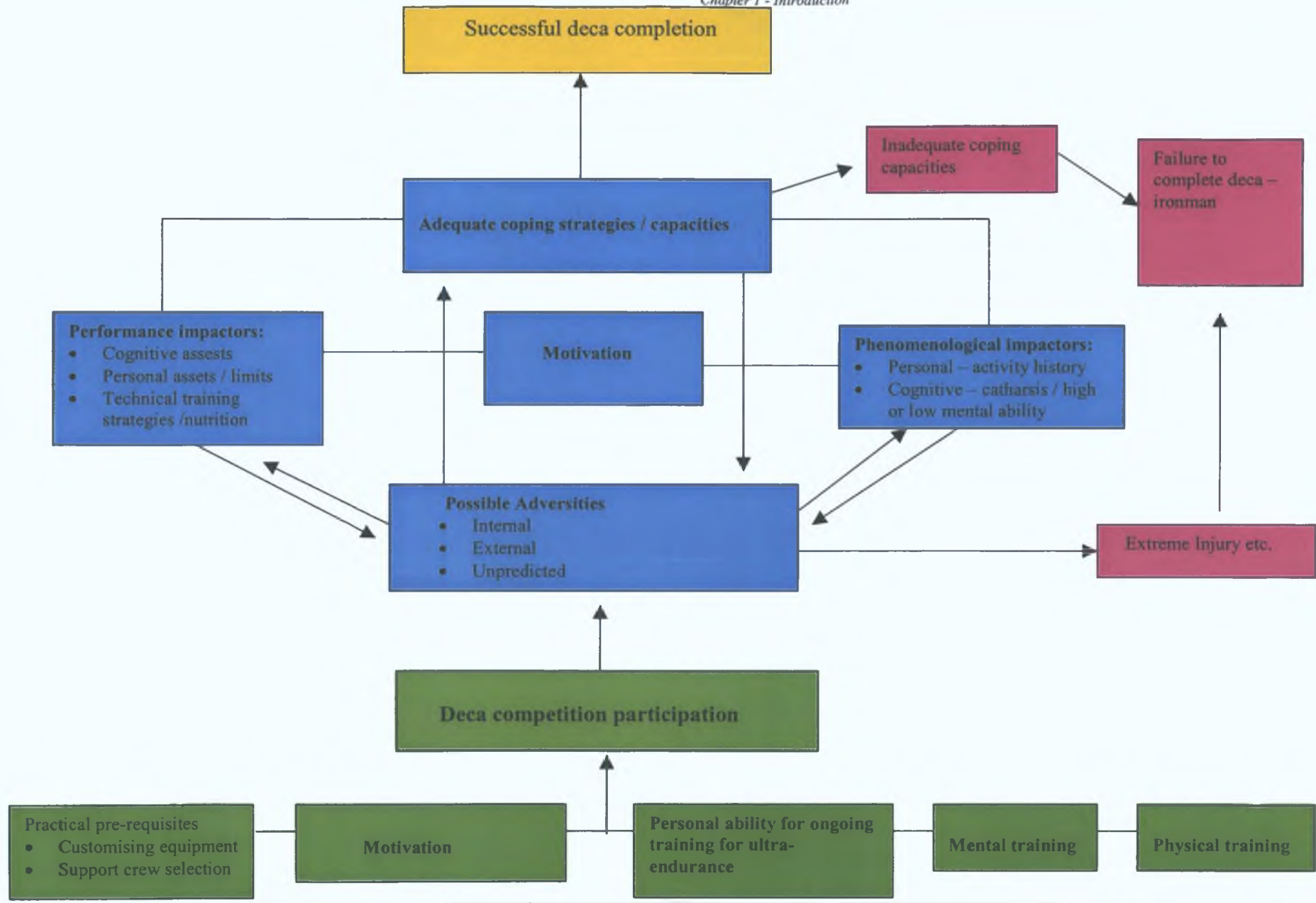


Figure 1.1 Overview of influential factors for successful deca-ironman completion.

Derivatives of failing to complete the deca-ironman:

Once one begins the deca-ironman, there are two foreboding factors which, if the triathlete cannot overcome, failure to complete the circuit is inevitable. These confounding elements involving extreme injury and the inability of the triathletes to adequately cope with adversities which are presented in their path to success, ultimately result in the disappointment of failure in completing the deca-ironman. A further element which prevents an individual from completing the deca-circuit is derived from personal reasons, for example, if the individual involved chooses to drop out of the event for reasons such as failing to break the world record. These three factors all result in a termination of the deca-ironman for the individuals in question.

Derivatives of succeeding to complete the deca-ironman:

Athletes who overcome the “derivatives of failing to complete the deca-ironman.” not only now have to contend with further adversities, their success is also dependent on four other concepts. There are four interlinking factors, all of which interplay with each other and have potentially beneficial or negative effects on the triathlete’s performance levels. These four concepts involve motivation, phenomenological impactors, performance impactors and adequate coping capacities.

To be a successful deca-ironman, one must have strong motivational abilities to endure the longevity of the race and all the problems encountered throughout the event. Performance impactors, which can be seen in more detail in the results chapter, come from cognitive, personal and technical influences, all of which can produce positive or negative influences on the triathlete. Phenomenological impactors play an important role in that this influence involves the experiences learnt through past ultra-endurance activities and the benefits these experiences can bring to the triathlete. The final link amongst these categories probably plays one of the most important role of all, adequate coping capacities. For any individual to be successful in the deca-ironman, they must have the ability to counteract negative impactors of, for example, pain or sleep deprivation, and emerge through adversities mentally and physically strong.

Additionally, as can be viewed in Figure 1.1, there are continuous arrows from performance and phenomenological impactors linking up with possible adversities. This

is to demonstrate that as one continues through the deca-ironman, the triathlete's performances levels are continuously tested by further adversities which emerge from the numerous variables presented in the results

If one can overcome the mental and physical problems continuously emerging throughout the deca-ironman, successful completion is inevitable, a fact represented in Figure 1.1 at the top of the diagram

In summary, the purpose as can be seen in the previous paragraphs, encompasses a comprehensive and wide ranging area for investigation. Details of each of the aforementioned concepts are presented throughout the current thesis

1.5 Ethical considerations

Ethics approval was granted by the Centre of Sports Science and Health, Dublin City University, Ethics Review Panel. The author feels that the endurance athletes in the pilot and main studies were not affected in any derogatory manner, as the subject area was not of a sensitive nature. The sole requirement of the athletes involved them divulging personal opinions and thoughts regarding factors which they felt influenced their personal motivations and cognitive strategies, while also sharing specific strategies they use to overcome adversity in their experiences of endurance sporting activities. To assist the researcher, all participants agreed to the interview being recorded on a mini disc.

Data was held in the strictest of confidence, with assurances of anonymity being relayed to all participants prior to all interviews. This was stringently observed, with all post interview references being allocated written codings immediately. All pilot interviewees signed an informed consent form (see Appendix 1.1), prior to the interview-taking place, which also explained basic interview procedures, while the deca-ironman sample provided written consent through emailing facilities in addition to verbal consent, recorded on mini-disc, prior to each interview. Participants were made aware that they could terminate the interview if, at any stage they felt uncomfortable or preferred to discontinue with the interview. It was requested that the participants ask the researcher any questions if they did not fully understand anything asked. This was especially of

paramount importance with English not being many of the main study samples' primary language.

Throughout the investigation the author was sensitive to the competitor's wishes, ensuring impeccable consideration and awareness of not hampering the competitor's preparations or race tactics/styles. Some of the competitors had been preparing for this race for six years or more and the author did not wish to have any detrimental effect on the athlete's performances. Finally, it should be noted that photographs used throughout this thesis are all specifically from the 2002 Deca-ironman event, where kind permission was given by the photographed individuals to use their pictures in this thesis. It should be noted however, that the photographs do not correspond in any way to specific individuals being described in the text where the picture is located. Additionally, some of the photographed individuals were not subjects involved in the present research.

1.6 Research design

One of the major challenges posed to researchers involves choosing the most beneficial methodological format to explore their chosen research area, fostering optimal accuracy when one finally analyses and presents the data. The design strategies for the main body of this research paper were guided through a pilot investigation, an overview of which can be seen in Chapter 3 concerning methodology.

The main investigation incorporates idiographic procedures, which were guided by a grounded theoretical approach, to produce phenomenological accounts of the athletes "real life" experiences. Multi-faceted theoretical approaches such as this, were succinctly coined by Hammersly (1997) as a "methodological eclecticism" (p. 167). The phenomenological approach chosen provided the researcher with opportunities for obtaining valuable, direct information from the athlete's personal experiences of racing in the deca-ironman competition. However, as it cannot be truly realistic to interpret athlete's cognitive strategies for coping, the factual aspects of this area are attained through incorporating underlying aspects of a grounded theoretical approach. Details of this inter-actional approach are found in the methodology chapter.

The participant sample (n=10), all of whom took part in the 2002 Deca-Ironman World Championships, provided rich data concerning their phenomenological ultra-

endurance experiences through one-on-one interviews, participant observation, video footage and field notes.

The analytic process involved an inductive coding process, where themes and concepts were generated through the raw textual data obtained from the interviews, video analysis and other fugitive documents.

1.7 Results / Findings

Evidence from the findings demonstrated that the full compliment of the deca-sample recognised the insurmountable importance of mental strength individuals require to compete successfully in ultra-endurance activities such as the deca-ironman. Results illustrated that the cognitive strategies used by the deca-ironmen were primarily those used in mainstream sporting disciplines, for example goal setting and imagery. However some unique training and coping techniques emerged from the findings, such as meditative tactics. Additionally, findings report that deca-ironmen are primarily motivated by intrinsic concepts, however, evidence illustrates that one must have inherent intrinsic and extrinsic motivation to get through an ultra-endurance event such as the deca-ironman. A unique motivational concept emerged from the data, depicting that a small percentage of deca-triathletes are primarily motivated by dedicating the event to someone, or something else, hence placing greater responsibility on the triathlete involved to complete the circuit.

1.8 Thesis layout

The layout of this study proceeds with an extensive review of literature, followed by Chapter 3, which provides an in-depth portrayal of the methodology underpinning this investigative thesis. This is followed by results and discussion of the findings being presented in Chapters 4 and 5 respectively. Finally, Chapter 6 examines conclusions and recommendations for future research.

1.9 Delimitation's of the study

Although many of the athletes were almost fluent in English, participants with English as their primary language were in the minority. This may have inhibited, at times,

full textual and structural data being obtained by the researcher. Potentially dubious problematic areas were overcome by further questioning through e-mail facilities.

Methods for measuring mental skill practice and quantifying amounts of mental skill usage were estimated from information from the interviews and other data gathering materials such as video recordings etc. Specific mental skill usage times, however, were beyond the scope and remit of this paper.

Chapter 2

REVIEW OF LITERATURE

“Only those who risk going too far, will know how far they can go” (T S Elliot)

The purpose of this chapter is to review the literature concerning the current state of knowledge regarding areas explored in the research question of this thesis, specifically cognitive coping strategies and motivational aspects of ultra-endurance triathletes. Throughout this chapter, a critical appraisal is given to available research concerning the numerous strategical cognitive coping and motivational concepts endurance athletes incorporate into their race schedules to optimise their chance of event completion.

Initially literature related to the cognitive and motivational aspects of elite and endurance sports are discussed. This is followed by a critical appraisal of literature concerning the coping mechanisms and coping skills which endurance athletes potentially use to assist them in coping with adversities throughout events of ultra-triathlon caliber. This section also explores findings from investigations involving pain and sleep deprivation, which are two of the main adversities faced by the sample in the main study of this thesis. Research specific to cognitive skills endurance athletes incorporate into their training and competition routines are then presented. Evidence relating to motivation and endurance are then reviewed, with the final section discussing literature concerning appropriate methodological procedures. It should be noted that only areas of research specific to this thesis' investigative concerns are discussed.

2.1 Criteria and sources for literature review

Parameters of the literary search were guided by the years 1970-2002, thereby providing the most recent and up to date investigative findings. Any references external to these years were located through background reading for this thesis. The literary search was carried out both through manual and electronic sources. Manually, the author chronologically went through all relevant journals available in the particular libraries.

used by the researcher, specifically, Dublin City University, University of Limerick and University College Dublin. Furthermore, journals were located through interlibrary loans. Overall, there were sixty-three journals which proved to contain relevant information for background readings and direct usage in this literature review, as seen in Appendix 2.1. Book references were also obtained either directly from the libraries shelves or through interlibrary loans.

During the electronic search through web literary sources, the author used search words such as endurance, ultra-endurance, elite, elite and sport, endurance and sport, motivation and sport, triathletes, triathlon, ultra-swimmers, ultra-cyclists, ultra-runners, marathons, sleep deprivation, sleep deprivation and sport, hallucinations, hallucinating, pain, overcoming pain, pain and endurance, pain thresholds and sport, pain and sport, boredom, boredom in sport, fatigue, fatigue and endurance, fatigue and sport, qualitative research, qualitative methods, coping and pain, coping and sport, adversity and sport etc.

The search words were entered into electronic Internet research sources which included Swetsnet, Sports Discus, PubMed, Institute for Scientific Information (ISI), Science direct, Medline, National Library of Medicine (NLM), Web of Sciences and Science direct.

2.2 Previous endurance research papers

"Since the ultra-marathon runner must persevere for an extended period of time, his or her psychological state can be expected to have a profound impact on race performance" (Tharion, Shelley, Strowman and Rauch, 1988, p. 229)

Research concerning cognitive and motivational concepts of ultra-endurance athletes are presented in this section. Overviews of the relevant sections can be seen on Table 2.1, 2.2 and Table 2.3. It should be noted that information provided on Tables 2.1, 2.2 and 2.3 contain information solely relevant to the present research and do not contain full information obtained in the listed research investigations.

2.2.1 Ultra-triathlon investigations

A literary search throughout the sources listed in Appendix 2.1, for previous investigations specifically concerning ultra-triathletes highlighted the void for knowledge regarding the psychological concerns of ultra-triathletes. Although the inquiry did reveal other research concerning ultra-triathletes, for example the physiological profiles of ultra-triathletes (O'Toole, Hiller, Crosby & Douglas, 1987), even these appear to be minimal. Specific deca-ironman information located by the author is limited to an overview of deca-athletes sleeping patterns compiled by Snoeyenbous (2000) plus physiological aspects of ultra-endurance athletes written by a deca-ironman competitor, Knechtle (2001), in German.

2.2.2 Triathlon research investigations

Investigations exploring psychological aspects of triathletes are also, in comparison to other sporting disciplines, sparse. The limited literature concerning triathletes emerging from the aforementioned literary search, has investigated concepts such as the medical aspects of Ironman triathletes (Lester, Mayers & Noakes, 2000) plus triathletes mood states (Rehor & Knuckley, 2001, Bell & Howe, 1988). Although, cognitive coping aspects of triathletes were not found, an investigation involving the motivations of triathletes was carried out by Bell and Howe (1988). Although this research, details of which can be seen in Table 2.1, provides some insight into the motivations of triathletes, it does not provide any concept of how ultra-triathletes maintain motivation for events of such longevity as the deca-ironman, or how the triathletes sustain motivation for training etc.

2.2.3 Marathon research investigations

Literature involving marathoners demonstrates a vast array of exploratory interests. One of the first investigations concerning the psychological profiles of modern-day marathoners was carried out by Morgan and Costill in 1972, and since then there have been numerous studies investigating various aspects of marathon running and the participants it entices. The investigated areas include mood state (Tharion, Strowman & Rauch, 1988), pain and coping (Malika & Thierry, 2001, Pensgaard, 1998), variables

predicting marathon times (Slovic, 1977, McKelvie, Valliant & Asu, 1985), calorific requirements and variations (Thompson, Nequin, Lesmes & Garfield, 1982), physiological factors (Costill, 1972, Thompson, Nequin, Lesmes & Garfield 1982), personality profiles (Folkins & Bell, 1981), factors accountable for finishing time variables (Okwumabua, 1985, McKelvie, Valliant & Asu, 1985), pain tolerance levels (Forbes, 1986) and marathoners training practices (Slovic, 1977)

One investigation, whose aims and methodologies prove to be somewhat similar to the present research, was carried out by Morgan and Pollock (1977), details of which can be seen in Table 2.1. Although this research provided psychologists with an introduction into the race thoughts and motivations of long distance runners, it does not provide any real insight into the cognitive coping techniques which the athletes used to overcome adversarial situations. Furthermore, even though Morgan and Pollock attempted to introduce qualitative aspects into the investigation, which must have been quite dynamic at the time as qualitative research was not as recognized as it is today, it was quite limited. Even though the interviews encouraged phenomenological factors to emerge, the fact that two of the three written questions were constrained to answers of no more than 25 words perhaps limited the athlete who may not have been able to transfer feelings accurately into a specific word count. Findings from Morgan's (1988) investigation were supported by Curtis & McTeer (1981).

2.2.4 Ultra-marathon research investigations

Research investigating various concepts of ultra-marathoners have taken place over the last thirty years, such as time predictions (Rauch, Tharion, Strowman & Shukitt, 1988), psychological profiles of ultra-marathoners (Tharion et al, 1988), active mood states during an ultramarathon (Joesting, 1981, Sachs et al, 1981), personality traits (McCutcheon & Yoakum 1983), physiological and training profiles (Thompson, Nequin, Lesmes & Garfield, 1982) and cognitions of ultra-marathoners (Acevedo et al, 1992).

One relevant body of research carried out by Bull (1989) presents an interesting perspective of mental preparation and techniques used by an athlete for a solo event of similar duration as the deca-ironman, however, the paper was primarily written from a consultant's perspective. Although Bull presented some very interesting reports,

Table 2 1

Overview of research involving cognitive strategies and motivations of ultra-endurance athletes

Author (s)	Investigative areas	Participant discipline / pax	Methodology / Measure	Findings
Morgan & Pollock (1977)	1) Psychological characteristics 2) Motivations for participation	Elite long distance runners (n=11) Marathoners (n= 8)	1) Interviews (1 hour) 2) Battery of psychological tests 3) Written answers to three questions concerning motivations for running and cognitions during endurance event	<ul style="list-style-type: none"> • Motivation 'Feel good factor' Necessary for competition • Cognitive strategies Assoc = primary strategy Assoc and dissoc to overcome pain Watches used for pacing etc Self-talk – used continuously
Morgan (1977)	Cognitive coping techniques of elite versus non elite endurance athletes	Endurance athletes (n=10)	Interviews	Elite used primarily associative techniques Non-elite used primarily dissociative techniques
Morgan et al (1988)	1) Psychological characteristics 2) Motivations for participation	Elite distance runners (n=14) ➤ Marathoners (n=3) ➤ 3000M steeple chase (n=1) ➤ 1500M (n=1) ➤ 5000M (n=4)	1) Questionnaire 2) Interview (1 hour) Covered questions re mot involvement, mot adherence, cog strats, race strats, staleness, pre-competition arousal	<ul style="list-style-type: none"> • Motivation 93% intrinsic High intrinsic levels enhances perseverance • Cognitive processes Assoc = primary strategy Assoc and dissoc = 28% during competition Training = 43% dissoc 21% assoc 36% combination <p>Elite = primarily associated Non-elite = primarily dissociated Interaction of assoc and dissoc appears paramount for coping for both elite and non-elite</p>

Table 2 1

Overview of research involving cognitive strategies and motivations of ultra-endurance athletes (contd)

Author (s)	Investigative areas	Participant discipline / pax	Methodology / Measure	Findings
Curtis & McTeer (1981)	Motivations of marathoners	Marathoners (n=740)	Quantitative	<ul style="list-style-type: none"> • Motivation Goal attainment (77%) Influence of others (20%) Psychological well being (19%)
Bull (1981)	Cognitive preparation for successful 500 mile run Race held over 19 consecutive days (Consultancy exercise)	Ultra-marathoners (n=1)	Pre-race cognitive intervention and deliberate mental practice	Imagery usage = beneficial Coping with boredom = imagined self as soldier in battle etc
Acevedo et al (1992)	Testing confidence, commitment and competitive orientation of runners taking part in 100 mile trail run (in 30-110 degrees F)	Male (n=86) Female (n=26) Mean age (40 2)	<ol style="list-style-type: none"> 1) Battery of questionnaires administered 1 week prior to race, night before and post race 2) Cognitions recorded during event via force choice questions 3) Qualitative open-ended questions 	<ul style="list-style-type: none"> • Cognitive strategies Visualisation Consultation of pre-race information Goal setting – time and achievement self-set goals Self-talk Thought control Dissoc =75% external External variables affect performance Unique orientations - existential and spiritual orientations
Rauch, Tharon, Strowman & Shukitt (1988)	Ultra-marathoners (50 mile trail race) Investigating mood state, goal setting and motivation levels	Ultramarathoners (n=44) (male = 42, female = 2) Age 23-53 (mean age=35 59) Mean running experience = 8 30	Questionnaire (Self Motivation Inventory – Dishman, Ickles & Morgan '80) administered ten hours before event	<ul style="list-style-type: none"> • Goal structure To complete race (n=14) Finishing in specific time (n=13) Placings (n=10) Subjective goals (n=7) • Motivation Primarily motivated by goals Athletes highly self-motivated

Table 2 1

Overview of research involving cognitive strategies and motivations of ultra-endurance athletes (contd)

Acevedo & Hollander (2000)	Unique cognitive orientations of ultra-swimmers Psychological characteristics and reflective meanings examined	Ultra-swimmers - swimming English Channel (n=8) (Females = 5, males = 3) Mean age = 42)	Qualitative – Interviews x 2 Interpretations Triangulation	<ul style="list-style-type: none"> • Motivation High self-efficacy • Cognitive strategies High levels of mental toughness Dissoc = higher usage and more beneficial than assoc Strategic dissoc Goal setting Compartmentalisation Attentional control / relaxation • Deliberate training techniques Learning to urinate and vomit (from too much salt ingestion) while swimming
Bell & Howe (1988)	Motivations of triathletes	Triathletes (Male = 160, Female = 89) (1 mile swim, 21 mile cycle, 6 mile run)	For motivations, triathletes completed 6 item scale re reasons for triathlon participation 24 hours after event 1) To compete with oneself 2) Improve social interaction 3) Compete against others 4) Obtain reinforcement from others 5) Improve fitness 6) Obtain a feeling of enjoyment	<ul style="list-style-type: none"> • Motivations 1) Males results Compete with oneself (39.4%) Fitness (38.1%) Enjoyment (17.4%) Compete with others (6.5%) 2) Female results Fitness (48%) Competing with self (30.0%) Enjoyment (16.3%) Compete with others (3.8%)

Notes Assoc = Association, Dissoc = Dissociation, Cog strats = Cognitive strategies, Mot = Motivations, F = Fahrenheit

for example the athlete overcoming boredom by imagining himself as a soldier being chased by the enemy, perhaps more examples could have been provided to gain a comprehensive understanding from the angle of the athlete. This may have provided the reader with a greater perspective on how the techniques worked for the ultra-runner and if the athlete felt the approach used actually enhanced performance.

In conclusion, as demonstrated in the preceding paragraphs and as can be seen from Table 2.1 and Table 2.2, detailed insight into endurance athlete's cognitive coping strategies has been minimal. Apart from Bull (1989) and Acevedo and Hollander (2000) who did describe some specific examples of how athletes actually incorporate particular cognitive coping techniques into their race regimes, there is minimal inquiry into specific cognitive coping techniques and the beneficial effects, they have, or have not, during an actual elite ultra-endurance event, such as the deca-ironman.

2.3 Coping

In this section, an overview of research which has investigated relevant concepts of coping are primarily discussed and presented in Table 2.2, followed by a literature review of two highly probable adversarial areas of the deca-ironman, specifically pain and fatigue. Finally, this is followed by evidence involving the coping mechanisms used to overcome these elements, excluding specific mental strategies discussed in section 2.5 of this thesis.

2.3.1 Coping overview

One of the essential ingredients of successful performance in sport is effective coping mechanisms and the ability to cope with emergent adversities and distractions throughout competitions. The coping mechanisms required for endurance activities involves constantly altering one's cognition's and behaviours to overcome negative influences which potentially extend an individual's personal limits. More specifically, coping has been described as "the specific strategies or the general styles which people use, regardless of their efficacy, in order to eliminate, reduce or change the demands of a

stressful experience (problem-focused coping) and to manage the associated negative emotions (emotion-focused)” (Weinman, Wright & Johnston, 1995, p 3)

Research investigating coping strategies of extreme individuals, have included polar explorers and astronauts (Samdal, 1996) and elite athletes (Pensgaard & Ursin, 1998, Kim & Duda, 2000, Pensgaard & Duda, 2001), illustrating that coping strategies are influential for a wide range of individual performance levels. It has been accepted for over thirty years that individuals who wanted to be successful in endurance situations are reliant on personal physical capacity and the ability to cope mentally with, at times, extreme discomfort, which can be learnt like any physical skill (Cox, 1998). This is supported by the evidence which demonstrates that elite athletes are more proficient than non-elite athletes in coping with periods of stress by converting potentially problematic obstacles into less threatening situations (Koivula & Fallby, 2001, Anshel, Kim, Kim, Chang & Eom, 2001). The benefits of coping strategies with regard to performance enhancement and managing performance slumps have been demonstrated by Smith and Christensen (1995) and Eklund, Grove and Heard (1998) respectively.

Although quite idealistic, a coping strategy, recommended by Butts et al (1983) is still in many ways applicable to today's athletes. Butts and her colleagues recommended that athletes should follow a 5-point procedure which ultimately would enhance performance. The five step stages involved identifying the problem area, deciding on a specific coping strategy, developing a specific personalised action plan, practicing the appropriate coping skills and constantly reviewing and updating these coping skills. More recently, researchers such as Tuffey (2000) recognised specific cognitive strategies which benefit athlete's abilities to manage pain and fatigue, for example, associative tactics, such as concentration / focusing, use of mental imagery or incorporating self-talk.

Coping abilities investigated specifically through qualitative methodologies by sport psychologists suggest that ultra-endurance athletes display unique psychological orientations and coping strategies (Acevedo & Hollander, 2000, Dale, 1996, 2000, Rauch, Tharion, Strowman & Shukitt, 1988).

Table 2.2 Overview of research involving cognitive coping strategies of athletes

Authors	Investigative areas	Participant discipline / pax	Methodology / measure	Findings
Crocker (1992)	Competitive athletes stress coping strategies	Competitive athletes (n=237) (male= 119, female= 118)	Quantitative Questionnaire completion – Ways of coping checklist (Lazarus and Folkman)	<p>Various cognitive and behavioural coping strategies used, all classified into eight dimensions</p> <ul style="list-style-type: none"> • Active coping • Problem focused coping • Seeking social support • Positive reappraisal • Self control • Wishful thinking • Detachment • Self-blame
Koivula & Fallby (2001)	The relationship between perfectionism and sport related coping skills	Elite athletes (n=178) (male= 109, female= 69)	Quantitative Questionnaire completion – Multidimensional Perfectionism Scale (MPS) (Frost et al, 1990)	<ul style="list-style-type: none"> • Elite athletes with high personal standards positively associated with peaking under pressure, goal setting, mental preparation, concentration, confidence and achievement motivation • Athletes with high personal standards may have ease or difficulty with coping with adversity • Elite athletes more proficient than non-elite for coping with stressful situations • Elite athletes convert potential stressors into less threatening scenarios using arousal control techniques
Yoo (2001)	Coping profiles of Korean competitive athletes	Competitive athletes (n=532) (male=332, female=200) Elite (n=266) Non elite (n=266)	Quantitative Questionnaire completion – Culturally adapted coping scale (CSKA) (Yoo, 2000a)	<ul style="list-style-type: none"> • Elite athletes use significantly more problem focused and transcendental coping strategies than non elite • Individual sport athletes used more avoidance and transcendental coping than team sports • Problem focused and emotional coping same for team and individual sports • Males used more problem focused coping than females • Females used more transcendental and emotion focused coping than males

Table 2 2 (contd)

Overview of research involving cognitive coping strategies of athletes

Pensgaard & Ursin (1998)	Stress, control and coping in elite athletes	Winter Olympians (n=69)	Open ended questions post Olympics COPE inventory	<ul style="list-style-type: none"> • Problem focused coping strategies employed at all times • Cognitive defence strategies employed prior to and post Olympics
Dale (1994)	Coping strategies during 'best ever' performance	Elite decathlete (n=1)	Qualitative Phenomenological interviews	Beneficial cognitive coping strategies <ul style="list-style-type: none"> • Narrowing attentional focus before and during competition • Imagery • Verbal encouragement from crowd • Awareness of others
Dale (2000)	Coping strategies of elite decathletes during their most memorable performances	Elite decathletes (n=7)	Qualitative Phenomenological interviews (x 2 / pre and post analysis)	<ul style="list-style-type: none"> • Most memorable when performed well (not when won) • Personal feelings a) Felt highly focused b) Ignored irrelevant cues and distractions e.g. others performance levels • Coping strategies a) Imagery / Visualisation b) Cue awareness c) Competing against self d) Confidence in training e) Ability to focus attention f) Consistency g) Camaraderie
Pensgaard & Duda (2001)	Gain deeper understanding of an athlete's stress and coping processes	Olympian (n=1) (Female)	Qualitative Athlete kept detailed diary of feelings/ experiences	<ul style="list-style-type: none"> • Coping strategies = emotion focused and problem focused

Table 2 2 (contd)

Overview of research involving cognitive coping strategies of athletes

Baltzell & Sedgwick (2001)	Cognitive coping strategies of elite rowers	Elite rowers (n=25) (Contenders / members of Olympic team)	Qualitative Interviews - Rowers asked to recall instances when most and least beneficial coping strategies were employed	<p>Most beneficial coping strategies</p> <ul style="list-style-type: none"> • Self-belief and strong attentional focus on adversity to be overcome • When athletes focus on optimal execution of skill, stressful distractions minimised • Interpreting external stressors as positive and motivating <p>Least effective coping strategies when had negative thoughts and worried about competition outcome</p> <p>The six most effective coping scenarios during an event</p> <ul style="list-style-type: none"> • Technical – physical efficiency • Focused on process • Auto pilot • Executed race plan – internal • Rising to the challenge • Feeling in control
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Furthermore, qualitative research found that not only are ultra-endurance athletes' coping and motivational strategies unique to the individual and the environment, strategies incorporated are not usually utilised by traditional sports such as soccer or basketball (Acevedo et al, 1992 & Chamblis, 1989)

2.3.2 Types of coping

Literature demonstrates that established categories have evolved for various classifications of coping strategies during the past twenty years, however, only the concepts specifically related to the present investigation will be discussed in this section

Coping skills can be classified as problem focused, (where the athlete attempts to alter the problem causing the stress), and / or emotion focused, (where the athlete handles the problems through arousal control techniques) (Koivula & Fallby, 2001) Furthermore, there is avoidance coping, where athletes ignore the stressors through task or person oriented strategies, i.e. distracting themselves by thinking about other situations and/or people or detachment coping, where the athlete reaches a mental state which detaches them emotionally and physically from the stressor and event. Detachment coping is similar to transcendental coping, which according to Yoo (2000a), eliminates any desires and expectations "by means of self-acceptance and independence over environment" (p 393)

Active coping and problem focused coping appear to be highly adaptive strategies since they can directly alter strategies to help manage the environmental demands contributing to stressful relations (Crocker, 1992) On the other hand, wishful thinking and detachment coping may in the short term help reduce emotional stress but prevent the athlete from being the active agent of change. Additionally, athletes may cope through cognitive coping techniques which incorporate positive thinking, thought control, concentration control, relaxation (Gould & Finch, 1993) or set routines, social support, problem focused coping and increased effort and resolve (Madden et al, 1989) Further insight into coping strategies employed by elite athletes have progressively emerged since 1994 to the present day

From the research, presented in Table 2.2, we can ascertain that although elite athletes incorporate various coping techniques into their routines, the ability of

converting negative to positive scenarios is the underlying denominator among all the approaches

2.4 Potential adversities experienced by deca-ironmen

Due to the physical demands of the deca-ironman event, one could surmise that two predictable adversities which would be encountered by the triathletes during the deca-ironman are fatigue and pain. Therefore, background research into these two specific adversarial concepts are now presented.

2.4.1 Fatigue / Sleep deprivation

While coaches and athletes are continuously endeavoring to improve the duration of muscle fatigue tolerance, sport psychologists are working on improving the effect of mental skills, to further enhance athletes' strategies for mentally overcoming areas such as fatigue.

Although there are no specific sleep deprivation tests carried out in the present investigation, it is inevitable that the concepts of fatigue and sleep deprivation potentially play an adversarial role throughout the deca-ironman competition.

Investigations involving sleep deprivation are progressively informative throughout the last thirty years. Early research concerning sleep deprivation found that small amounts of sleep deprivation causes periods of inefficiency but did not significantly interfere with physical work. However, sustained periods of sleep loss results in fatigue, lack of attention and interest (William's et al, 1965, Broden et al, 1969). More recently, investigations have explored endurance performance affected by sleep deprivation, such as Haslam's (1981) research investigating the effect of sleep deprivation over nine continuous days. Results derived through Haslam's subjects, who were soldiers, only permitted to sleep durations ranging from zero to one hour stints, found that small amounts of sleep are more beneficial than no sleep at all. The zero sleep group could only continue required work for 4 days, whereas members of other groups continued for 9 days and test completion, which would concur with many of the deca-triathlete's sleeping

durations, with faster recovery (within days). There was no significant differences found between the 1.5 and 3 hour sleep duration groups.



Photo.2.1 Deca-ironman competitor taking a power nap.

Throughout the literary search one specific reference concerning deca-ironman athlete's sleeping patterns was located. Snoeyenbos (2000) observed that deca-athletes slept minimal durations at the outset of the event, increasing their sleeping times throughout the competition. This, Snoeyenbos reported, ensures the athletes manage to get more sleep during the run, providing additional opportunity to rest their fatigued feet.

Snoeyenbos observed that deca-athletes incorporated personal sleep patterns, which ranged from 3 to 6 hours sleep in every 24-hour cycle. Additionally, Snoeyenbos recorded how one might train for sleep deprivation. One suggested strategy which athletes can employ to cope with sleep deprivation is to ensure naps are timed so the athlete wakes up at dawn. The reason for this is that the body's light sensors reactivate themselves leaving athletes feeling more refreshed with higher possibilities for a positive mental outlook, in comparison to waking in darkness. Additionally, Snoeyenbos claims that 10-minute power naps leave ultra-endurance athletes clear headed and refreshed in events lasting over twenty hours. However, the aforementioned author does stipulate that ultra-endurance athletes who nap for periods extending 10 minutes will not reap the beneficial assets of a short power nap as the athlete begins entering into the rapid eye movement (REM) phase of deep sleep. The importance of ensuring REM sleep is achieved during ultra-endurance was clarified, as it is during REM that the human growth hormone is maximally produced and being starved of REM can also play havoc with one's emotional balances. Snoeyenbos is supported by Giam's (1997) research involving the effects of sleep deprivation on military operations, who found power naps of 10-20 minutes useful when continuous sleep is not possible. Additionally, Giam found through his subjects, personnel from the army, navy and airforce, that the accumulation of sleep debt results in, among other factors, decreases in the subject's motivation, attentional focus, plus physical and task performance.

Some triathletes reported hallucinating during the deca-ironman. According to Misner (2000), sleep deprivation encourages perceptual distortions, stating that athletes deprived of only 48 or 72 hours sleep experience "visual task-related perceptual distortions and hallucinations" (p. 2). Hallucinations (from the Latin word *alucinari* "to wander the mind"), are defined as "an apparent perception of an external object when no such object is present" (Hinsie & Campbell, 1970). Although hallucinations are usually discussed in conjunction with psychiatric disorders, Boza (2003) confirms that hallucinations can be derived from many sources, one being sleep deprivation. Boza goes further to explain that sleep deprivation "may evoke dream imagery with comforting visual hallucinations erupting into the waking state" (p. 3). Furthermore, in some cases,

hallucinations are, according to Snoeyenbos (2000), a form of waking dream where the athlete confuses the waking dream with reality.

2.4.2 Pain



Photo 2.2. Deca-ironman competitors blistered foot.

Pain is a difficult concept to accurately define, a fact appreciated by Herzlich and Perret as far back as 1884, when they claimed that is “impossible to define physical pain, one cannot describe it, it is only a matter of experience”. Nevertheless, pain has been described by the International Association for the Study of Pain as an unpleasant sensory and emotional experience (Merskey & Bogduk, 1994).

The literary search revealed there are extensive investigations involving pain and sport, for example, pain effect in sport (Tajet–Foxell & Rose, 1995), pain levels regarding athletes versus sedentary people (Egan, 1987; Jaremko, Silbert & Mann, 1981) and the use of positive self-talk to overcome pain (Girodo & Wood, 1979). Additionally, there is research involving pain tolerance variables including experiences of acute bouts of exercise (Kemppainen et al, 1985), and investigations involving reaching peak

performance states, which, according to Unestahl, (1992), has a spontaneous increase in pain tolerance where athletes don't feel common exhaustion and pain

An individual's conception of pain is an individualised multi-layered decision process relative to the sporting situation, where athletes have the potential to overcome adversity through practical (alterations in pacing), or mental (cognitive actions/tactics) strategical changes. Furthermore, cognitions dedicated to pain may effect how the pain is ultimately perceived (Cook & Koltyn, 2000), as the interpretation of pain is potentially influenced by prior experience and current contexts (Pargman, 1999). Even though pain intensity is one of the most powerful predictors of tolerance for ultra-endurance activity, research involving the psychological aspects of pain and ultra-endurance sports have received little attention. However, there is convincing evidence that pain tolerance levels progressively increase in conjunction with the type of sporting discipline. For example, research has found that endurance athletes have significantly higher pain thresholds than non-contact athletes such as tennis (O'Conner, 1992), which is most probably due to progressive painful experiences building up ones resistance capacities leading to higher "immunity" to sensations of pain (Addison, Kremer & Bell, 1998). According to Raiport (1988), athletes who train beyond their pain thresholds, attain increased awareness of their physical and mental barriers hence resulting in improved performance levels. Additionally, pain can be integrally intertwined with peer influences, for example maintaining a macho image when continuing with sport while injured (Frey, 1991, Nixon, 1993). Athletes with greater abilities to endure pain appear to have an advantage when participating in endurance events, however, to achieve elite status in endurance sports, the ability of an individual to cope with pain plays an imperative role. Athletes who want to reach elite status must accept that pain must be experienced and endured, achievable by athletes overcoming the pain barrier while remaining injury free (Addison, Kremer & Bell, 1998). From a psychological perspective, various other variables also influence pain coping abilities. Factors such as optimism, self-efficacy, goal importance and degree of life interference (Sullivan et al, 2000), along with the fact that pain control is more easily attained when there is an end in sight (Heil, 1998), all demonstrates that the degree of pain endured can be mentally affected.

An integrative model was developed by Addison, Kremer and Bell (1998), where the physiological aspects of pain were linked with cognitive appraisals and responses in behavior found in athletes coping strategies. Participants (n=10) for the investigation were from elite rugby union and triathlon backgrounds, all of whom had competed at international or provincial level. The sample group took part in in-depth one on one interviews, where athletes perceptions of pain and the sensations involved were explored. Addison and his colleagues found the athletes identified varying classifications and concepts of pain. Lazarus and Folkman (1984) reveal that pain proves to be a two-stage process. The primary phase deciphers whether the pain is threatening or not, and during the second phase, a more refined judgment as to which pain category, of which there are six, the pain should be allocated is decided. These established pain categories include the following. Firstly, a “positive training pain” emerged which involves non-threatening pain, typical of endurance activity, where athletes experience tiredness in the muscles, but where athletes have gone through the fatigue barrier. The pain type was understood and described as “under voluntary control” and therefore produced positive vibes for the athlete. Secondly, “negative training pain” occurs when an athlete has over-trained and perceives the pain as threatening and of no benefit to physical improvements. The resulting action depends on the evaluated decisions made by the athlete. Thirdly, “negative warning pain” concurs with negative training pain with the added dimension of increased threats. This pain classification does not occur suddenly and may be a new experience regarding pain for the athlete. Fourthly, “negative acute pain” is sudden, excruciating pain resulting from immediate injury during the sporting discipline. Fifthly, “fatigue / discomfort” involves routine sensations associated with regular training or physical exercise. Finally, “numbness” is an extreme negative response as, although no pain per se is experienced, a numbness occurs which the athlete conceives as not normal and potentially serious. In conclusion, the findings demonstrate the athletes decide which response option to choose, which are dependent on the athletes’ goals and expectations and whether the athletes intrinsic or extrinsic regards merit the effort and discomfort.

Even though many of the research investigations exploring pain did not occur during a sporting activity, there appears to be limitations in the pain research to date with regard to cognitive coping strategies for overcoming pain in ultra-endurance sporting

activities. Research demonstrates that there is a need for further information concerning pain levels, plus stipulation of the coping strategies athletes have found to be successful from past experiences. Additionally, if one pinpoints specific painful experiences endured during ultra-endurance activities, psychologists could develop more appropriate interventions for the athletes.

2.5 Psychological skills used by ultra-triathletes

2.5.1 Introduction

If an endurance athlete is to obtain optimal performance levels, they must synchronise psychological and physiological states, working each concept in unison with the other (Drinkwater, 2000).

Early recognition of the benefits of mental skills were recognised by Wilmore (1970), who found that strength and endurance capacities are limited by psychological inhibitions and that supramaximal performances occur when these psychological barriers are broken down, either through motivation or hypnotic techniques. Ever increasingly, the benefits of incorporating mental skills into an athlete's programme are widely recognised (Seiler, 1992, Unestahl, 1992). To provide the reader with some picture of the recognition of mental skill usage in sport, Vealey (1988) explored the most prominent psychological methods referenced in sports psychology books published in the 1980's. Vealey found that imagery occurred in 100% of the books, thought control featured in 93% of the references, while physical relaxation and goal setting were represented 93% and 70% respectively. Even back in 1983, psychologists found that success in high level sports was 10-20% accountable to physiological concerns, while 80-90% was due to psychological aspects of the performer. Williams (1993) defined success in sport 40-90% due to mental factors, where sports involving higher skill levels require higher mental skills. In endurance sports, Patrick and Hrycaiko (1998), found that elite endurance athletes (runners in the 1,600 metres), improved their performances when introduced to a mental training package consisting of relaxation, imagery, self talk and goal setting.

Throughout the extensive literature for this thesis, certain mental skills used by elite and endurance athletes continuously re-emerged. It was these recurring mental skills which guided the present research towards specific cognitive skills potentially used by

deca-ironmen to cope with adversity. Investigations have demonstrated that specific mental skills, such as imagery, tactics of thought control, goal setting and coping strategies, enhance elite performer's motivations (William & Krane, 1998, Patrick & Hrycaiko, 1998). Additionally, Gould, Gunan and Greenleaf's (1998) investigation, involving a sample of elite athletes from the Atlanta Games, demonstrated mental factors played an influential role not only on motivations, but also performance levels of Olympian athletes. Gould and his colleagues used surveys and interviews to find cognitive strategies elite athletes benefited from, which included distraction preparation, development of and to adherence preparation plans, optimisation of physical training, mental preparation for unexpected events and stressors, team cohesion and harmony. Concurrently Duda (2000) clearly states that maximal sport performance must be fostered by motivational techniques such as controlled imagery, self-talk, goal setting etc. Another prominent obstacle which deca-triathletes have to overcome, and recently sports psychologists have been investigating, are the effects of mental strategies on muscular endurance. Among other concepts, the effect of self talk and emotive imagery on muscular endurance was carried out in various forms by researchers such as Gould and Weiss (1981) and Feltz and Riessinger (1990).

2.5.2 Specific cognitive strategies employed by endurance athletes

Cognitive strategies employed by endurance athletes which would potentially correlate with deca-ironmen are now delved into in the following section.

Association/Dissociation

There is extensive research involving the performance benefits from incorporating association and dissociation techniques into athlete's coping strategies. An overview of the research carried out involving associative and dissociative research relevant to this investigation are portrayed on Table 2.3.

As can be seen in Table 2.3, the evidence for the benefits of associative and dissociative strategies are numerous. Associative strategies involve thought processes focusing on internal sensations such as, for example, breathing, muscle tension or performance levels etc. Alternatively, dissociative techniques employed by endurance

athletes can vary dramatically (Tuffy, 2000) Athlete's dissociative tactics range from singing to oneself, creating compositions of distractive self-talk or incorporating the use of imagery by visualising task-irrelevant people and places Furthermore, dissociative processes can be active (distracting) or passive (floating) Floating seems to be an appropriate descriptor having the effects of auto-hypnosis (Callen, 1983) Although dissociation, according to Hardy et al (1996), proves limited for use in sports which are relatively low in terms of skill complexity, such strategies do assist in coping throughout endurance exercise involving intense pain and fatigue Association and dissociation strategies have improved performance levels in, amongst other disciplines, elite endurance athletes, as among their numerous advantages, they can beneficially allay pain and discomfort (Forbes, 1986, Pollock, 1977)

There is strong evidence that elite athletes use associative techniques, while non-elite use dissociation techniques (Ungerleider, Golding, Porter & Foster, 1989, Morgan, O'Conner, Ellickson & Bradley, 1988) Furthermore, Sachs, Milvy, Perry and Shermans (1981) found that their sample group of ten ultramarathoners used association during marathons and dissociation during training, while Gill (1986) found dissociation proved better for maintaining performance Conflicting evidence is found where Hardy et al (1996), demonstrated that association assists athletes attaining placings and timing, conversely Okwumbua (1983) found that neither association or dissociation strategies played any part in an athlete's finish time

One of the dissociative strategies used by many of the sample athletes involved in this thesis, involved listening to music during their deca-ordeal The method which music enhances endurance performance may be explained in terms of extra-musical association, according to Karageorghis and Jones (2000), which promotes imagery and increases the ability of music to narrow attention, which in turn improves the affective response to physical activity Furthermore, with regard to overcoming pain, Masters and Lambert (1989), demonstrated runners' abilities to shift attention according to their sporting demands from a dissociative, distractive mode to an associative, focusing mode and the ability to tune into performance cues as needed despite the pain

Imagery

“Imagery is an experience that mimics real experience” (White & Hardy, 1998, p 389)

To demonstrate the respect which imagery ensconces in the elite world of sport, Table 2.4 depicts some percentages allocated to imagery usage by Olympian athletes

By managing one's thoughts and emotions through imagining an experience from the past or future, one can create productive competitive focus (Vealey & Greenleaf, 2001). Throughout the present literary search, sources concerning the benefits of imagery in sport are numerous. Apart from cognitive enhancement, i.e. learning and performance enhancement, (PaiVio, 1985, Feltz & Landers, 1983, Martin, Moritz & Hall, 1999), imagery has a number of other useful qualities. Imagery's multi-faceted benefits encompass building confidence (Garza & Feltz, 1998), relaxation, learning new skills and focusing attention (Hardy, Jones & Gould, 1996). Further uses are considered by Roberts, Spink and Pemberton, (1999) such as correcting a skill, assisting psychological recovery, assisting with coping and stress levels (Cogan & Petrie, 1995), motivation (Beauchamp et al, 1996), enhancing peak performance (Hall et al, 1990), endurance performance enhancement (Bull, 1989, Patrick & Hrycaiko, 1998), strategies for increasing muscular endurance task (Lee, 1990) and performance enhancement (Dale 2000).

Literature breaks mental imagery into 'kinesthetic' or 'visual' imagery, both of which can be experienced from internal or external perspectives (Mahoney & Avenier, 1977). Internal imagery involves image perspectives from inside the athletes' body, a personal insight, while external imagery is viewed from an outsider's perspective, as if they were watching themselves perform. Some literature claims internal imagery is more beneficial than external imagery (Cumming & Ste-Marie, 2001, Harris & Robinson, 1986), while others found that external imagery produced the most positive results (Glisky, Williams & Kihlstrom, 1996, Hardy & Callow, 1999).

Table 2.3

Overview of research involving associative and dissociative cognitive strategies of endurance athletes

Author	Investigative areas	Participant discipline/ pax	Methodology / Measure	Findings
Morgan & Pollock (1977)	Explore psychological characteristics	Elite long distance (n=11) Elite marathoners (n=8) College middle distances (n=8)	Psychometric best scores from standardised psychological inventories* Structured interviews (approx 1 hour) Written questions ** Experimenter rated	<ul style="list-style-type: none"> Psychological variable comparisons = no significant differences Motivation – no underlying factors responsible for initial involvement in running / Adherence in running – due to intrinsic and extrinsic reward Elite use assoc techniques /did not encounter pain zones or ‘walls’ Homogenous re frequency, duration and intensity of training Non-elite use dissoc techniques during painful input
Morgan et al (1987b)	Evaluate psychological characteristics plus asses motivation and cognitive strategies	Elite distance runners (N=14) Marathoners (n=3) Steeple chase/ 3,5000M (n=1) 1,500M (n=1) 10,000M (n=5)	Structured interviews which involved <ul style="list-style-type: none"> Motivation (involvement) – describe in 25 words or less the primary reason for participation Motivation (Adherence) – describe in 25 words or less reasons from continued participation Cognitive strategies – describe thoughts during running (classified as assoc or dissoc) 	93% involved for intrinsic reasons 100% primarily intrinsic for continued involvement Assoc in training = 21% Assoc in racing = 72% Dissoc in training = 72% Dissoc in racing = 0% Both assoc and dissoc in training = 36% Both assoc and dissoc in running = 28% Elite use assoc techniques Non-elite use dissoc techniques

Table 2.3 (contd)

Overview of research involving associative and dissociative cognitive strategies of endurance athletes

Author	Investigative areas	Participant discipline/ pax	Methodology / Measure	Findings
Kirby (1996)	Cognitive processes and mood states of an ultra-runner	Elite ultra-marathoner (N=1) 38 year old female (48 hour race)	Single case study Profile of mood states (POMS) prior to and post event Tested 68 times in 40 hours (approx every 35 minutes)	Responses Assoc = 70.6% Dissoc = 29.4% Dissoc (distraction = 14 of 20 thoughts) Dissoc (floating = 6 of 20 thoughts) Assoc = main cognitive process Shifting between assoc and dissoc increase endurance times
Schomer (1986)	Relationship between assoc and perception of training Faster pace Coping	Marathoners (N=31) Superior (n=9) 6 of whom were classed as elite Average (n=10), Novice (n=12)	Continuous recorded thoughts Objective data Perceived exertion measured using the Borgs scale	Assoc = faster pace Tougher run became = higher perceived exertion = increased associative thinking Dissoc = overcoming pain but danger of over-extension
Masters & Lambert (1989)	Faster pace Coping	Marathoners (N=48)	Race diary Qualitative	Assoc = 93% Assoc = faster pace Shifting between assoc and dissoc Assoc – used in marathon Dissoc – used in training
Weinberg, Smith & Jackson (1989)	Effects of assoc and dissoc and positive self talk on endurance performance	Inclusion requirements 3 miles/day, 5 days/week, Endurance task (30 minute run) (N=60) Muscular leg endurance task (N= (230)	<u>Experiment one</u> Subjects given 1 of 4 cognitive strategies 1) Dissoc thoughts 2) Assoc thoughts 3) Self talk 4) Control group <u>Experiment two</u> Assigned randomly to assoc /dissoc /positive self talk /control group for muscular endurance task	Results of Experiments one and two No significant differences between groups Cognitive strategies employed 74% of time Dissoc and positive self-talk = significantly greater persistence than assoc group

Table 2.3 (contd)

Overview of research involving associative and dissociative cognitive strategies of endurance athletes

Author	Investigative areas	Participant discipline/ pax	Methodology / Measure	Findings
Hollander & Acevedo (2000)	Cognitive /coping strategies	Ultra-swimmers (N=8) Males(n=3), females(n=5), Swimming English Channel (27 miles)	Qualitative Interviews	Dissoc assisted in increasing swimmers perseverance levels
Sachs (1984)	Coping strategies	Ultraendurance runners (n=10)	Experimenter rated Subjects given 1 of 3 cognitive strategies 1) Assoc 2) Dissoc (right brain-thinking of colour, music etc) 3) Dissoc (left brain – problem solving, counting etc)	Shifting between assoc and dissoc due to physiological demands Dissoc used to overcome pain = potential danger of overexertion / over-extension
Couture et al (1994)	Effect of mental training on endurance tasks (3 hour march in full military gear, [approx 24kg])	Soldiers (N=40) 3 hour march in full military gear [approx 24kg]	4 experimental groups 1) Biofeedback (assoc) 2) Meditation (dissoc) 3) Combined biofeedback and meditation 4) control After 2 weeks of mental training soldiers performed march again	No significant differences between assoc and dissoc Dissoc = did not improve performances via perceived decreased feelings of exertion, fatigue and pain Control group= substantial reduction of perceived fatigue in both trials

Notes * Battery of psychometric tests= State Trait Anxiety Inventory (STAI), Somatic Perception Questionnaire (SPQ), Depression Adjective Checklist (DAACL), Profile of Mood States (POMS), Eysenk Personality Inventory (EPI), Physical Estimation and Attraction Scale (PEAS), Hidden Shapes Test (HST)

**The interview questions related to runner's programmes, occupation, family structures, use of common drugs, coffee, tobacco etc



Photo 2.3. Deca-ironman competitor using music for dissociative purposes.

Table 2 4

Frequency of imagery usage as a mental skill by Olympian athletes to enhance performance

Author	Sample	Findings / % imagery usage
Ungerliedder & Golding (1992)	Potential Olympians (N=633)	85% - used imagery 99% (of imagery users) – used imagery prior to competition / 33% during competition
Orlick & Partington (1998)	Olympians (N=235)	99% used imagery during training and performance (12 mins / 4 days per week)

Researchers, such as Hardy (1997) suggested that skills depending on a technical form, for example precise body movements, would benefit from external imagery as opposed to skills depending on perceptual information that does not depend on specific technique precision Hardy goes further to claim that “imagery exerts a beneficial effect on the acquisition and performance of a motor skill only to the extent that the generated images supplement the useful information that would otherwise be available to the performer” (p 289)

Imagery which should be a polysensory experience (involving all the senses), therefore inclusive of visualising, kinesthetic, tactile, auditory etc , can be incorporated into sporting programmes in various ways, for example, recreating / creating, where the athlete reconstructs past events or studies photos or video footage of the upcoming events and / or opponents and effectively visualises themselves in appropriate locations Research has demonstrated that task imagery can be enhanced by the use of synchronic music when incorporated into endurance tasks The results also demonstrated that

motivating music enhanced endurance times to a greater degree than imagery alone (Karageorghis & Jones, 2000, Karageorghis & Lee, 2001)

However, throughout the vast imagery literature, there are some discrepancies regarding the link between imagery and optimal performances. Researchers who oppose the concept of imagery being beneficial to performance, for example Raglin and Wilson (2000) feel that imagery benefits seem modest at best “the mechanism that imagery putatively enhances performance has not been identified” (p. 215). Furthermore, Murphy (1990) claims there have been many inconsistent findings regarding imagery effects on performance, however he feels this could be partly attributed to inadequacies in the design of many studies (p. 31).

Goal setting

In the present context, goals can be classified as what an athlete hopes to accomplish, the underlying object or aim of an action (Weinberg, 2001). Goals “motivate individuals to take direct action by focusing attention, increasing effort and intensity, prompting development of new problem solving strategies and / or encouraging persistence in the face of failure” (Burton, 1992, p. 269).

The initial, highly documented investigations concerning goal setting were carried out by Locke in 1966. Locke found in the first instance that specific goals lead to increased performance compared to general and /or ‘do your best’ goals, and secondly that difficult goals lead to additional performance improvements compared to easy goals. However, Locke’s research was carried out in workplace environments and the uses of goal setting in a sporting capacity were not explored in any substantial form. In the 1980’s it began to emerge that by developing structured goal setting systems, endurance athletes could enhance focus, intensity and persistence through appropriate goal setting structures. Additionally, as far back as Oxidene (1968), it was realised that there were three main classes of rewards all of which played initial steps in the importance goal development: symbolic, materialistic and psychological, now more commonly generalised as intrinsic and extrinsic rewards.

Goal setting assists the performer in two ways. It enables enhanced feelings and perceptions of control as well as allowing for a combination of ego and mastery goal

perspectives, which enables feedback throughout an event, for example focusing on a specific moment rather than sole reliance on the final outcome (Thelwell & Greenless, 2001) There are various studies involving goal setting purporting that performance, process or outcome goals prove the most beneficial for enhancing performance Performance goals identify what is required to achieve a final target, process goals involves goal setting using a progressive routine or format which is required for a successful performance, while outcome goals involve goal setting with the end result or outcome in mind The benefits of setting process goals as oppose to outcome goals to improve sporting performance have been hugely documented (Durand, 2001, Kingston & Hardy, 1994) Additionally process or performance goals were found by some authors to produce optimal results (Burton, 1992) Conversely, in Gould, Eklund and Jackson's (1992b) qualitative study investigating elite wrestlers, they found all subjects had outcome goals, as opposed to performance or process goals, while Kingston and Hardy (1994a) found elite performers focus on outcome goals or performance / process goals in relevant situations Additionally, for optimum motivation, Jones & Hanton (1996) and Kingston & Hardy (1994) feel elite performers need to incorporate outcome, performance and process goals to progress and perform to optimum their ability Furthermore, Orlick & Partington's (1988) investigation into goal setting strategies of Olympians (n=235), found the highly successful Olympians set concise daily goals

As with most mental skills, there are conflicting views regarding the strengths of their benefits Many studies demonstrate the powerful influence that goal setting plays in enhancing sport performance (Kingston & Hardy, 1994) Conversely, authors such as Smith, Hauenstein and Buchanan (1996), feel that despite the abundance of positive results demonstrated by tests involving goal setting in laboratory and workplace settings, "the evidence collected in the area of sports and exercise performance has been inconclusive" (p 141) However, they do conclude that this is most probably due to methodological limitations Furthermore, there is evidence that no significant improvements were found by incorporating different goal types into endurance performance routines (Weinberg et al 1989, 1990, 1993, Barnett, 1977)

In conclusion despite some inconsistent findings research demonstrates that goal setting is a skill that can benefit endurance performers Although research demonstrates

that systematic goal setting works to varying degrees, its benefits as a motivational technique to assist endurance athletes maintaining their motivation through long and repetitive hours of training appears to be conclusive

Self talk

Self-talk was defined by Hackfort & Schwenemeger (1993) as “dialogue in which individuals interpret feelings and perceptions, regulates and changes evaluations and convictions and gives him instructions and reinforcement” (p 355)

The purpose of self-talk as a psychological intervention has numerous values Not only does self-talk enhance performance, it can enhance learning new skills and technique, assist in maintaining control, reinforcing and motivating (Schuifers, 2001), while also encouraging transference from negative to positive approaches, increasing attentional focus and encouraging positive mood state

Athletes can use one of three self-talk procedures, according to Van Raalte (2001), namely positive, negative and instructional Other methods of self-talk involve being able to control negative self-statements by reconstructing them in a positive manner (Maynard, Smith & Warwick-Evans, 1995)

Research has demonstrated that self-talk benefits endurance performance in various endurance sporting disciplines, such as cross country skiing (Rushall, Hall, Roux, Sasseville & Rushall, 1988), rowing (Rushall, 1984), enhancing ultra-distances (Bull, 1989) and increasing general endurance performance (Patrick & Hrycaiko, 1998, Weinberg, Smith, Jackson & Gould, 1984) Furthermore, Highlen & Bennett (1983) found in their study on elite wrestlers, that wrestlers who qualified used more positive self-talk than non-qualifiers Additionally, an investigation into the coping strategies of elite skaters by Gould et al (1993b), found that by recognising negative and potentially debilitating (self defeating) thoughts and replacing them with constructive rational (self-enhancing) cognitions, individuals can enhance performance outcome

Self-talk has proved to be one of the most beneficial cognitive strategies of motivation in elite athletes (Gould, Eklund & Jackson, 1993, Bandura, 1977) as it appears to have the power to counteract inappropriate or misguided thinking which potentially

could lead to negative thinking and poor performance. The benefits of self-talk are conclusive throughout all the sources in this review of literature.

Relaxation / meditation

“Mental training is widely used as a self-regulation technique, which, although is regarded as a contemporary phenomenon, mental training has roots in ancient meditative martial arts traditions” (Heil, 1986, p 19)

Research investigating the effects of meditation on endurance performance is quite limited, with any sport-related investigations being primarily physiologically based research. Hardy Jones and Gould (2001) concur with the author: “research findings from investigations of meditation effects upon performance are relatively scarce, nevertheless, the available studies suggest that meditation may have a facultative effect upon gross motor skills” (p. 16).

Alternatively, relaxation as a coping enhancing strategy has been highly documented by numerous researchers. Relaxation techniques, used in sport as well as other environs, are undertaken in a mental or physical fashion. Progressive muscular relaxation (PMR), initially introduced by Jacobson in 1938, appears to be the most widely used physical relaxation technique. PMR and its variants have diversified somewhat throughout the years, however, the differing techniques still contain the original underlying strategy, systematically tensing and relaxing the individual muscle groups. Additionally, Ost (1988) developed an intervention which assists athletes in acquiring enhanced relaxed states during a sporting encounter within 20-30 seconds, executed when the athlete verbalised the mantra ‘relax’ to themselves.

Research has demonstrated that elite athletes incorporate relaxation into their routines through breathing, counting and imagery, which in many instances is introduced generally instinctively and without training (Jones & Hardy, 1990a). Deep breathing, muscle relaxation training, meditation and therapeutic massage can assist an athlete to cope with painful situations. Deep breathing increases oxygen flow to the pain site, which physiologically reduces the pain sensation, while as pain restricts various muscle groupings, muscle relaxation helps to relieve these pressures, thus reducing the pain.

Meditation can induce a state of relaxation physically and mentally, while also distracting the athlete plus reducing negative emotions derived through the pain, which in turn assists athletes with their pain management. Finally, therapeutic massage involves manually manipulating the muscles (Taylor & Taylor, 1998).

Although Bull (1989) found support for relaxation usage in ultra-distance runners, distinct benefits were not clarified. However, further research by Bull, Albinson and Shambrook (1996) found relaxation techniques may enhance endurance performance by allowing the endurance athletes to maintain their optimal relaxation state despite conflicting cognition's and feelings of pain. This investigation delivered relaxation techniques in three stages. The first stage enabled the participant to feel what it is like to relax using PMR (Progressive Muscle Relaxation) (Jacobson 1938). The second stage was the technique of centering, used when participants are stretching and getting ready for performance (Hardy & Fazey 1990), where participants focus their center of consciousness from their head to their center of gravity (just below the naval). This centering allows for quick and effective relaxation while focusing attention on what needs to be done and how it is going to be achieved. The final stage was breathing strategies to enable participants to relax during the event. To enable learning each skill, all participants were requested to monitor their tension levels prior to and following the relaxation session by responding to a series of bipolar descriptors on a scale from (0) very tense to (10) very relaxed. These strategies allowed the participants to develop their understanding and self-awareness of their tension levels.

In summary, evidence suggests that ultra-endurance athletes endeavor to maintain a relaxed state through their endurance ordeals to assist optimal performances. The aforementioned meditative and relaxation techniques proved to play an integral part in events of deca-ironman caliber. However, greater insight into the actual cognitive routine involved is required for clarification of which strategies provide the best coping results.

Attentional focus



Photo 2.4. Deca-ironman during the biking discipline.

“Attention is the term that describes the process whereby an individual uses his or her senses to perceive the external world. Focusing your attention simply involves becoming aware of one thing to the exclusion of others” (Roberts, Spink & Pemberton, 1999, p. 156).

Literature demonstrates that focusing ones attention can occur, and can be categorised in a variety of ways. Work by Niddifer (1976, 1981), involving attentional focus has been highly recorded, where Niddifer describes attention as being defined by the dimension of width (broad – narrow) and direction (internal – external). Two further dimensions of attentional focus were developed by Eysenck in 1984, when he established grounds for “focused attention” for sports involving closed skills such as golf, and “divided attention” in sports involving teams. Thelwell and Greenless (2001) report that many endurance performers report continuously being able to focus on bodily functions

such as breathing and muscle tensions, (association), which may enhance their abilities on focusing on task relevant thoughts

Attentional focus, may also be associative, for example focusing on the pain and interpreting it in a positive way or alternative form, or dissociative, when one concentrates on other thoughts, ignoring the pain thus perceiving the pain as less severe (Morgan & Pollock, 1977) With specific regard to pain, Heil (1996) claims that dissociation can be potentially damaging if the athlete over-extends the injured muscle or body part, however research involving endurance athletes incorporating dissociation to overcome pain did not concur with Heil's views (Master & Lambert, 1989, Ungerleider, Golding, Porter & Foster, 1989)

Taylor and Taylor (1998) in their paper exploring pain education and management in rehabilitation discuss various alternative dissociative focusing techniques which are potentially used by deca-athletes Their concepts include external focusing, (for example music), pleasant imagining or soothing imagery (which causes relaxing distractions), rhythmic cognitive activity (such as repeating a mantra), pain acknowledgment (an internal associative technique where athlete visualises the pain in a calmer, more manageable format), dramatic coping (an internal-associative technique where athletes perceive themselves as heroic invincible figures etc) and situational assessment (an external –associative technique used by ultra-runners) Furthermore, in Hardy, Jones and Gould's (1996) review of attentional strategies used by elite athletes to enhance their attentional control, a combination of techniques were observed, with the concepts of process-oriented goals, imagery and relaxation emerging as most prevalent

In conjunction with attentional focus an investigation involving pain thresholds and the Canadian infantry, Couture et al (1994) found that narrow internal attentional focus improved a soldier's ability to tolerate pain and improved their endurance performance levels Couture and his colleagues claim this is achieved by the individual gaining specific focus on a particular thought and disjoining themselves from the pain, while assisting them from developing self defeating thoughts or attitudes Finally, Forbes (1986) found marathon runners who can separate themselves from inherent pain utilising attentional strategies provide more beneficial results

2.6 Motivational aspects relevant to the present investigation

2.6.1 Motivation introduction

Since 1964, when Vanek & Hosek found the central motive for participation in sport was the need for achievement and the need for physical activity, numerous studies have supported this belief of motivation being a key persistence factor in sport. The fact that elite endurance athletes must generally be extremely highly motivated may prove imperative to their success. Ultra-endurance performers must have high levels of motivation, to get through repetitive, intense and grueling training sessions and the dedication to continuously push themselves mentally and physically throughout every season of their entire careers. Research supporting this concept demonstrates that elite performers maintain high levels of intrinsic motivation throughout the span of their careers (Orlick & Partington, 1988, Hardy & Parfitt, 1994).

Although according to Costill (1979), evidence of our genetic legacy (i.e. running for hunting etc.) is clear when we observe how quickly our bodies adapt to endurance training, Shepard (1980) points out, "attempts at predicting endurance performance in elite athletes solely on the basis of physiological variables have been generally unsuccessful" (p. 297). Therefore, it is suggested that psychological factors, such as motivation, are of utmost importance in regard to improving achievement standards (Roberts, 1992). As far back as the early 1960's psychologists such as Hellerbrandt and Waterland (1962) and Ika and Steinhaus (1961) recognised the influence that motivation could play with regard to improving strength and endurance capacities. Since the early days of experimental psychology, researchers have been attempting to measure motivation through various scales and formats. Numerous theories have also evolved, which total, according to Roberts (2001), approximately thirty-two different motivational theories. Along with these motivational theories, sports psychologists have been pursuing beliefs and carrying out in-depth investigations to support their notions and ideas involving motivation and elite or endurance performers. Extremely high levels of both intrinsic and extrinsic motivation is what distinguishes the elite from other athletes. They need this high level of motivation to remain focused and get through problems such as tough training, injury or sponsorship problems, equipment failure etc. (Hardy, Jones & Gould, 1998). Evidence demonstrates a positive relationship between improved sport

performance and higher motivation levels exists (Bakker, Kroning, Schenau & De Groot 1993, Mahoney 1989)

The task of defining the specific motivations of deca-ironmen are beyond the scope of this thesis, however, relevant areas of research concerning intrinsic and extrinsic values, plus task and ego orientations of motivation will be presented in this literature review

2.6.2 Intrinsic and extrinsic motivation

In essence, athletes can be motivated in one of two ways, intrinsically or extrinsically. Intrinsic motivation involves the athlete engaging in the activity purely for the self-satisfaction and pleasure derived from the activity (Pellitier et al, 1995). Conversely, extrinsic motivation concerns athletes who partake in a particular sporting activity to obtain external reward, which can be material or verbal, while consciously aiming to avoid negative consequences, such as external criticism.

Vallerand et al (1992) further defined intrinsic motivation (IM) into three sub-categories, IM to know, IM to accomplish things and IM to experience stimulation. Athletes portraying elements of 'IM to know' take part in the activity for personal pleasure while also having the desire to learn and explore new areas or techniques. Individuals demonstrating 'IM toward accomplishments' is another means of portraying task orientated motivation, where the athlete takes part for the personal pleasure while also desiring a sense of accomplishment. Finally, 'IM to experience stimulation' involves athletes who take part primarily to experience kinesthetic or aesthetic sensations while enjoying the fun and excitement of the activity.

Extrinsic motivation (EM) can also be sub-categorised, according to Pellitier et al (1995) on a continuum of lower to higher levels of self-determination as external reward, interjection and identification. External reward involves the athletes taking part in an activity purely for the resultant reward. Interjection is present where the athlete is driven by experience related accumulated guilt to continuously perform optimally, while being self-conscious when their performances are not up to a high standard. Identification is prominent when the athlete's extrinsic traits to achieve personal goals are "internally regulated and self determined" (p 38).

Although research demonstrates that elite performers partake for differing intrinsic and extrinsic reasons, the evidence suggests that elite performers appear to uphold intrinsic motivation throughout their careers (Hardy & Parfitt, 1994, Orlick & Partington, 1988) Furthermore, in their research concerning Olympic status rowers coping strategies, Baltzell and Sedgwick (2001) findings indicated that elite athletes need to maintain high levels of intrinsic motivation, focusing on the immediate situation, to overcome external adversities

2.6.3 Task and ego orientation

Task orientation relates positively to the belief that success requires high effort and collaboration with peers, while also believing that ability is an acquirable personal quality According to Duda (1997) strong task orientations are related to achievement striving and overall enjoyment of one's sport Alternatively, ego goal orientations are "evident when performance evaluation is based on normative standards, that is, when success and failure are defined in comparison to the performance of others" (Ntoumanis et al, 2001, p 190) Furthermore, Hanrahan (2001) describes task oriented people as "those who define success as mastering tasks and improving one's personal skills, whereas individuals with ego orientation define success as being better than their competitors" (p 193) In simplified terms, task oriented athletes are intrinsically motivated while ego oriented are extrinsically motivated

Available evidence demonstrates that ego orientations alone are not detrimental to performance, however, when ego orientations are combined with low perceived ability, it may prove to be harmful to elite performances (Hardy, Jones and Gould, 1997) Alternatively, Roberts (2001) argued that although elite Olympians would be expected to exhibit high ego involvement, the athletes actually function better when they exhibit high ego orientation tempered with high task orientation While Hardy (1997) argues that promotion of ego involvement is essential and should be a normative criteria for elite athletes and suggests that ego involving competition provides motivation during practice sessions Pensgaard and Roberts (2000) found Olympic athlete's who created a mastery climate while fostering task orientation, were less stressed and more motivated than those in ego oriented climates, while Kavussanu and Roberts (2001) found that males had

higher ego orientation, lower task orientation and lower levels of moral functioning than females

With regard to task orientations and goal setting, evidence demonstrates that elite sports-people focused their task orientations into performance and process orientated goals for competitive performances in order to sustain motivation (Burton, 1989, Jones and Hardy, 1990a) Furthermore, athletes who orientate their goals in ego oriented environs will probably lead to high anxiety, low self efficacy (Nicholls, 1989) and a depreciation in performance effort (Duda & Chi 1989, Hall 1989) Conversely, high task orientated athletes were found to practice more in their free time (Duda, 1988) and exert more effort to achieve higher performance levels than low task orientated athletes (Duda et al, 1989)

2.6.4 Self efficacy

Although the overall social cognitive theory (SCT) perspective does not prove to be of direct relevance to this investigation, a specific theory within the SCT framework, namely self-efficacy, does play a part in the motivations of deca-ironmen Self-efficacy has been described as “a judgment of ones capability to execute behaviours necessary to produce a particular outcome” (Bond, Biddle and Ntoumanis, 2001, p 244)

Furthermore, Hardy, Jones & Gould (2001) describe self-efficacy as “situation specific self-confidence as opposed to global self-confidence it is the performer’s perception of his/her competence to succeed at a given task at a given time” (p 46) Since original research papers regarding self-efficacy were published in the late 1970’s, there has been over sixty articles written concerning self efficacy relating specifically to sport, although there are very few relating specifically to endurance (Mortiz, Feltz, Fahrback and Mack, 2002) However, one series of studies undertaken by Martin and Gill (1991) examined the competitive orientations of self-efficacy beliefs for placing (outcome) and finish time (performance) of distance runners They found a win orientation was positively associated with self-efficacy beliefs for placing, whereas goal orientations were positively associated with beliefs for finish time However, the outcome efficacy / win relationship was much stronger than the performance efficacy goal orientation In a second study, Martin and Gill (1995b) observed that runners with strong win orientations

chose important place goals that also predicted outcome efficacy beliefs. These results suggest that rather than outcome goals being negatively associated with self-efficacy, they may be based on realistic appraisals of one's capabilities compared with other competitors. Moreover, evidence demonstrates that athletes with higher levels of self-efficacy are more prone to setting and achieving more difficult goals, logically resulting in increased intrinsic motivation and therefore more internal stamina to overcome testing periods such as sponsorship problems or injury (Bandura, 1986, Locke et al, 1984)

Many studies show a strong relationship between self-efficacy and endurance sports, where evidence demonstrates that athletes require a strong sense of self-efficacy to overcome failures and maintain perseverance (Hardy, Jones & Gould, 1998, Bandura, 1982). Bandura (1997) also maintains that resilient self-efficacy is enhanced by experiencing situations which involve failure or mental and physical setbacks. Athletes with high self-efficacy expectations, according to Singer, Hausenblas and Janelle (2001), generally also demonstrate low precompetitive anxiety, positive affect, strong goal importance, high personal goals and high trait sport confidence. Mortiz et al (2002) carried out ten studies concerning self-efficacy and sport, most of which demonstrated that self-efficacy either was the prime variable or played a major role for significant or moderate relationships between self-efficacy and performance. Conversely, Bandura noted in 1990 that due to the complexities of sport, self-efficacy may not prove to be so significant in the efficacy-performance relationship.

A further investigation involving ninety American marathon runners, comprising of 82 males and 8 females was carried out by Okumabua in 1986. The study set out to examine the relationships between self-efficacy, associative cognitive strategy use, expected pain, training history, past performance and race performance. Measurement tools for self-efficacy used in the investigation, were a 9-item self-efficacy strength and level on a 100-point probability scale for running the marathon. This scale was administered to the performers approximately three days prior to the competition. Performance measurement was controlled by the performers' finish time. Results demonstrated that self-efficacy strength proved to be the strongest predictor of the finish time, followed by past performance, expected pain and training history. The results also

showed that self-efficacy and strength levels proved to be related to training history and past performances

Evidence suggests that self-efficacy is one of the most influential psychological constructs affecting achievement ambitions in sport. The beneficial effects of individuals having self-efficacy in sport are so respected that when instances of self-efficacy are not found to be a significant predictor of performance, it is deemed to be due to interventions and measurements problems (Singer, Hausenblas and Janelle, 2001)

In conclusion, research which incorporated motivation into their elite, endurance investigations, clarifies that the full compliment of elite endurance athletes in the aforementioned research are primarily motivated by intrinsic values, for example personal challenge and self- motivational forces (Bell & Howe, 1988, Morgan et al, 1988, Morgan & Pollock, 1977, Acevedo & Hollander, 2000) Motivational concepts of sport have been widely researched, with motivations for overall participation in sport being reported. However, ultra-endurance, and specifically triathletes again seem to be, to a large extent ignored, with no concrete evidence being provided for specifically how these ultra-endurance athletes maintain motivation though training and long distance competition

2.7 Qualitative approaches to research

Epistemological debates concerning the qualitative and quantitative forms of inquiry both believe they use legitimate modes of inquiry to gain warrantable knowledge through their methods of collecting data, data analysis and data interpretations. This section reviews methodological research relevant to this thesis and conveys justification as to why the author of the present investigation has chosen a qualitative as opposed to a quantitative means as a main approach to the present investigation.

Rather than discuss advantages and disadvantages of the concepts of qualitative versus quantitative research methods, which can be widely read in numerous publications, for example, Denzin and Lincoln, (2003) or Richardson (1996), suffice to say that quantitative paradigms are rationalistic, while qualitative paradigms are naturalistic. However, one can inform the other, for example quantitative data from surveys and questionnaire can inform interview or focus group content, while

alternatively, qualitative data from interviews can guide the construction of questionnaires

A concise table providing an overview of the main differences between qualitative and quantitative approaches can be seen in Table 2.5

Table 2.5

Differences between qualitative and quantitative research approaches (adapted from Bryman (1996, p. 94))

Variables	Quantitative	Qualitative
Role of researcher	Preparatory	Explores/Interprets
Researcher/subject relationship	Distant	Close
Researcher/subject presence	Outsider	Insider
Relationship of theory/concepts and research	Confirmation	Emergent
Research strategy	Structured	Semi-structured
Scope of findings	Normothetic	Idiographic
Nature of data	Hard, reliable	Rich, deep

The researcher in the present investigation believes that when investigating human performance in a particular context, one truly cannot find a more realistic and reliable approach to delve into the human psyche of individuals than through qualitative means such as in-depth interviewing or observation. The complexities of human action and human thought are the main areas where qualitative research proves vital. When individuals are treated as numbers or statistics, or through structured approaches in the extreme, as in many quantitative formats, elements of human nature's individuality may be lost and true and realistic results may remain undiscovered. Qualitative data can be obtained through various empirical means. A qualitative, non-judgmental approach, coupled with systematic procedures and analysis, utilises instruments such as interviewing, case studies, personal experiences, biographies/life stories,

introspective/interactional/ visual texts, or observational methods, to achieve personable, realistic and reliable results, while providing a valid, honest representation of the subject's viewpoints. Although some may argue, probably with some conviction, that it is impossible to get to the deepest core of the person's personality and cognitions, a qualitative approach will provide optimal opportunity for rich description, while perhaps gaining genuine insight into the individual's motivations and cognitions. In summary, qualitative research is a method which provides that opportunity for answering questions about people, which primarily consists of words rather than numbers. Furthermore, with regard to quantifying and/or qualifying human diversity, this investigation involves humans, so surely they deserve an approach that caters for differences of opinion or strategies that cannot be obtained solely through quantitative methodologies. More specifically in the case of this present research, the individuals, by the very nature of their chosen endurance disciplines, do not seem to fit into the norms of societal stereotypes. Even within the group being investigated it was anticipated that there would be major variants as well as similarities, but to try and analyse their motivations and mental skill usage solely through quantitative means would seem unsuitable and futile, leaving little no scope for deviance's or unexpected data.

As Hanson and Newburg (1992) pointed out "what better way for athletes or coaches to learn about success in their perspective sport than through detailed, descriptive accounts of the lives of others who were in similar situations and have reached a high level of performance" (p 48). Or as Lenski (1988) explains " [humans] are not amenable to controlled experimentation under laboratory conditions. It is clear that the social sciences cannot operate in the same way or be governed by the same rules as the natural sciences" (p 164).

2.8 Theoretical Approaches

The next section defines precise theoretical approaches and procedures which are relevant to the present research thesis. This research used two primary investigative strategies due to the complexity of the research question, specifically, phenomenology and a grounded theoretical approach. Further insight into these approaches can be seen in the methodology chapter of this research.

2 8 1 Phenomenology

Phenomenology studies how people interpret their world, with the phenomenologist attempting to view the world from their subject's perspective. Being directly concerned with the social sciences, phenomenologists study people in their specific environs where the interpreter can decipher and understand motivations for particular actions, by gathering "deep information and perceptions through inductive, qualitative methods such as interviews, discussion and participant observation and representing it from the perspective of the research participant" (Lester, 2003, p. 1)

There are some unique aspects to phenomenology regarding components of analysis, which includes aspects such as the use of a research group and inductive interpretation. This process permits the researcher to remain on a par with their subjects, while also working with a chosen research group, who peruse the interview transcripts in an interactive manner, looking for potential themes and thematic headings. It is then possible to cross check the researcher's original codings and interpretations with the results from the research groups and see whether their interpretations correlate. Member checking is also unique to phenomenology, which involves returning the interpreted and coded reports to the subjects' for verification that interpretations were accurate. Although it must be partially beneficial for subjects to review the interpretations of their actions, subjects' findings of the interpretations given should not be conclusive, but treated as further input for the final report (Fielding & Fielding, 1986). Further insight into coding and thematic procedures can be seen in the methodology chapter of this thesis.

2 8 2 Grounded theory approach

Original concepts of grounded theory methods emerged in the 1960's (Blumer, 1969, Glaser & Strauss, 1967), as a method for generating or analysing qualitative data. It allows researchers the opportunity to portray a theory which evolves from, (or is grounded in), continuously dimensionalising and coding data, which was gathered from structured settings such as interviews, participant observation or other fugitive documents (Pidgeon, 1996). Data gathered is analysed from textual (i.e. what is being experienced) or structural (i.e. how it is being experienced) perspectives, which are guided by

grounded theory perspectives. In many aspects of the social sciences, data collection and data analysis are two distinct concepts, whereas in a grounded approach, it is of utmost importance, to incorporate an interchange between the two phases. Using the grounded approach, “freely generates new categories from the data, particularly in the early stages” (Pidgeon & Henwood, 1997, p 87). Specifics regarding the processes for coding data and the precursors of new theory generation can be seen later in this thesis. Charmaz (2003) highlighted a number of theorists who have interlinked grounded theory with data primarily obtained through interviews, for example, Baszanger (1998) and Charmaz (1995b).

The flexibility of qualitative investigations provides the researcher with scope for theoretical evolution. In a grounded theory approach, the hypothesis emerges from series of raw data collections, codings and analysis. The underlying benefits of a grounded theoretical approach are further strengthened by Stern (1995) who claimed that grounded theory proves most beneficial in unique situations, or when fresh perspectives are required. Furthermore, Thomas and Nelson (2001) consider grounded theories as the “best for explaining observed phenomena, understanding relationships and drawing inferences about future activities” (p 346).

2.9 Summary

From the review of literature, it is clearly evident that there is a void of knowledge concerning the area of cognitive strategies which athletes employ in ultra-endurance disciplines, and more specifically regarding ultra-triathlons. There appears to be a large percentage of the research carried out on ultra-runners or “endurance” sports dealing with mood states and personalities. Alternatively, cognitive strategies potentially beneficial to ultra-athletes and triathletes coping mechanisms, have been, to a large extent, ignored. Furthermore, research methodologies in the area of sports psychology have rarely incorporated qualitative approaches for data collection and analysis.

One area requiring detailed definition in this thesis, is the broad spectrum of what endurance actually signifies. The author believes that some of the research to date which has investigated endurance, have used, perhaps, irrelevant measures for an “endurance task”. Although it was defined earlier in the ‘Glossary of Terms’ as “the ability to sustain

or repeat intense effort” (National Coaching Certification Programme, p 7-11), it should be noted that for this thesis, the meaning of endurance goes far deeper. The concept of endurance is very definitely relative to the specific endurance task in question. Literary research demonstrates two ends of a very long “endurance” exercise spectrum. At one end we have, for example, Weinberg, Lawrence and Jackson’s (1985), investigation involving the effects of goal setting on an “endurance task” involving continuous sit-ups for 3 minutes in one of their experiments, which, although admirable in itself, does not compare to the endurance task of competing in the deca-ironman. The concept of endurance for the subjects involved in this investigation is far more intense involving incessant commitment to the task of completing a race like the deca-ironman before the cut off time, which involves a duration of fourteen days or 336 hours, as opposed to 3 minutes. Raglin and Wilson (2000) concur with the authors thoughts stating that ‘the endurance activities tested have generally borne little semblance to actual endurance events’ (p 216).

A critique of the literature published to date is that data has been primarily collected through self-report formats. While this is beneficial and can contribute to developing our knowledge, there is a need to move beyond self-report and utilize other strategies for understanding ultra-endurance athlete’s experiences. Literature demonstrates that the event investigated in this research has never been covered before in any great detail. This study has therefore been beneficial in diminishing the void of knowledge concerning enlightening aspects of this area, i.e. the worlds of ultra-endurance triathletes.

Furthermore, there seems to be a surplus of studies involving college students as “norms” or comparison groups. Even though research has demonstrated that psychological techniques improve endurance athlete’s performance levels, research has rarely involved subjects from an elite field. The author feels there is a definite need for further investigations using experienced, elite, non-collegiate sample groups. Raglin & Wilson (2000) and Meyers et al’s (1998) concur with this opinion. Furthermore, it is felt that ultra-triathlete’s motivations and mental skill strategies are multi-faceted, concurring with, among others, Acevedo et al’s (1992, 2000) research investigations, who found that

unique cognitive strategies were utilised, which may prove not to be the norm in other mainstream sporting disciplines

Past research by sports psychologists such as Gould, Eklund and Jackson (1992) have found that successful ultra-endurance athletes overcome physical and mental barriers through heightened effort and commitment, a clear motivational strategy and a high level of motivation to achieve goals. The author concurs with this view, and seeks to provide further insight into the cognitive and motivational strategies these ultra-endurance athletes use to remain focused and overcome these mental and physical extremes of highs and lows.

With regard to motivation, past research demonstrates that endurance athletes are primarily intrinsically motivated. When transferred to deca-ironman competitors, it possibly mirrors that at the hub of all deca-ironman participants is the need for intrinsic traits to ensure perseverance in training and competition. Additionally, for some ultra-triathlete's mere completion may not be sufficient for attaining feelings of satisfaction and that for some racers, winning is everything, while for other competitors' completion of the course and feelings of accomplishment and achievement will prove ample as a reward. One aspect the current study will examine is the motivational profiles and driving influences behind deca-triathletes' motivations for training and competition.

During such ultra-endurance events, where environmental conditions continuously change, an individual's psychological state can have a large impact on performance (Clews, 1992). However, as can be seen from the review of literature, there are relatively few studies concerning triathletes, with perhaps no studies concerning mental strategies and motivations of deca-triathletes. Rehor and Knuckley (2001) also recognised the void of research in the area concerning triathlete's psychological influences which potentially promote or inhibit athlete's performance levels.

With regard to methodology, the author concurs with Dale (2000), who recommended that future research should involve athlete's experiences through interviews and phenomenological processes, enabling real insight into the athlete's experiences which can be passed onto psychologists, coaches and athletes. Finally, there is a definite need for research which examines cognitive strategies which can be used by

ultra-endurance athletes to optimise their performance levels (O'Conner, 1992) It is into this void that the present thesis endeavors to provide additional knowledge

Chapter 3

Main Research Methodology

3 0 Introduction

For this research investigation, the author felt there was a definite need to tailor the methodological approach beyond the more generic approaches to qualitative research and therefore the format incorporated into this research investigation is derived from an interaction of two recognised approaches. The primary approach was phenomenological, inter-linked with the underlying aspects of the grounded theoretical approach to define cognitive coping and motivational strategies utilised by deca-triathletes.

Phenomenologically, this thesis attempts to clarify the meaning of the data gathered, through interpretation and insight, required to define the athlete's experiences. However, it is more factual from a systematic perspective as cognitive strategies, which are under scrutiny, are definitive concepts which cannot be fully analysed through interpretation. Additionally, the methodology could not be classified as purely grounded in nature as the research is not categorically generating a new theory. However, as far as the author is aware, the area under investigation has not previously been researched, so the opportunity to reveal new concepts, specifically relating to the cognitive strategies deca-triathletes use to complete this ultra-endurance event, is prevalent. By incorporating a grounded theoretical approach, a broader scope was provided for "varied fundamental assumptions, data gathering approaches, analytic emphases, and theoretical levels" (Charmaz, 2003, p. 252). This thesis is also grounded because, as Sarantakos (1993) portrayed, "it is related to, emerges out of, is created through, and grounded in empirical data" (p. 269). The intersection for the two approaches allowed the phenomenological experiences described through the narrative formats, to be further developed into specific theoretical concepts.

Additionally, pertaining to a grounded theoretical approach, the methodological procedures were primarily written as guidelines as the specifics of the methodology emerged during the research. Furthermore, in the early days of this research investigation, as seen in chapter 2, the researcher carried out a review of literature and also a pilot study.

(an overview of which is described in this chapter) These procedures, in conjunction with the researcher attending a twelve-week course in qualitative and quantitative research methods, further enlightened the author's views confirming that a primarily qualitative methodology would prove most beneficial to the aims of this research. It would provide for a dynamic methodology producing veracity in the findings far beyond the scope of conventional wisdom in areas concerning cognitive strategies and motivations of ultra-endurance triathletes. The methodological process chosen also provides this research investigation with results which prove to be valid and reliable in nature.

This chapter presents the methodology incorporated in this investigation. The pilot investigation is primarily presented. Methodological procedural details are then presented, followed by analytic formats undertaken, finally completing this section with data analysis concerns the researcher was made aware of throughout the investigation which pose relevance to all qualitative research approaches.

3.1 Pilot investigation

Prior to the main body of investigative research taking place, a pilot study was conducted. The pilot investigation paved the way for ensuring optimal procedures were established prior to the main research questions being tackled. The purpose of the pilot study was four-fold:

- Primarily it provided the researcher with a format which assisted in ensuring the main body of research's methodology was of relevance and could be validated, which is demonstrated later in this chapter.
- Secondly, the pilot study provided the author with a platform for improving their interviewing skills.
- Thirdly, it gave the researcher an opportunity to elucidate further on potentially nebulous topics which required more clarification regarding their relevance to the overall study, specifically areas of motivation, cognitive orientations and cognitive strategies.

- Finally, the pilot investigation provided a means for establishing the final interview structure used in the main study, by means of entering any necessary further amendments and fine-tuning the interview question formats

Prior to providing an overview of the pilot investigative procedures, a brief insight is provided which describes background information explaining the path which the research question focus followed

The original forum for investigation was aimed towards involving elite, solo, ultra-endurance sailors who have taken part in the Vendee Globe race. The Vendee Globe race encompasses the most extreme sailing through the world's most difficult and dangerous waters in the harshest conditions possible. The race involves sailing 27,000 miles non-stop, circumnavigating the globe, alone and unassisted. Originally the author's aim was to ascertain possible unique cognitive and motivational strategies used by these sailors to get them through stressful and at times life-threatening situations. This primary investigative plan proved to be unrealistic due to two main restrictions. Firstly, access to many of these elite sailors was a major obstacle and secondly, the additional financial requirements required when working with top elite athletes, if one is aiming to carry out productive research, was unavailable to the author. From a positive perspective however, in retrospect, the project focus alterations provided the author with a broader knowledge of the subject area from two main perspectives. Firstly, the cognitive and psychological focal aspects of elite sailors' reactions to extreme weather conditions while competing alone for long durations (at least 94 days) were highlighted, plus secondly, the opportunity to acquire further experience regarding some of the problems which researchers can potentially encounter throughout the research process were learnt.

When the first pilot interview took place, the project aims still remained geared towards solo sailors. It was then that the overall focus began to evolve and other endurance sporting disciplines such as extreme mountaineers, were introduced. Nevertheless, the underlying project focus primarily concerning cognitive strategies and motivations of ultra-endurance athletes remained as the central aim. The final decision to specifically investigate deca-triathletes came when the author was invited to travel to Mexico with one of the deca-athletes as a member of their support crew. This provided

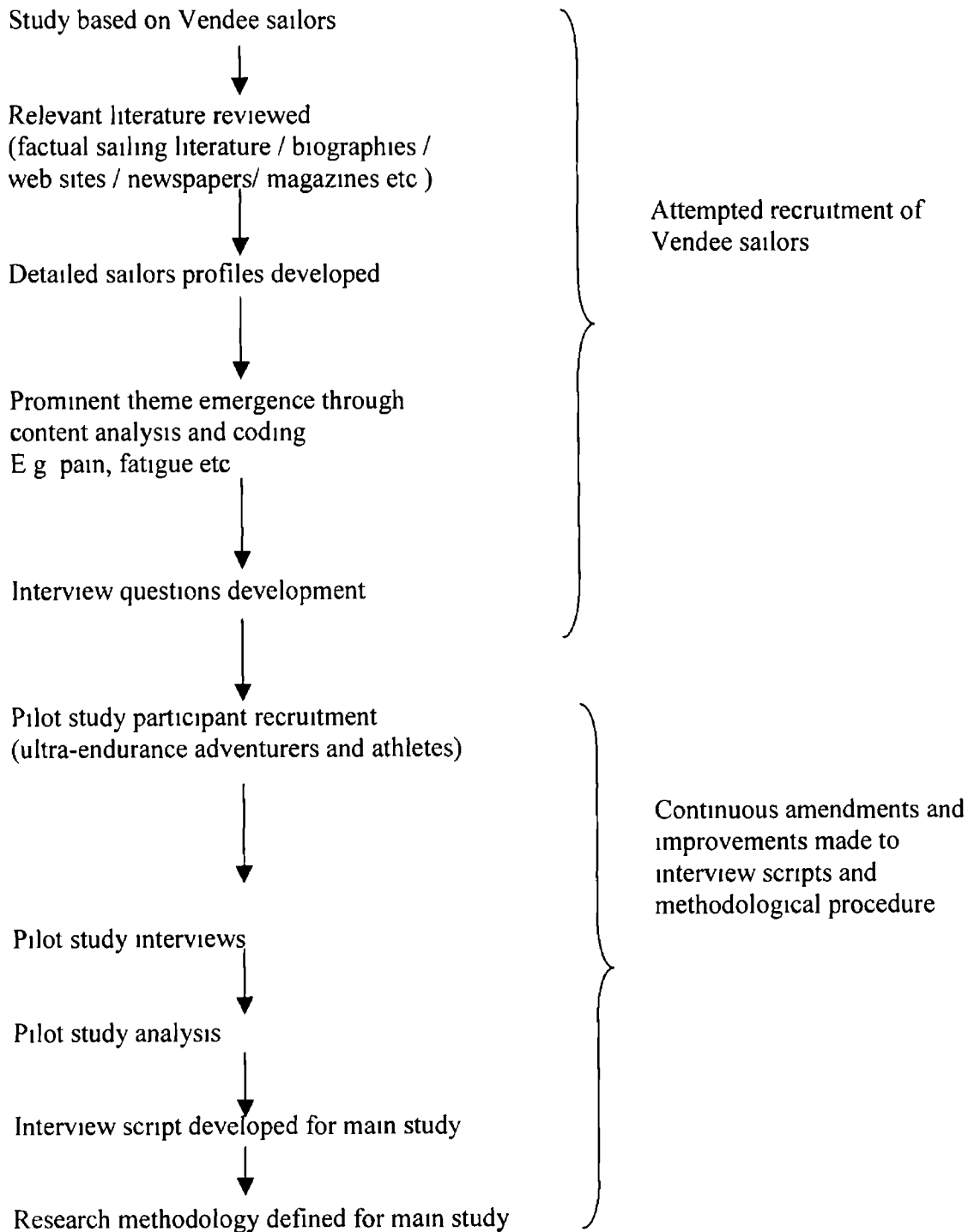


Figure 3 1 Flow chart depicting pilot investigation procedures

the perfect opportunity for gaining ‘hands on’ experience with ultra-triathletes, while concurrently having the perfect opportunity for collecting data

An overview of the pilot study preparatory phases and procedures involved with the execution of interviews and analytical concepts can be seen in Figure 3.1. Brief overviews of each stage portrayed in Figure 3.1 are now presented

Phase 1 / Literature review and theme emergence Initially extensive accounts of solo sailors voyaging experiences were reviewed from various sources such as books, autobiographies, journals, magazine and newspaper articles as well as Internet websites. Using information gathered from the aforementioned sources, the researcher incorporated a content analytic strategy. This process began with clustering recurring references around underlying uniformities onto a spreadsheet format, which can be seen in Appendix 3.1. The recorded traits emerging from this spreadsheet, guided basic theme areas for potential script development, while also providing directive guidance for meritable areas of research. This ensured appropriate phenomenological experiences of ultra-endurance sailors were tackled, for example, ‘reached mental limits,’ ‘sleep deprivation’ etc.

Phase 2 / Detailed sailors profiles Files were developed involving direct reports of solo sailor’s emotions, beliefs and coping strategies experienced during their solo sailing experiences. These findings provided additional insight into appropriate areas for further investigation.

Phase 3 / Theme emergence Various thematic concepts which had emerged throughout the content analytic procedures of phase 1 were examined. Six potentially meritable areas for further research emerged from the investigation, designated by their qualities of inherent overall interest and validity to endurance generally. An extensive table was developed to cover the potential interview areas inclusive of ‘motivation’, ‘attributions’,

‘goals’, ‘burnout’, ‘mental skills’, and ‘sailors backgrounds’ for pre, during and post sailing race experiences. This table can be seen in Appendix 3.2

Phase 4 / Interview script development The author appreciated that it would not be feasible to explore all the components listed in Appendix 3.2 and the initial phase of the pilot study proved to highlight this concern. The first pilot interview script had fourteen questions which investigated areas such as the individual’s sporting background, motivation, sleep deprivation, goal setting and cognitive strategies. After this initial interview had been carried out, the author realised that a more extensive and direct interview script was required. The initial interview script was then scrutinised both by the author and other experienced endurance athletes and necessary alterations were amended. It was from this platform the evolving research questions were continuously narrowed down to a composite of theme areas involving motivation and cognitive coping strategies for areas such as pain or fatigue.

The incipient interview script contained numerous prompts, to ensure that the author covered all the required areas throughout the interview. The complete draft, with prompts, can be seen in Appendix 3.3. The semi-structured format of the interviews provided the author with flexibility and therefore the knowledge that optimal opportunities were provided to obtain premium information for answering the research question of the overall investigation.

Phase 5 / Pilot participant recruitment Criterion sampling procedures were followed, meaning that the first three pilot participants were chosen because of their extensive endurance experiences in extreme sports. A snowballing tactic initialised the fourth pilot subject becoming involved as the author became enlightened regarding the difficulties related to achieving contact time with Vendee sailors specifically and recognised the need for broadening the subject group areas for the main research investigation.

Regarding the specifics of the pilot study sample, the pilot interviewees have experienced long distance sailing, extreme mountaineering (inclusive of a successful summating of, amongst others, Mt Everest), as well as a host of other endurance attributes, including one world champion ultra-marathoner. Even though none of the pilot

subjects had taken part in ultra- triathlons, it was felt by the author that the aims of the pilot investigation had been achieved, and hence a further pilot study involving ultra-triathletes specifically, was not deemed necessary

Phase 6 / Pilot interviews Pre-interview conversation was kept to a minimum as relevant information began to be aired without being recorded on mini-disc. The mini-disc recorder was turned on as soon as was appropriate without being impolite to the participant and the interview began. The questions were all asked in everyday language to ensure participants could understand the questions being posed. The interviews lasted from 50-70 minutes. Immediately after each interview, each participant was assigned a code, For example 'PS1' (Pilot study 1), to enhance confidentiality and anonymity.

Phase 7 / Pilot analysis

Throughout the entire pilot research phase, the author continuously made an analytic narrative which recorded all investigative procedures and relevant information. Many thoughts and comments, for example, were recorded through text and memos, which provided information of possible relevance to the development of the theory for the main study. Analysis for the pilot study went through six main phases, details of each of these phases are systematically portrayed in Figure 3.2. Details of the analytic components of the pilot investigation were repeated in the main body of research and can be seen in section 3.5.

Phase 8 / Final interview script Before completion of the final pilot script draft, any necessary refinements were implemented into the question format and context. The final pilot interview draft neared completion and contained twenty-two questions. The final pilot draft is depicted in Appendix 3.5. Resulting from the pilot investigation, a hierarchy of first level themes emerged, resulting in three primary dimensions, specifically motivation, cognitive strategies and coping mechanisms being highlighted for intricate investigation in the main research paper. The author also felt that sub-categories

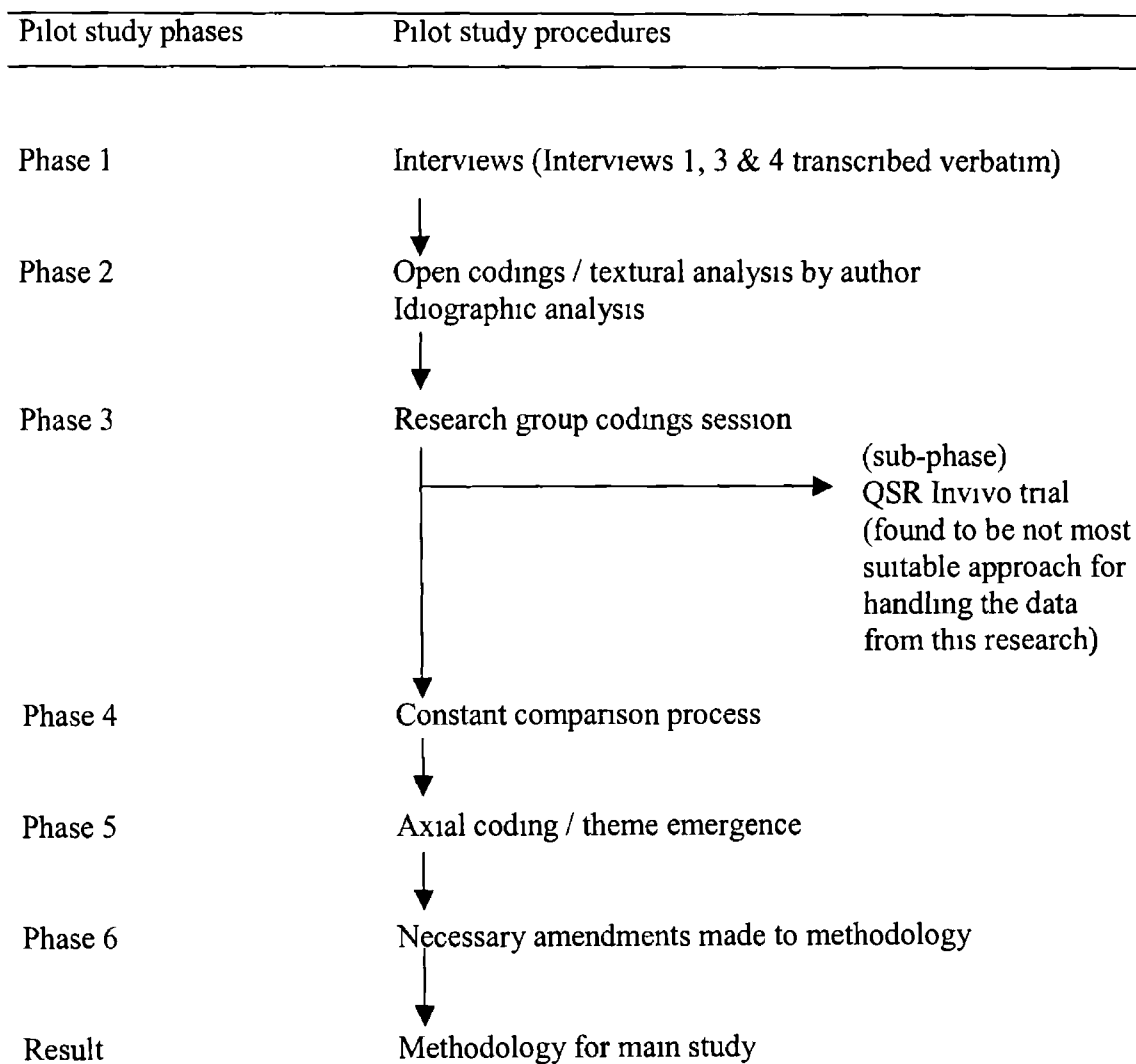


Figure 3.2 Overview of the analytical steps followed throughout this pilot investigation

related to these aforementioned themes, such as pain and fatigue could be investigated further providing meritable coping information through the same methodological approach as was carried out in the pilot study

Phase 9 / Methodology for main study

The pilot interviews proved to serve their purpose with regard to clarifying the research methodology through testing the research instruments and their suitability for the main study. A phenomenological approach, inclusive of interviews and observation, was

deemed as the primary methodological format, as data concerning real life experiences of the athlete's motivation and coping strategies could be gathered first-hand from the sample group. However, because one of the aims of the main investigation is to define specific cognitive strategies for coping, which is more factual and defined, an underlying grounded theoretical approach was deemed necessary to achieve all aspects of the main research aims. The grounded theoretical aspect of the methodology facilitates the author in specifying individual cognitive strategies which, from the data gathered in the pilot investigation, enhanced ultra-endurance athletes coping capacities. Finally, the pilot study provided information guiding the author towards a beneficial and comprehensively theoretically validated main body of research.

Methodological procedures for the main research investigation are now discussed.

3.2 Main investigation methodological procedures

3.2.1 Participants

The athletes were recruited through criterion sampling, as all the participants have one common denominator, i.e. all have experienced the phenomenon involved in this investigation, namely the deca-ironman triathlon. Rationale for the main sample selections stipulated that the participants had all participated in the deca-ironman event at least once. The sample, involving competitors from the 2002 Deca-Ironman Triathlon World Championships, held in Monterrey, Mexico, were aged between 31 and 54 years of age (mean age =39.7). The total complement of past and present Deca-Ironman competitors is, in relation to other sports relatively small (N=38). The total complement of competitors for the 2002 event (n=19) were contacted for this research, ten of whom took part in this investigation (n=10). All but one of the sample group participated in the 2002 event. The author felt this sole competitor held full legitimacy to be involved in this research as they are one of the most experienced athletes world-wide for ultra-endurance races. Participants included two females and eight males, seven who finished the circuit (female, n=2, male, n=5), one who didn't manage to complete the course before cut off time and two participants who retired from the race. The participants represented trans-

global locations, traveling from Ireland, France, Quebec in Canada, Switzerland and Mexico.

When compared to some investigations which incorporate large participant numbers, the numbers involved in this investigation are relatively small, which allowed for detailed idiographic perspectives being achieved from specific rich textural data collected, which may not have been achievable if the participant numbers were high. As Polkinghorne suggests, the aim is to obtain richly varied description, not achieve statistical generalisations (Polkinghorne, 1989).

For the analytic process of this thesis, the deca-ironmen were separated into two groupings, namely “top elite” and “elite”. The top elite group had all either competed in the deca-ironman on at least one other occasion, or had won the event. The elite group comprised of the other deca-ironmen competitors in the sample who were competing in the event for the first time.

Subject profiles:

The sample contained high profile athletes from the world of ultra-endurance. Athletes included the present (2002) female and male deca-world champions, plus past female and male deca-world champions. One of the sample group has completed the deca-ironman seven times, while another participant is the current world record holder for the double deca-ironman event.

To demonstrate the calibre of experience within the sample group, when one breaks down Ironman race experiences from double, triple, quadruple, quintuple, deca and double deca-ironman distances to single ironman distances, an astonishing 494 Ironman distances have been covered by the sample (accurate to January 2003). This figure does not account for additional vast racing experiences such as numerous ultra-marathons, marathons, 100K races and 24 hour to 5-day races. One of the sample is the current world champion for running 1000 miles, as well as holding the world record for the 2,000-kilometre distance (which incidentally was run around an 800 metre track taking 19 days).

One participant is a full-time professional triathlete while three others are fully sponsored, although they still have full-time jobs. The remainder hold down regular jobs,

self- funding race entries, all monetary needs and travel expenses. Some of the sample groups experiences can be seen in Table 3.1. The athletes codes are not given on the table to assist in maintaining the athlete's anonymity. All specifics given are valid to November 2002.

Table 3.1

Overview of sample group's endurance experiences

Age	Triathlon experience*	Completed 2000 deca	Completed 2002 deca
31	Double ironman x 2 Death valley	Not competing	Yes
47	Deca ironman Double ironman Triple ironman Quadruple ironman Quintuple ironman Deca ironman x 4 Fifteen ironman Double deca ironman 1000 mile running race 2000k running race	Yes	Not competing
37	Triple ironman Ironman x 4 Ultratriathlon Marathon x 7	Not competing	No
38	Marathon x 2 Ultratriathlon x 4 Deca ironman	Not competing	Yes
33	Ironman x 7 Double ironman x 4 Triple ironman x 3 100k run x 18 24 hour run x 5 Deca ironman	Not competing	Yes

Table 3 1

Overview of sample group's endurance experiences (contd)

Age	Triathlon experience*	Completed 2000 deca	Completed 2002 deca
38	<i>Only placings available</i> Ironman – winner x 2 Double ironman – winner / 2 nd x 2 Deca ironman – winner Triple ironman – winner	Yes	No
54	Deca-ironman x 7 Ironman x 9 Double ironman x 26 Triple ironman x 21 Quadruple x 1 Quintuple x 1	Yes	Yes
33	Ironman x 5 Double ironman x 2 Triple ironman x 1 Ultraman x 2 24 hr bike race Himalayan expedition	Not competing	No
49	Marathon x 53 100k x 4 24 hr runs x 3 Ironman x 11 180K bike / 42 k swim Double ironman x 12 Triple ironman x 7 Deca ironman x 1	No	Yes
38	Double ironman x 9 Triple ironman x 10 Deca ironman x 2	Yes	Yes

Note *The details shown only involve some of the triathlon and marathon experiences of the sample athletes. The listings are by no means complete.

3 2 2 Recruitment procedures

Athletes taking part in the 2002 Deca-Ironman World championships were initially approached by the researcher through e-mail. Most of the e-mail addresses of the

competitors were obtained from the President of the International Ultra-Triathletes Association (IUTA) based in Mexico. In some instances the contact with the athletes had to be made twice, but in general, the participants were very facilitating and responded efficiently. In this initial correspondence, e-mails stated that the author was carrying out research endeavoring to investigate mental skill usage and motivational driving forces behind endurance ultra-triathletes. The researcher also explained that they would be present at the event as a support crew for one of the competitors and would hope to carry out personal interviews with all competitors at some stage either prior to, during or after the event. It was explained that the choice of interview time would be solely in the hands of the competitors themselves. The e-mail also commented that if the competitor had no objections, that it would be a desire of the investigator to record the interview for reliable research purposes.

All of the 2002 entrants were contacted (N=19). Replies totaled (n=14), all of which were positive. The four competitors who did not ultimately take part in the research had minimal English, and as the author had no French, it was decided by the author to base the research on the ten remaining participants.

Further correspondence involved acquiring dates and times of participants arrival times in Mexico, their preferred time of interview, whether English was their first language, and if not, were they fluent in the language. Some competitors requested more information about the author's interests, status and reasons for the research. Replies to these queries were provided immediately.

3.2.3 Roles: Researcher / Gatekeepers

Role of researcher The researcher played dual roles throughout the deca-ironman. Their primary role concerned their capacity as a support crewmember for one of the competing athletes, to assist in ensuring their completion of the circuit. Although this did demand substantial time and energy, the researcher's secondary role as an investigative researcher, had plenty of opportunities to emerge. Support crew procedures permitted assisting the athlete to be synonymous to gathering observation and interpretation opportunities. Also as the run (or for some the walk) was less demanding on the support

crews due to the fact of lower athlete velocity, the researcher had the opportunity to interact with other athletes, attaining interviews etc

Alterations of researcher's role Prior to the researcher's deca-ironman experiences, the author, having been directly involved in numerous sports for their entire life, felt that they 'knew about sport' and most of the components involved. However, when the researcher initially entered into the field of the deca-triathletes, feelings of inadequacy prevailed for the initial couple of days. The author felt that their knowledge of the world of ultra-endurance triathlon was insufficient for the task at hand. This emerged from informal conversations with the sample athletes, where the author was quizzed on which triathlon events they had taken part in, plus specific French or Canadian triathlons being discussed, some of which the researcher had never heard of before. The author felt that their demonstration of ignorance regarding these ultra-triathlons might hinder the athlete's cooperation with interviews and other gathering opportunities. However, this was not the case and all the athletes could not have been more accommodating and patient with the researcher. Each of the athletes were asked if they would mind being filmed throughout the event. No athletes demonstrated that it would interfere with their progress, and in fact at times throughout the videoing, some of the athletes shouted amusing comments or made funny faces at the camera. It was felt by the author that a bond of trust developed between the athletes and the researcher throughout the two weeks of competition, as the author remained tactful regarding timing of photos, videoing etc and was continuously considerate to the athletes apparent mood and fatigue states. Significantly, many of the athletes have contacted the researcher post the deca-event requesting a copy of the video coverage taken. The author felt they progressed from a total "outsider" to a partial "insider" throughout the deca-ordeal.

Gatekeeper details 'Gatekeepers' providing the author with access to the investigative site, i.e. the deca-ironman emerged through two mediums. Firstly, there was the participant for whom the author was a support crew member. This allowed for direct access to the athletes and the competition surrounds. Secondly, the event organiser and

President of the I U T A was very facilitating and helpful to the author throughout the entire investigative period

Although it is difficult, if not unrealistic to speculate what the aforementioned gatekeepers gained from the whole investigative experience, the author hopes that the results demonstrated from this thesis can perhaps be used as a reference by the gatekeepers for other potential deca-ironman competitors. It is also hoped that organisational lessons can be learned and perhaps improved on in future deca-events, for example concerns with lap counting and the mistakes which seemed to be prevalent throughout the event, which caused unnecessary additional stress and fatigue being placed on the athletes

3.3 Data collection instruments

The primary mode for data collection was interviews, while the secondary source was through field notes, observation, video and DVD. The rudimentary instruments used for gathering data for this investigation are now discussed, followed by a section explaining the specific procedures involved in collecting data from the various modes

Interviews

According to Biddle et al (2001), interviewing “forms the cornerstone of qualitative data collection in sport and exercise psychology” (p. 793), while Bannister et al (1994), portrayed that research through interviewing has many advantages over other approaches, such as enabling one to explore issues that are too complex for general forms of investigating, as well as getting more realistic definitive, personal thoughts from the interviewee

The researcher felt that interviewing the athletes on a personal level would prove far more beneficial than a question and answer session via e-mail as notations, personalities and state of mind was observable, along with the fact that spontaneous questioning and elaborating prompting are more beneficial in a “live” interview. This being said, one of the interviews was corresponded through e-mail, however video footage and recorded field notes assisted in clarifying information specific validity through cross checking procedures explained in the analysis section of this chapter

Interview data was collected prior, during and post the deca-ironman event. The on-site interviews provided the scope to obtain participant's true, phenomenological, realistic views of the questioned areas during the actual event. The question areas were constructed in a semi-structured format. Semi-structured questions gave potential scope for detailed experiences from a first person perspective, while also giving the respondent "considerable latitude to express feelings and to expand on ideas" (Thomas & Nelson, 2001, p. 262). It was originally thought that open-ended questions would prove most appropriate for this investigation, but factors such as the limited personal interview time and potential language problems, dictated that "semi"-open ended questions, i.e. open ended questions with distinct guidance inherent in the question, were most suitable for the situation. This form of questioning provided scope for variations in replies while at the same time creating guidelines to be followed, i.e., "How do you overcome pain?" When necessary, this was followed by prompts such as "How do you mentally cope with pain during training or in a race?"

There were some situation specific interview areas where the researcher had to demonstrate sensitivity, for example not delving into some interviewee's replies as it may have triggered detrimental thoughts, resulting in hindering the athlete's performance. Also, as some of the participant's first language was not English, it was paramount that all questions were understood completely by the participant and that fluidity of answers was encouraged. The questions were all asked in everyday language, to ensure participants could understand the questions being asked. The first questions involved icebreakers which were personable to the any participant and therefore easy to answer while requiring minimum recall, for example, "how long have you been involved in endurance sports?" The remaining questions were asked in various sequences, depending on which direction the participant and researcher interaction steered the interview. Throughout the interview period, appropriate feedback such as providing recognition for a fact divulged, or laughing at the appropriate moment, was interjected to encourage the participant for further information. Phenomenological questions were also posed, where athletes were asked to recount their best or worst experiences, where memories of possible horrendous experiences or a memorable encounter or races were recounted.

Interview script modifications

There were some modifications made to the final draft used in the pilot interviews to cater specifically for the target group. Modifications involved rephrasing some questions with the intention of making the question applicable to ultra-triathletes, such as altering question 1 “How long have you been involved in endurance sports?” as opposed to “how long have you been involved in hillwalking / sailing etc?” and the pilot’s question 5 “What keeps you focused throughout the preparatory phase of an expedition?” was changed to “How do you stay focused during training?” which was followed by the question “How do you stay focused during an ultra-triathlon?”

An additional question entered into the script, (question 19), specifically involved pain, “How do you cope mentally with pain during training or in a race?” The author felt that substantial measures of pain would be witnessed throughout the event and that it was necessary to record how this may possibly hinder the athlete’s performances.

Synonymous to the pilot interviews, the question involving the interviewees recalling their best experiences, the main interview script included this question, while also requesting the interviewees to recall their worst experiences also, and why they classified them so.

The concept of boredom was integrated into the script as the author felt that boredom may pose as a factor throughout the deca-ironman event. This was tackled in question 8 “Do you ever experience moments of boredom or monotony and if so how do you overcome these instances?”

Two questions omitted were “What is the longest duration you have remained on an expedition?” and “Does your focus ever change when you are on the mountain/sailing?” These questions were omitted, as, other than the double-deca ironman race which has only ever been held on one occasion, the deca-ironman is the longest ultra-triathlon race available, so therefore asking this first question would seem futile. Regarding the participant’s focal change, the author felt this would already be covered throughout the goal setting interview question section and therefore was potentially repetitive. All amendments to the interview script were maintained for the main sample interviews.

Field notes/Observations

Although the researcher is not bringing full-scale ethnographical details into the study, a narrative vignette or detailed description, was recorded by means of field notes and observations made by the author either in written format or recorded on mini-disc. Overt observational methods were incorporated into this research, in other words, mutual awareness of researcher and athletes presence was evident. This allowed the researcher to openly watch and record what the athletes did and said throughout the deca-event.

Additionally, support crews from the other triathletes assisted the researcher in gaining further insight into their “charges” tactics, strategies, music choices, nutritive requirements and general approaches to the deca-ironman event. Furthermore, one of the support crews facilitated the researcher by acting as a translator for the interview with UM6. Information and feedback provided by the other support crews permitted the researcher to gain an overall picture of the deca-ironman competition as a whole, not solely being from one competitor's perspective.

Video

The researcher recorded a total of five hours of video footage. The recordings covered areas such as race preparation, action from the three disciplines, athletes and support crew comments, physical states, evidence of fatigue, medical situations such as health, psychological aspects, social interaction, doping tests etc.

DVD

There was a DVD produced by the I A T U which showed highlights from the deca-event. This provided some extra raw data footage which had not been captured by the author in video recordings.

Web-site information

Some of the competitors have personal web-sites. The author accessed these sites and gathered any further relevant information to be included into the main body of text which will help in verifying some interpretations and perhaps provide more input into the research.

3 4 Procedures

3 4 1 Data Gathering Procedures

Conforming to a grounded approach, interviews, video recordings and field notes were all conducted in the field, specifically in the pool area and track locations during the deca-ironman event, allowing for systematic data and observations to be gathered in a specific environment

Data gathering opportunities were abundant, with the author spending seventeen consecutive days interacting and living continuously with the participants 24 hours day, in their capacity as a support crew member for UM2. Close contact with UM2 was obviously inevitable, but researcher /competitor contact was further enhanced as the support crew tent set up, which were all placed alongside two sides of the track were in very close proximity to one another. This led to obtaining exceptionally close access to all competitors and fellow support crew-members, where further information could be gathered. As the race was 24 hours a day, every day, resultant observation and contact time in the field was at least 280 hours. The author feels this was ample time for gathering sufficient data for this thesis. Furthermore, many of the sample athletes invited the author to contact them after the event if further information was required. Although many of the athletes contacted post-deca replied with questions posed by the author, there were some athletes who did not correspond further, even though they were contacted a further three times. The author did not proceed with contacting them further as the athlete obviously was too busy or uninterested in replying, which the author respected as their prerogative.

Interview locations

Nine of the interviews took place either in various locations around the track used for the deca-ironman event or while walking around the track during the actual competition. One of the participants was interviewed in a hotel in Ireland both prior to and after the event. On the final day of the event, a few hours before all competitors and support teams headed to a hotel for the prize giving ceremony and a press conference,

one of the competitors, who had only finished hours previously, requested an interview, demonstrating the generosity of time and exceptional inherent endurance qualities of these deca-ironman participants. The track and interview surrounds can be seen in Photo 3.1

3.4.2 Interview procedures

Prior to the event, one of the competitors, had informed the researcher that they could carry out an interview during the running section of the event. The interview took place seven days into the competition. After this initial “on track” interview, other competitors followed by example. It materialised that many of the competitors chose to be interviewed while they walked, during the running section, during the extremely high mid-day temperatures. This arrangement suited the competitors as it helped distract their minds from the race for the duration of the interview, while also suiting the researcher as the running section of the race lasted from four to seven days, providing scope so that dual roles of interviewer and support crew could both be carried out professionally. Four competitors who had completed the event or retired from the race due to injury, were interviewed in their support crew tents.

For recording purposes, the researcher placed the minute mini-disc recording microphone on her t-shirt sleeve, while walking alongside the participants for the duration of the interviews. At the outset of each interview, the researcher reiterated the request for precise, honest answers. The mini disc recorder was then turned on and the interview began. It should be noted that the interviewer was very conscious not to inhibit the athlete's performance in any way and therefore, while interviewing, tried to keep in step with the athlete's rhythm and so have as little intrusion on the participants race pace as possible. The interview script accompanied the researcher throughout the interview for reference purposes, to assist in ensuring all areas requiring exploration were asked. No rigid format and some flexibility in topic areas were present. Probing and content steering took place where appropriate. Interviews generally lasted approximately 60-90 minutes.

Due to mini-disc / researcher error, one of the interviews did not record for the full interview duration, providing only half of the interview data. Endeavoring to

overcome this problem, the researcher immediately began recounting the interview content in the form of recall notes.



Photo 3.1. Deca-ironman event track surroundings

The situation did not allow the researcher to ask the participant for a second interview as the individual was truly fatigued after a tough event and the author felt it would not be an ethically moral request. It was also felt that between the recorded interview section and the recorded notes, sufficient data was gathered.

On completion, each interview disc was immediately assigned an individual code, with date and race specific details also being recorded, for example: “day 2 of run” or “retired.” This assisted with analysis where fatigue levels could be monitored etc.

Descriptive analysis was conducted to present the psychological and cognitive profiles of the ultra-triathletes. These were included in the findings and will assist in ensuring validity.

Directly after the interview, the researcher made notes, initially written into a ‘Deca-diary’, but this proved to be too time consuming, so most notes and observations were recorded onto the mini-disc. These notes were transcribed verbatim on their return home. The second structure involved individual athlete files. Again these were written in the deca-diary, where sections had been categorised for each competitor. Any potentially helpful physical or verbal actions made by the individual in question were recorded here. These recordings sometimes took place during the day, but mostly the main bulk took place at night when the author was on support crew duty in the early hours of the

morning Not only did this provide the researcher with time and peace to enter observations into the journal, but it helped ensure the researcher stayed awake for their role as a support crew member

3 5 Data Analysis

Throughout the analysis of this investigation, the author incorporated numerous visual models to provide additional clarity and sufficient explanation so the reader could gain a holistic picture of the deca-triathletes perspectives It should be noted that percentage values presented in the results for various coping and motivation dimensions directly reflect the data, and should not be interpreted as if one technique with higher values is categorically more beneficial, or more frequently used than another

In 1998, Kruger explained that analysis does not have to be punishingly intricate and convoluted, it can be simple and straightforward if the patterns are clearly identifiable and the differences existing within the sample are not excessively complex Analysis does not have to be lengthy as it is usually guided by instinctive thoughts Kreuger also reminds us that analysis is generally intuitive, qualitative researchers work through insights and insights can come at the speed of light (Kruger, 1998)

3 5 1 Analysis – data analysis technique

Many of the “experts” in the field of qualitative research feel that data collection and analysis are a synonymous and simultaneous process Each interview and observation provided a progressive culmination of information which enhanced further meaning to the investigative areas, and helped to provide a clear portrayal of deca-ironmen and their strategies for coping

As can be seen from the analysis chapter of this thesis, the author carried out the data analysis process in an organised and systematic manner Even though at times the analysis procedures varied slightly from the pilot investigation analysis, all variations were planned and deliberate Throughout the whole investigative process, the researcher recorded an analytic narrative, keeping a vivid reconstruction and systematic documentation of all investigative proceedings, noting why certain routes were chosen as opposed to others, why one interview script was preferable to another etc Memos were

also made highlighting potentially problematic and ambiguous concepts, while Internet and magazine information were placed into separate files which were incorporated into the analysis process at a later stage. Samples from the memos, field notes and video footage observation notes can be seen in Appendix 3.5.

Throughout this analytic process, the author continuously followed the trail of theme emergence accounting for all textual (i.e. what was being experienced) and structural (i.e. how it was being experienced) data presented for analysis. Continuously horizontalising the data ensured that all data was treated equally, and that bias towards eliminating potentially irrelevant data remained minimal in the initial analytic phases.

3.5.2 Analysis – material analysis technique

As previously mentioned, analytic procedures and format of this research investigation were influenced through papers by Dale (2000) involving coping strategies of elite decathletes, plus Acevedo and Hollander's (2000) research concerning endurance athletes swimming the English Channel. Similarly to these papers, the author employed a coherent and systematically controlled approach, which in a simplistic form, follows a five-step format, i.e. raw data – description – interpretation – conclusions – recommendations. To ensure a narrow interpretation of the data was avoided, while facilitating a general reliability check, a research group was developed by the author, which assisted throughout the coding processes. A flow chart depicting a general overview of the analysis process undertaken by the author for the present research question can be seen in Figure 3.3, which is followed by a detailed description of the entire analytic process.

Transcript perusal

Primarily, the recordings from the participant interviews were transcribed verbatim. Relevant notations regarding emotions, changes in voice tones etc. were included. Initial perusal through the documents then took place, enabling the researcher to achieve a better grasp of the interviewee's perspective. The interview transcription were read and re-read numerous times, providing the author the opportunity to ponder over exactly what was being portrayed by the interviewees.

At this stage, bracketing was incorporated into the analysis process. Bracketing can be employed for research in various formats, which according to Dale (2000), “minimises researcher bias by creating more awareness of preconceived notions regarding the topic” (p. 21). For the sake of this research, bracketing was employed two-fold. In the first instance, the researcher carried out bracketing through self-reflection. Time was spent gathering thoughts together concerning presumptions which the researcher had prior to the deca-ironman event. For example, the author recognised that they expected the athletes to be loners, as they obviously spent so much time alone, training etc. Results demonstrated to prove generally untrue. Secondly, any preconceived notions such as what the author thought her role was as researcher amongst the athletes, what the author felt was the athletes’ role, were recorded and what the author felt was their role throughout the competition, while also utilising the concept of bracketing through using the participants’ transcribed language in the interpretation of the data, which Dale (1996) found is a methodological criteria for phenomenological research.

Open coding of transcripts

Generating categories of information

When all interviews and fugitive documents were gathered together, open coding or “disentangling the data”, took place where basic descriptive categories were established from the raw data, which also provided general focus for the overall analysis.

These descriptive codings, were subsequently further categorised, presented along a continuum and then dimensionalised. For example, in the present investigation, motivation may be partly influenced by the individual’s upbringing. Coding along this examples continuum include early nurturing/parental influence to school influences to early introduction to running etc. The result of open coding produced numerous codes and categories taken from the text. All codes developed were defined and clarified through the means of memos, as cognate to the pilot investigative analysis, the open codes were written directly onto the transcribed interview sheets. Examples of the open codes include “family reliance”, “pain” etc.

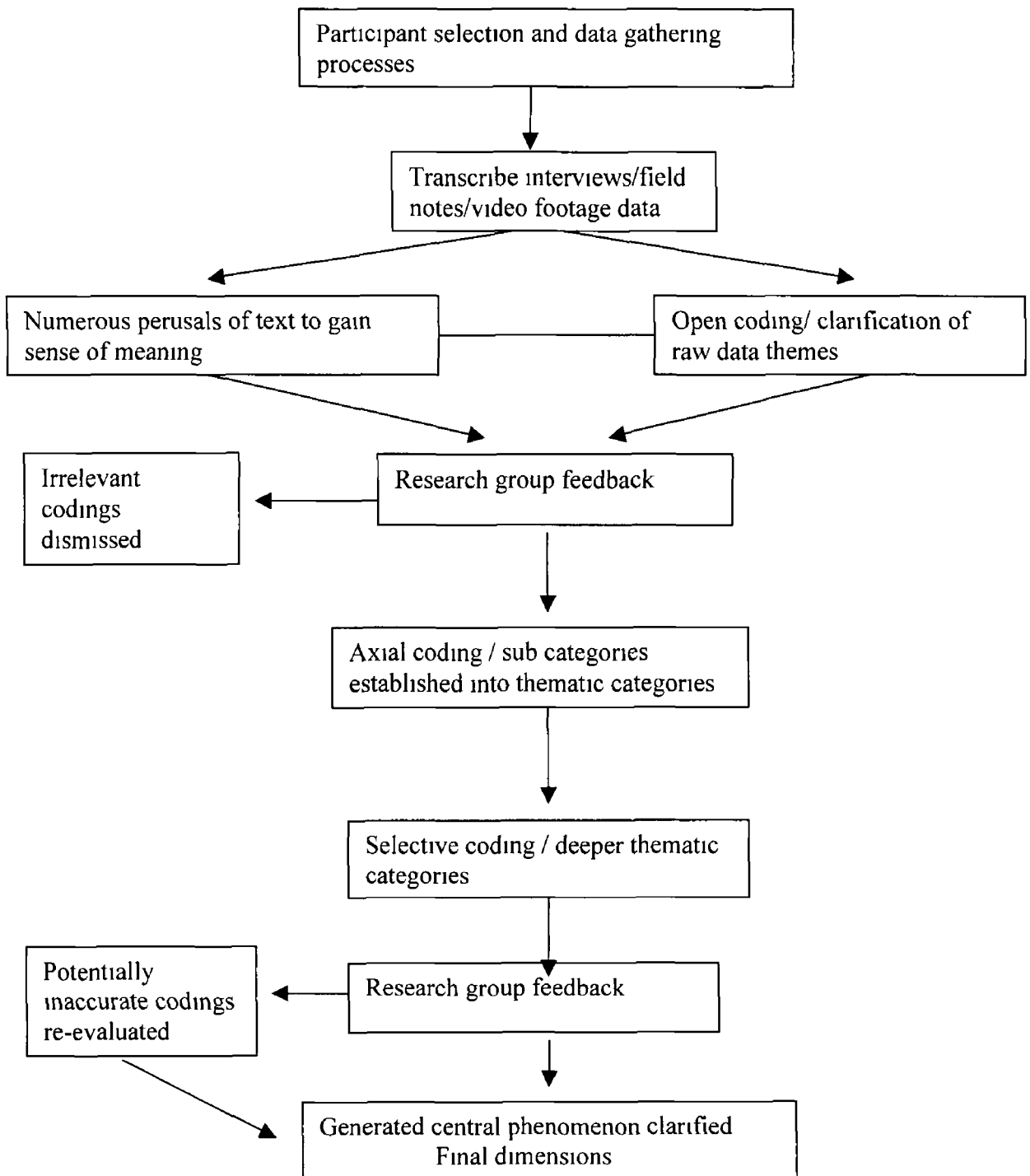


Figure 3 3– Flow-chart demonstrating an overview of the analytic structure of the main investigation

Research group analysis

Following these initial codings, four of the transcripts were given to a research group consisting of three other external researchers who are experts in the qualitative field of analysis, to carry out the same exercise. The author felt that three externally coded scripts would suffice to comparatively ensure the author was interpreting the scripts, with optimal possible accuracy. Additionally, this process would assist in reducing bias, while also producing data which not only presents the authors' interpretation of the data, but also provides scope for the reader to make their own personal interpretations of the presented data. When open codings were completed by all parties, a meeting was arranged when all coded scripts were examined with great care. The scripts were read aloud, slowly and progressively, with continuous breaks as each relevant word, phrase or paragraph was “disentangled” methodically by the group. Each research group member present divulged their coded interpretations of the script content, with any potentially ambiguous areas being discussed until definitively unanimous codings consensus was reached.

Axial coding / higher order themes

At this stage, transcriptions of the interviews and initial raw data codings were then entered into a word table format where codes were attached to all the transcribed data. Codes were developed where invariant meaning units were clustered together. The coding took place line by line or in segments or phrases where applicable. An example of the word table can be seen in Table 3.2. The aim of this phase termed axial coding is, according to Flick (2002), to “refine and differentiate the categories resulting from the open coding” (p. 181), while Strauss and Corbin (1990) describe axial coding as more focused than open coding while being “geared toward discovering and relating categories in terms of the paradigm model” (p. 99).

Table 3 2*Word table format excerpt*

Open coding /	Excerpt of interview transcript
Raw data themes	
Pain experience in deca	<p>Karen And the same with pain, for example during the cycle when you were definitely in pain, but in the last ten laps or so when your knee was really sore, how did you, or could you block out the pain?</p>
	<p>UM17 Well actually, the pain really began on Monday night, so I had the pain for Monday night, Tuesday and today, until this afternoon when I quit so the first night I was dealing with the pain</p>
Overcoming pain	<p>Karen How?</p>
Just deal with it	<p>UM17 How? you just deal with it you just feel the pain and just separate the pain from the other yes you say just ok the pain is there but its not so hard so I can still go I was taking pills for the pain and the pain was definitely there I was trying to do things to see if this pain would go but the pain stayed there so first I said maybe the pam will go, you don't think about it but you have so many hours to realise that the pain is really there and you have to realise between what is correct and what is not correct</p>
Separate pain	
Acceptance of pain	
Medication	
Dissociation	
Positive thoughts	
Realism	

Table 3 2*Word table format excerpt(contd)*

Open coding /	Excerpt of interview transcript
Raw data themes	
Coping with pain Considerations Goals Self honesty Pain tolerance levels	you see how many times you have trained for the event, how many things you have left behind at home, at work to be training, so when you get to that point its sad to see how many things you put away to do this and you are trying to get this idea your ideal, your goal you are so focused on getting that goal that you don't want to let it go, so the hours are still running running and the pain is there and em you are thinking on shit if the pain still stays like this I can still finish, but sometimes during so many hours there is a time that you have to realise where you are you know it's a matter you just have to be honest with yourself and with your body because you can, well you can learn to rule over mind and rule over your body,
Coping with pain Deceiving mind	you also learn to lie to your mind or your body, then you can be lying to you and your body for so many hours I was doing that lying to my body this pain is not too hard, the pain is going to disappear
Realisations Truths	But eh there is a time , I don't know where or when, but you have to realise where are you what you have and what you don't have what the other competitors have and where do you stand so
Coping with pain Race decisions	it's a complete mental test from you start thinking on the pain until when you decide what's the best thing to do
Coping Thoughts	And I tell you, I went through so many thinkings between sadness, between saying that this is not fair, why me? you know so many times

Throughout the axial coding phase, core analysis took place, where the author developed subcategories from the open coding phase into categories, which involved the researcher refining their indexing system and basically breaking down data before reassembling the recurring and most prominent themes found in the open coding process. These new concepts were further analysed, with commonalities being explored and consequently clustered into a series of composite thematic headings. As new phenomenon or ideas developed, the author delegated new codes. Throughout the whole analytic process, constant comparison strategies ensured the researcher moved forward and backwards through the text as necessary, encouraging comparisons being made with earlier parts of the text data. This constant comparison strategy was labeled by Dale (2000) as “the hermeneutic procedure” (p. 23).

Throughout this coding phase the researcher moved from inductive to deductive thinking constantly, keeping procedures firmly focused on discovering and relating categories to the original research question. Inductive thinking involves developing ideas and concepts directly from the interviews and fugitive documents, allowing themes to emerge from the data, while deductive thinking, although it can be very limiting, uses a predetermined set of themes and categories to organize the data while also involving testing prior concepts and notions against the transcripts.

Idiographic and nomothetic interpretations of the data was also conducted. Interpreting idiographically involved interpreting each athlete's interview content as a case study, while nomothetic interpretations involved comparative interpretation, in other words, interpreting individual athlete's interview content relative to the other endurance interviewees.

Selective coding/ General dimensions

This next stage developed a core category through a process known as selective coding or general dimensions. Selective coding according to Flick (2002) “continues the axial coding at a higher level of abstraction” (p. 182). At this stage of the analysis specific phenomenon and categories began to emerge. These emerging themes and concepts were formulated in precise detail.

The researcher, gathered all the important phenomena, and began to link them together as a unit where any emerging meanings were clustered into analytic groupings, in other words identifying factors and processes that may account for a participants motivations or cognitive strategies. Even though at this stage of the process, some of the codings still remained as sub-units, the central phenomena established linked any sub-codings together. These codes can be seen in Appendix 3.6, while narratives for these codings can be seen in Appendix 3.7.

Throughout the entire research process, including the analysis, the author made note of any problematic or ambiguous concepts, as well as any deviant cases which may or may not have been relevant to the overall investigative process. Deviant cases are concepts that can be hypothetically categorised under a listed raw data theme, but which does not fully compliment the thematic description. To overcome any potential problems generated by deviant cases, the author either modified thematic descriptions thus catering for the extended narration, or alternatively redefined that thematic narrative to categorically exclude the deviant case.

At the conclusion of this phase, the researcher was dealing with a central phenomenon and central category. Concepts being investigated portrayed specific attributes, which provided the researcher with definitive results. This helps the researcher discover the “whys” and “hows” of the emerging theories.

Final dimension categories

From the aforementioned coding procedures it evolved that the categories would become more refined, and this was accomplished by incorporating the above codings into a total of fourteen dimensional categories, which can be seen in chapter 5 which presents the results. The data was continuously checked, re-coded when necessary and improved upon until no further coding entering the investigation was progressive or beneficial, a stage known as “data or theoretical saturation”.

3.5.3 Video footage analysis

The video footage was studied by the researcher and any relevant information for this investigation was recorded and included in the research findings, which should also enhance validity and replicability. All the descriptive accounts were decoded and constructively analysed. An iterative process was followed by placing raw data relevant to the research into the developed codings from the interviews, or where necessary, being installed into new codings applicable to their description. The process can be seen in Figure 3.3.

3.6 Data analysis concerns

There are many similar concepts within the field of research investigations which are of paramount importance to the overall integrity of the research. These include validity, replicability and reliability. These areas are now discussed.

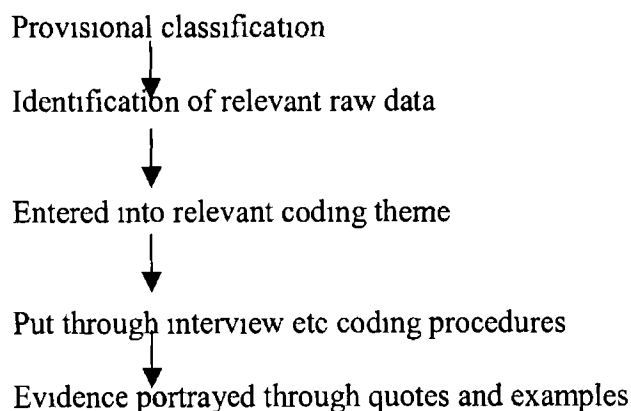


Figure 3.4 Overview of video and field note analytic procedures

3.6.1 Validity / verification

Qualitative validity, according to Bryman, (1996) “refers to the issue of how we can be sure that a measure really does reflect the concept to which it is supposed to be referring” (p. 28)

As demonstrated in this thesis, the author partially agrees with social scientists (e.g. Mays & Pope, 2000), whose beliefs ascertain that because of the interpretative nature of qualitative research, conventional criteria for measuring quantitative research such as validity, reliability and generalisability prove inappropriate to qualitative methods. The author also agrees with Morse et al (2001), who accurately state “the arguments centering on the semantics to ensure rigor and all it entails are becoming stale and unproductive” (p 187)

Validity, in this research was achieved internally and externally. Internal validity captured the reality of the deca-event, experienced first hand by the author, who managed prolonged engagement with the athletes, while also carrying out observational strategies. There are many positive repercussions from qualitative researchers being so heavily involved in the intricate investigative proceedings. As Thomas and Nelson (2001) claim “the intensive firsthand presence of the researcher is the strongest support for validity in the data-gathering process in qualitative research” (p 217)

Externally, the researcher and the research group, studied all investigative findings and decided what was, or was not, relevant to the present investigation. Thick description in the research reports provided a database for reader judgment and potential transferability. External validity is derived through generalizability, according to Thomas and Nelson (2001), where future readers of a specific investigation “evaluates the descriptions and analysis and determines what things apply to his or her situation” (p 351)

To further ensure research validity, inductive analysis took place, along with constant comprehensive data treatment. All data handling procedures were systematic and fully documented throughout the analytical process fully to assist any further analysis requirements while at the same time enhancing validity and reliability. Systematic analysis procedures, which can be seen in the analysis chapter, assisted the author in ensuring that results are optimally authentic.

Table 3 3

Techniques for enhancing validity in the present investigation (adapted from Whittemore, Chase and Mandle, 2001)

Types of technique	Technique	Applied to present investigation Yes/No
Data generating	Recording data collection decisions	Yes
	Demonstrating method of engagement – memoing and reflexive analysis	Yes
	Recording observations	Yes
	Providing verbatim transcription	Yes
	Demonstrating saturation (if applicable)	N/A
Analytic	Recording data analysis decisions	Yes
	Recording data analysis procedures	Yes
	Testing hypothesis in data analysis	No
	Performing a literature review	Yes
	Member checking	No
	Clarifying bias	Yes
Presentation	Providing an audit trail	Yes
	Providing evidence that support interpretations	Yes
	Acknowledging the researcher perspective	Yes
	Providing thick descriptions	Yes

The author of the present study also enhanced validity in simple ways, for example, the researcher was aware of and tried to avoid potential pitfalls mentioned by Eston, McComish and Greenberg (2000), such as equipment failure, environmental hazards and transcription errors

Aspects of Creswell's (2003) listings used to enhance verification, which are incorporated to this investigation are highlighted below. Further validity clarification can be seen in Table 3.3

- Get true sense of the experience
- Clarify self-bias
- Present negative / discrepant information that runs contrary to the themes – discussing contrary information adds to credibility
- Spend prolonged time in the field- gives true understanding
- External auditor- review project – gives further insight

3.6.2 Reliability

Reliability according to Bryman, is concerned with the “consistency of a measure” (1996, p. 29). With regards to the measuring consistency over time, many researchers from worlds of social and psychological sciences, aspire for enhanced reliability as opposed to validity in their investigations. A reliable study is one that can be easily replicated, while being internally and externally valid. It should be noted however that reliability does not assure validity, as one can continuously get consistent answers, however the answers reached may be ultimately incorrect. However, as can be seen in the preceding section, validity for this thesis is appropriate.

Reliability for this investigation was derived both internally and externally. Internal reliability was obtained through the mechanically recording the interviews, thereby providing a source for external researchers to assess reliability by listening to the recorded interviews and obtaining basic raw data. External reliability can be assessed by observations of the researchers' role being made by external examiners, for example the author's full-time supervisor throughout the duration of this investigation. Additionally, the fact that the author's relationship with the subjects was as a participant observer, as opposed to being a friend or an evaluator, provides a further reliability for this investigation.

3 6 3 Interpretations

Numerous researchers feel that interpretation creates the greatest means, from a qualitative perspective, of understanding the psychological aspects of sport, saying that the best approach researchers can take is to describe and interpret the status of any contemporary facts that may be present between the subjects, as accurately as possible (Streat 1998, Cronbach, 1975) As previously mentioned, the central aspect of qualitative research and this thesis, is interpretation Hermeneutics, the study of interpretation, up until recently, involved taking meanings from text, but more recently it has been expanding into wider fields such as interpretations of culture (Harris 1981) and differing sports (Duncan 1986) Interpretations provide detailed descriptions of an event, inclusive of what people say, do, think and feel in a specific setting has been defined as a “narrative vignette” by Thomas and Nelson (2001)

The interpretation of texts, which is always rooted in the raw data, plays a dual role, endeavoring to develop a theory, while at the same time highlighting what additional data needs to be collected However, there is a substantial amount of flexibility available when interpreting another person’s perspective and perceptions of a particular action or cognition In some cases this could potentially lead to a lack of relevance and validation in the central outcomes This can be overcome by various procedures For the sake of this research the un-coded transcripts were given to experienced qualitative researchers for comment and opinion, which were then compared to the original researchers codes for verification This provided the primary researcher the opportunity to use a comparative coding strategy, i e comparing code findings with experienced coders allocations, and ensuring they are of similar content, which in turn will enhance validity Qualitative methodology is particularly well suited for grasping the complexity of the phenomena we study,” and “interpretation holds the promise of clarifying complexity” (Peshkin, 1998, p 339)

3 6 5 Generalisations

All humans are individual in their cognitions and actions, therefore there are some instances when generalisations would not prove to be appropriate to an inquiry, in cases such as observational techniques It is not so much of a problem in interview situations

However, the author feels researchers must remain alert to the concept of generalisations. Generalisations could possibly become a problem in case studies, however when more than one individual is being explored, this problem diminishes considerably, (Bryman 1996). Researchers must ensure that generalisations do not become normal procedure in the investigation, they must seek to interpret all aspects of the research and endeavour to be as specific as is feasible in their interpretations to portray findings accurately. In the present investigation generalisations not present specifically but similarities are noted, for example goal setting usage or coping strategies for recurring painful experiences etc.

3.7 Summary

In summary, the process dictating which methodological procedures would prove most relevant to the present investigation were carried out in a detailed and systematic manner. The conclusive methodology chosen, specifically a phenomenological, grounded theoretical approach, established that optimally beneficial procedures were incorporated to provide real and valid information being generated from the study. From the initial stages of the raw data being gathered to the emergence of thematic concepts being developed, the purposeful methodology provides us with interesting emergent concepts which can now be seen throughout the following chapter where results from the raw data are presented.

Chapter 4

Results

4.1 Introduction

The concepts presented in this chapter fundamentally provide us with guidelines of the coping and motivational techniques deca-ironmen utilize, and the number of triathletes who reported using such techniques

A breakdown of thematic categories which emerged prior to this final results section can be seen in Appendix 4.1. Any areas which proved irrelevant to the specific areas explored in this thesis are displayed in italic form in the codings listings of the aforementioned appendix. When the higher order themes were established, the researcher found that derivatives from the raw data which emerged throughout the analytical process could be developed further into final dimension categories. Derivatives and explanations from all final dimensions which materialised are presented throughout the following chapter.

The layout of this chapter initially progresses with evidence identifying potential adversities which the deca-ironman triathletes cited as areas which hindered their performance levels. This is followed by details of the cognitive coping strategies the deca-sample employed to overcome these problematic areas. Section 4.4 and 4.5 illustrate results concerning performance and phenomenological impactors, while also incorporating specific unique strategies employed specifically for the deca-ironman. Finally section 4.8 depicting the motivations of the triathletes.

4.2 Adversities

Evidence from the present investigative findings demonstrate that deca-ironmen experience adversities derived from three main sources, specifically internal, external or unpredicted influences (Figure 4.3). Excerpts from the adversities section are minimal as the author felt most were self-explanatory and extracts were not deemed necessary, however for potentially ambiguous areas, examples have been provided.

Even prior to the deca-ironman commencing, 40% of the sample group reported experiencing adversarial situations, which evolved internally or externally. Internal adversities were derived from the individual themselves, for example not training enough, or from externally stressful situations which were out of the athletes control, for example lack of finance or sponsorship problems.

During the deca-ironman event external adversities came from a wide range of situations, for example weather conditions, punctures on the bicycle tyres or lap counter problems. It should be noted that a high percentage of the triathletes referred to experiencing lap counter problems at this or other events. The triathlete would claim they had completed a certain amount of miles or laps, which the lap counter would occasionally dispute, resulting in the triathlete having to complete additional miles.

Unpredicted adversities were wide ranging and involved the following samples. Firstly, the water condition of the swimming pool progressively became more unhygienic, due to the filtering system being unable to cope with excretions from the competitors. The researcher only observed two of the triathletes regularly using the toilet facilities throughout the entire swim, (the slowest swimmer took 32 hours, 12 mins). This obviously caused bad water quality which could be verified both visibly and by the wafting odors, causing excessive coughing and retching for all competitors. Secondly, the track was in a park containing ponds, and throughout the event, some ducks would waddle across the track, or even people during the weekends, if they had not been spotted by the security guards. This especially potentially caused stress for the competitors during the cycle as they were going at speed and may not have been looking directly ahead at all times. An excerpt from UM18 explains this further:

I love the Mexican people and I say to myself it's their town, they live here and have every right to use the park, but they disturbed me a lot because out of my eye I see them move from left to right, it was really too much movement and this really disturbed me, coz I couldn't concentrate and had to be ready to brake (UM18, Deca-ironman interviews, 2002)

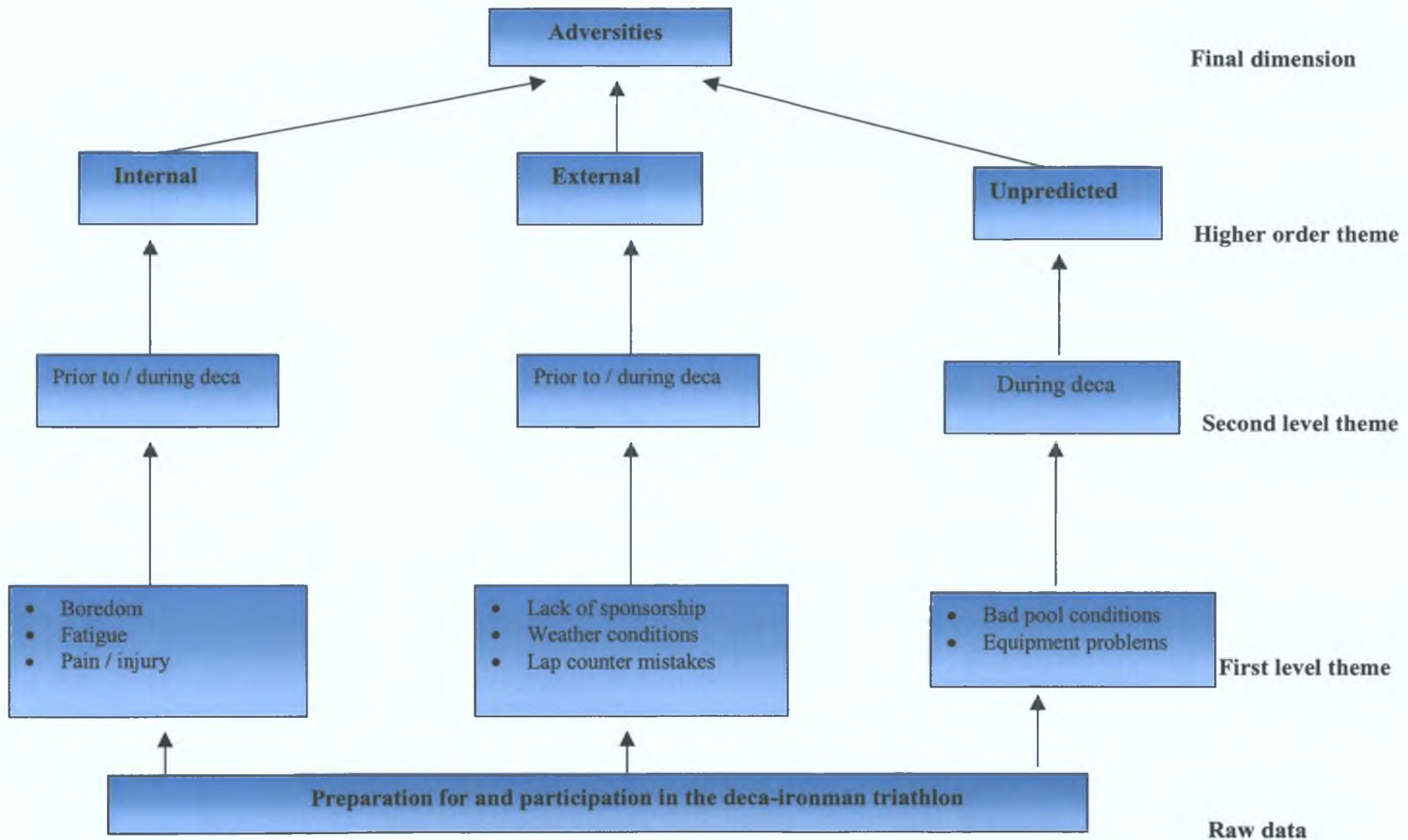


Figure 4.1. Diagrammatic representation of the emergence of general dimension Adversities

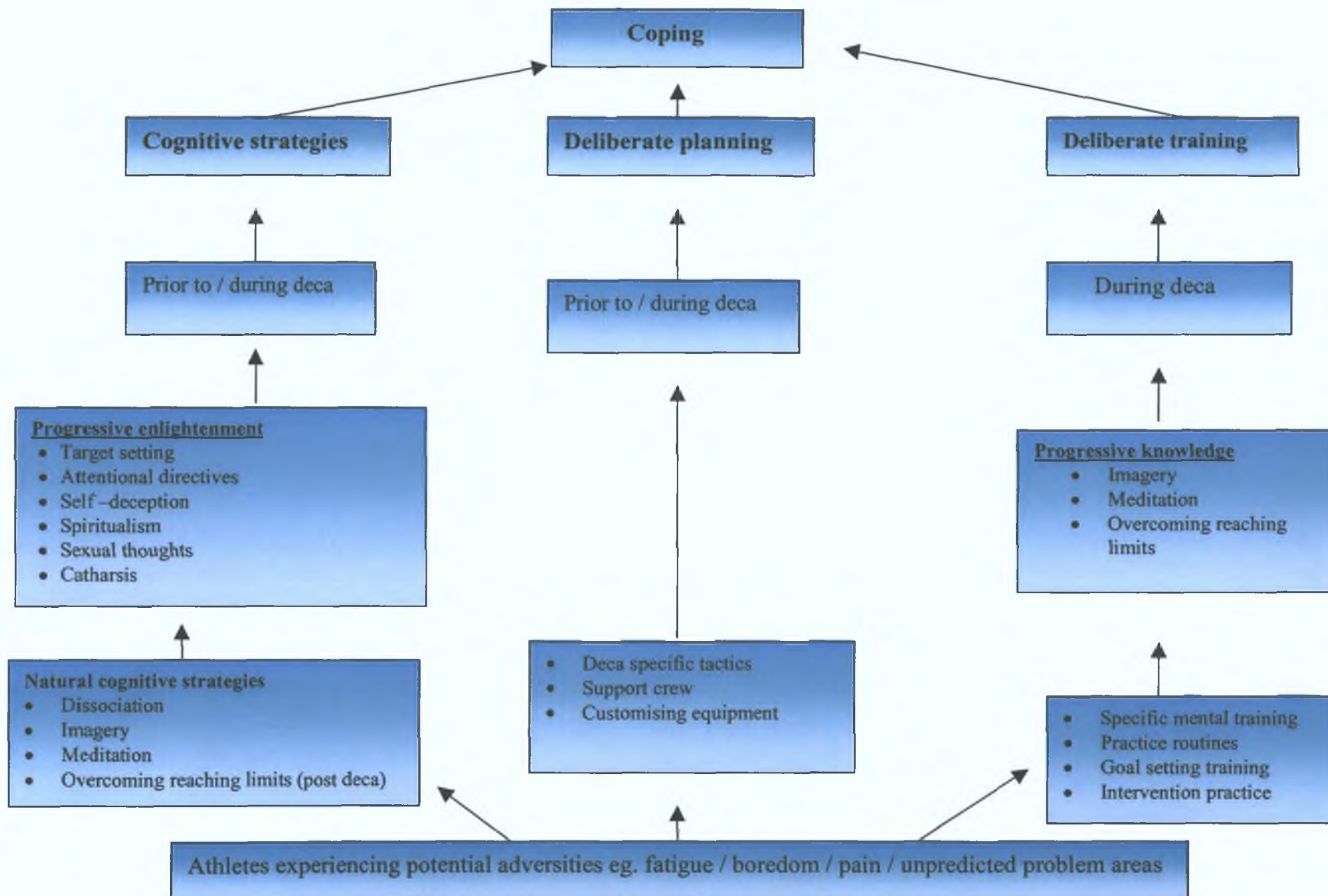


Figure 4.2 Diagrammatic representation of the emergence of general dimension Coping

Another unpredictable adversity was highlighted during the swim, (recorded through the field notes) when UM4 got an abscess in his mouth, and after requesting a mirror and needle from his support crew, he duly burst the abscess while his arms were draped over the poolside edge. Finally, another triathlete, UM17, who retired due to injury, felt high levels of stress prior to retiring, as he experienced feelings of guilt for his family and support crew who had inconvenienced themselves to allow UM17 to train and compete in the deca-ironman “ so many times you think of persons, all the persons that came here for you there is so many things around you and your decision, its going to affect everyone so its really hard ” (UM17, deca-ironman interviews, 2002)

With regard to expected adversities during the deca-ironman, the data illustrates that there were three primary recurring adversities highlighted by the sample, which proved to play the most influential adversarial roles throughout the event. These included boredom, which was specifically applicable to 40% of the sample, 80% referred to being in pain and 70% reported encountering fatigue at various stages throughout the event. Boredom was mostly due to the race longevity and the location which concerned going around the same track for the cycle and the run for up to thirteen days. The triathlete’s painful aspects evolved from three sources, 30% of the sample experienced extreme shoulder pain during the swim, while 80% got saddle sores during the cycle, and 60% of the sample reported blister problems during the run. The remaining health issues came from a variety of sources. Two of the sample, UM11 and UM9 had breathing problems during the event. UM11 was recovering from bronchitis and had encountered restrictions in his breathing during the swim, while UM9 had bronchial problems during the entire event.

Additionally, it was observed by the author that 100% of the sample group appeared to feel muscle tightness when transferring from the bike to the run, having to walk for substantial laps, prior to beginning to run. Finally, one triathlete, UM2, reported experiencing an upset stomach after the swim, which he felt was due to pool conditions and his nutritional intake.

Adversities final dimensions

Adversities /internal / ultra-endurance

Adversarial problems derived from internal sources are incorporated into this final dimensional theme. This theme incorporates predictable concepts such as pain, boredom, fatigue, and medical problems.

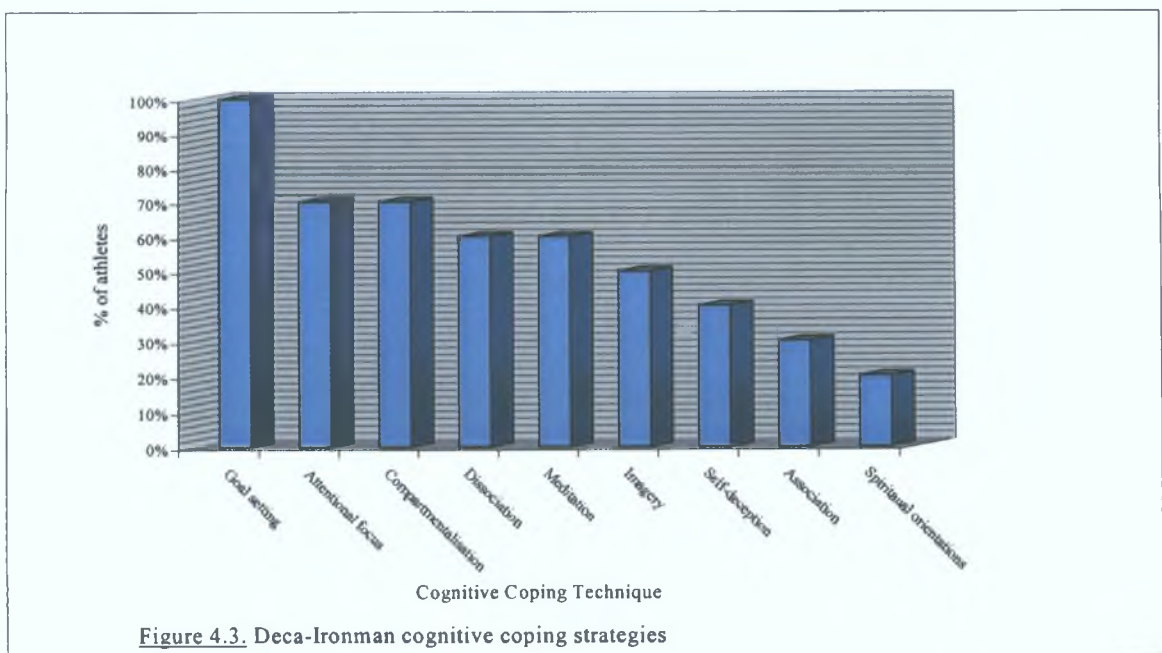
Adversities / external / ultra-endurance

External adversities can be from predictable or unpredictable sources, for example, event specific problems, for example adverse pool conditions etc. or inadequate training or sponsorship problems. It is these aspects which are the subject matter of this final dimensional category.

4.3 Cognitive coping strategies

Evidence from the findings demonstrated that the deca-triathletes coped with the various adversities either by incorporating cognitive coping strategies into their race programme or through incorporating pre-determined backup plans for potentially forecasted problem areas (Figure 4.2). The deca-ironmen reported using various flexible coping strategies in order to facilitate the varying adversarial situations which occurred throughout the event.

A breakdown of the cognitive coping strategies used by the deca-triathletes throughout their deca-programmes, in descending order included goal setting (used by



100% of the sample triathletes), attentional focus (70%), compartmentalisation (70%), dissociation (60%), meditation (60%), imagery (50%), self-deception (40%), association (30%) and finally spirituality, or seeking assistance from God (10%) These figures are represented on Figure 4 3

The following section portrays results illustrating the cognitive strategies used by deca-ironmen to cope with the three mainstream adversities which emerged from the results, namely pain, boredom and fatigue This is followed by a breakdown of references made by the triathletes regarding coping strategies for specific adversities

Target setting

As compartmentalisation strategies used by the deca-ironmen paralleled “mini-goals”, the areas relating to goals and compartmentalization are interlinked for the sake of the discussion chapter into a final dimensional theme entitled “target setting techniques” To ensure no specific information is lost, each concept will be treated individually

Goal setting

Evidence of goal setting strategies was found throughout the entire deca-ironman sample (100%), for example “Yes, I do all the time [set goals], I think everyone must have goals from the time I start thinking about a race , maybe for months or maybe a year before ” (UM17, Deca-ironman interviews, 2002) Additionally, UM12 replied “Always [sets goals], I set goals during my training and during the competition itself” (UM12, Deca-ironman interviews, 2002)

Furthermore, process goals were incorporated into UM3’s race plan “I set goals for everything, for my training, for my race, for my life ” UM3 goes further when explaining some process goal setting strategies they use specifically during the deca “you take every day, day by day, and OK I want to do 400K on the bike or 200, I decide this is my race for one day and then I did it so I take a little rest and then comes another day and another challenge ” (UM3 Deca-ironman interviews, 2002)

UM4 remarked on the importance of setting process goals as opposed to outcome goals

you think about the present, you don't think about the future, you think about the present and you think about this is the (number of) laps I will have to do and when you do the other laps, this is the laps I have to do now and you live in the present moment, you do not try and go into the future ” (UM4, Deca-ironman interviews, 2002)

Alternatively, UM18 and UM5 set outcome goals throughout the competition, as can be seen in the following excerpts “ My goal is to cross the finish line I don't care very much (if I finish) one hour more or one hour less” (UM18, Deca-ironman interviews, 2002) Additionally, as UM5 explains “During the race the target, the first target for the ultra-distance is to finish it all the time this is the first one and for the deca it was to finish ” (UM5, Deca-ironman interviews, 2002)

Goal changes were illustrated by some of the triathletes “ I said maybe I can do 360 kilometers per day for the bike and two marathons per day, so we tried to focus on this and we didn't do it but it works out to be four hours of biking and then take a break and four of the run and take a break ” (UM5, Deca-ironman interviews, 2002)

Compartmentalization

In general the researcher's field notes recorded that the triathletes all broke the three disciplines, of swimming, biking and running, into three separate categories, treating each stage individually From the full compliment of the deca-triathletes in this research investigation, 70% of them recorded using compartmentalization as a coping strategy 50% of the triathletes compartmentalize in the format of miles, speed, while 30% of the compartmentalising sample, broke the deca-ironman into laps while 20% of the sample never incorporated compartmentalisation into their deca-programme An example of a triathlete using both distances and laps came from UM17

I break the swim or perhaps the bike or run into distance the swim I break into laps maybe every 30 laps then in the bike and the run I use kilometers mostly I

try to stay focused and think of nothing except planning ahead in my mind about the next stage, maybe the next 10K or 30K (UM17, Deca-ironman interviews, 2002)

One of the competitors, UM18, who did not use compartmentalisation gave this explanation

not really [compartmentalise] I mean of course I love going out in the morning and say to myself 'let's see how far I can go today' I will say I will do at least two marathons today, if possible two and a half, but I am not always thinking, 'OK, 10km have some rest or whatever' I just well from time to time I ask my crew how far and how many kilometres did I do just to make sure I'm not going too slow (UM18, Deca-ironman interviews, 2002)

Evidence demonstrates that compartmentalization was used by 20% of the sample to specifically overcome pain, fatigue and boredom. The following excerpt from UM2 explains his compartmentalising strategies

Lots [of compartmentalisation] all the time. I really calculate all the time. Maths is the best way to keep going is by I'm always calculating. I'm an engineer, maths is my favourite subject anyway, but I'm always recalculating all the time, I'm looking at the miles to go, how much time is left on the clock, what pace I am going at. It's just simple little calculations (UM2, Deca-ironman interviews, 2002)

Attentional directives

To enhance clarity for the reader, the areas involving attentional focus plus associative and dissociative concepts, are placed under the umbrella term “attentional directives” in the discussion chapter, however at this stage, each are treated individually to demonstrate their individual attributes

Attentional focus

Results demonstrate that 70% of the triathletes utilise attentional focus as a coping strategy, with findings illustrating that the sample triathletes endeavor to continually focus their attentions on positive, beneficial mediums for distractive purposes. By distracting thoughts from the problem area, for example pain, athletes manage to cope with the situation, maintaining progress. This is explicitly portrayed by UM3 “You must always think positive things in the deca everything is the mental, mental, mental, you must think positive things to stay focused for a race like the deca.” Furthermore, UM3 uses attentional focus to overcome pain “its like a boxing fight, I say the pain is not going to beat me, I’m in control carry the pain maybe it doesn’t disappear, but I become tolerant of it its not easy” (UM3, Deca-ironman interviews, 2002). An excerpt by UM4, concurs with this concept “that’s why we [deca-triathletes] have a good mental because we have to put the pain, to put laziness on the side and concentrate on something good, on something nice.” However, later the interview UM4 reported

It’s hard to maintain focus here because there is a lot of people here at the tents [support crews and officials] when I walk I listen to music and I don’t think about something else I just think “you keep walking, you are a robot, you know like Robocop or something (UM4, Deca-ironman interviews, 2002)

Furthermore, 30% of the triathletes talked about honing their attentions in on their kinesthetic actions, on their chronic and acute techniques to execute their actions with perfection. The full compliment of the sample triathletes discussed their focuses through associative or dissociative concepts. One triathlete, UM2, claimed he dissociated when feeling good as opposed to when feeling under pressure

when you are feeling bad you can focus on technique, focusing on technique means you’re no longer thinking about the distance, you’re thinking about what you’re doing and it’s like one foot in front of another and how you’re doing it when you’re feeling good you’re not thinking about what you’re focusing on the distance or the next target, and focusing on speed and thresholds there’s two different

attitudes there, eh one keeps you going when you're feeling bad , the other makes you run fast when you're feeling good you just alternate between them, it depends how you're feeling (UM2, Deca-ironman interviews, 2002)

There was one triathlete who utilised attentional focus to specifically cope with boredom UM17 reported that

when that happens to me [experiencing boredom] usually it means that I have slowed the pace, because if I have time to say 'ohhh I'm bored' it's because I have lost focus and I have lost spirit right when I realise that I am doing that I just concentrate again and put again strong focus and I forget about my boredom (UM17, Deca interviews, 2002)

Dissociation

The findings demonstrate that 60% of the deca-triathletes used dissociative techniques throughout the event Among other dissociative thoughts, 60% of the sample listened to music on headphones, while 40% didn't listen to anything Of the triathletes who listened to music, the choice appears very personable, ranging from new age, to rock, to heavy metal The relevant triathletes felt the music helped cope with overcoming the boredom, pain and fatigue experienced during the deca-ironman

Alternatively, triathletes dissociated through thinking external thoughts such as family, friends or work or planning future goals One athlete held full conversations in her mind with family or friends "I start imagining, what do I do next week, what do I do in one year so I build up stories and I start talking in my mind with somebody, I call my mum, I call somebody, a friend " (UM18, Deca-ironman interviews, 2002)

Findings illustrate that the triathletes also use alternative forms of dissociation, such as playing mind games to pass the time, for example

in the mountains over there [behind the track] there is breasts (laughs) and I said to the other triathletes can you find breasts somewhere and they all find it!

(laughs) it was not difficult to find but it was like a game I was playing to find different things everywhere (UM5, Deca-ironman interviews, 2002)

Association

A relatively small percentage, 30%, of the sample group reported using associative strategies during the deca-ironman. Associative techniques involved focusing on personal bodily functions, focusing on the self and how the body was feeling, performance, perceived nutrition levels, heart rate, centering the concentration on the self, lap times and calculations. “I mainly focus on myself not to miss signs of malfunction. I was rather more focused on the race than on other things.” (UM9, Deca-ironman interviews, 2002), Concurrently, “for me I listen to my body. If I am going too fast I know now what my body should be feeling.” (UM3, Deca-ironman interviews, 2002)

Meditation

A total of 60% of the sample incorporated meditative qualities into their deca-programmes

The best thing which people advise you to do is meditate when you run. The whole point of running ultra-distance is conserving energy. You've got to conserve your energy coz you've got a long way to go. If you can meditate what you are doing is you are lowering your heart rate. You're relaxing and if you're relaxed you're conserving energy and once you get into that situation you're running fluently as well coz you're not thinking about running at all, it's all just automatic (UM2, Deca-ironman interviews, 2002)

One triathlete mediated while listening to music

on the bike I listened to a lot of music. The kind that can make me go into meditation. It's like a trance. You are on the bike and sometimes you don't see

nobody on the side, you just go on the bike and listen to the music and you are in your own world (UM4, Deca-ironman interviews, 2002)

Another triathlete’s form of meditation was to converse with God “I can be in meditation when I was running, but meditation I think is only for God” (UM3, Deca-ironman interviews, 2002) Active mediation was cited as a training strategy by UM4

You have to practice your mind I think, not only in training but maybe in front of your computer and you can practice your mental training its like active meditation and you can practice it anywhere [Karen and how does that work?] its when you don’t stay at the same place, you do something but you are like in another space or you’re concentrating on one thing to go away [e g pain] and not stop like me UM4, Deca-ironman interviews, 2002)

From the sample, 20% never utilised meditation One of the triathletes, UM9, felt he was “too rational” [Karen ever meditate?] “Oh no no no I am, in my daily work, making scientific studies and so on and I am very rational I know when something hurts that it is time to make a rest and when I am hungry it is time to eat ” (UM9, , Deca-ironman interviews, 2002), while the second individual, UM11, relayed that he tried it once but just fell asleep

Imagery

Reported imagery usage totaled 50% The imagery primarily was transportive in nature, for example during the swim UM4 had problems with one shoulder and swam eighteen kilometres with only one arm “ after 23-25 hours [of swimming] I was thinking I was in my room at home I was swimming and I was in my room and watched some TV and its like a natural high ” (UM4, Deca-ironman interviews, 2002)

Findings also illustrated that 30% of the sample visualized themselves crossing the finishing line, for example “The finish line I keep in my mind that I have the finish [line] ” (UM5, Deca-ironman interviews, 2002) Furthermore, “Every race I do I see in my mind I see it and I focus on it, I always see myself finishing ” (UM4, Deca-

ironman interviews, 2002) Finally, two of the triathletes imagined sexual thoughts with a significant other, while another athlete recorded that he never used imagery techniques

To cope specifically with fatigue during the swim, UM4 used visual external imagery “UM4 propped his two arms over the poolside and listens to Lord of the Dance – his eyes are totally closed in meditation” (FN, Deca-ironman, 2002) UM4 later revealed in the interview that while listening to this track he is using transportive imagery, imagining his sitting room at home surrounded by TV and normality

Self-deception

Self-deception usage was reported by 40% of the sample group The triathletes using this technique incorporated a variety of concepts, such as pretending another athlete was catching up if they felt their pace was slowing when tired “ sometimes I tell myself there is someone catching me when there isn’t ” (UM11, Deca-ironman interviews, 2002)

Another individual convinced his mind that the distance of the present goal or discipline was further than it actually was in reality “ I was pushing myself for 100 [mile mark], but I’m pushing past it now I’m looking beyond it, so I’m not actually looking at the 100 miles anymore I’m focused on 122 its no longer the case of setting to lower things” (UM2, Deca-ironman interviews, 2002), while for UM12 who is an exceptionally experienced deca-ironman competitor “ during the competition pain simply does not exist, I think of other things” (UM12, Deca-ironman interviews, 2002)

Finally, one athlete continuously convinced their mind that completion was only two laps away, continuously, until the individual managed to get out of whatever rut they were in and then they could continue “as normal”

I might say to myself just swim two more lengths and then have a rest, and then when I have swum those two lengths I would say the same again and when I have swum those lengths and then again and again until I feel free and feel the swim is effortless again (UM17, Deca-ironman interviews, 2002)

Furthermore, one triathlete, UM17, when experiencing fatigue, would pretend that the lap he was swimming or biking was the last ever lap he would ever complete in his life, convincing his mind to cherish the occasion

I use my mind to convince myself that everything is good, or this is the last time I will ever be on a bike and I convince myself that it is really a great experience by doing this, by persuading myself that this is my last time doing these things, I really start to enjoy it (UM17, Deca-ironman interviews, 2002)

Findings illustrated that 20% of the sample never used self-deceiving strategies, feeling they were too realistic, which can be seen in the following excerpt regarding overcoming pain “ because I guess this pain is part of the race, it’s part of my body so why should I trick it?”, furthermore, concerning overcoming fatigue, “ no I tell myself that I’m very very tired and that’s a shit , but I go on ” (UM18, Deca-ironman interviews, 2002)

Spirituality

Findings illustrated that 20% of the sample incorporated spiritual means to cope with adversity, through conversing with God and seeking assistance from him as the following excerpt from UM3’s interview represents “You just talk like God is a person who is hearing you and who knows you like a friend he’s always around” Later in the interview UM3 referred to the assistance they gather from God [Karen would you pray at all during these races?] “Yes a lot I know that God is always there and that he helps me when I ask him, I talk to him all the time during these distances” (UM3, Deca-ironman interviews, 2002) Another deca- triathlete (UM17) believed that God had given everyone personal strengths to be used and not to be wasted, and endeavored to succeed in these ultra-endurance events to please God

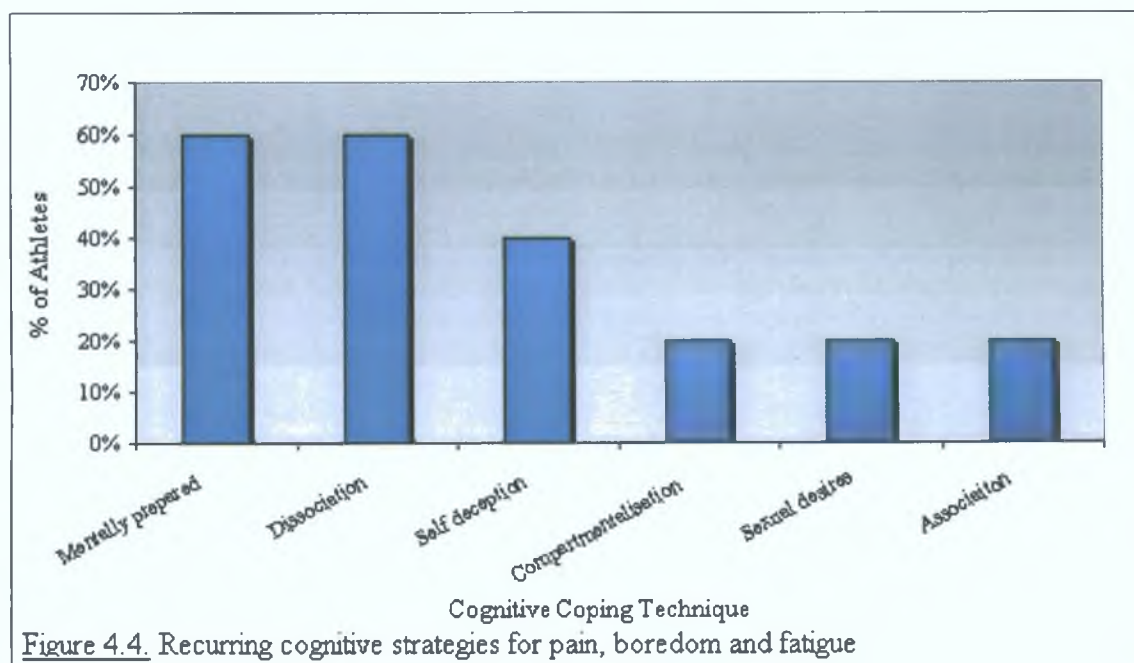
It is a privilege that I have been given to use I have been given a privilege by God he gave me good mental powers and physical powers and the reason he gave me these things was to use them and not to waste them by just ignoring

them...some people make excuses that they can't do something, but we are all put on this earth to achieve the best we can...(UM17, Deca-ironman interviews, 2002).

When asked how they would overcome fatigue, UM3 replied that while also using other techniques such as listening to music, they also: "...talk to God and he helps me" (UM3, Deca-ironman interviews, 2002).

4.3.1 Cognitive strategies specifically to cope with pain, fatigue and boredom

Specific strategies, not mentioned above, which the deca-triathletes utilized to overcome the three primary adversities, pain, fatigue and boredom, occasionally overlapped and intertwined to produce dual or triple benefits, for example overcome pain and fatigue concurrently. Evidence demonstrates that deca-triathletes classified a variety of seven cognitive strategies to cope with the triple concepts of pain, fatigue and boredom (Figure 4.4).



Mental preparation

Mental preparation prior to the deca-event was carried out by 60% of the sample where the triathletes trained and became mentally aware of the inevitable upcoming occurrences of pain, fatigue and boredom which needed to be overcome during the deca-ironman. For example, UM17, who mentally trained for the deca for six years, found that training his mind and body to achieve a “comfort zone” for activity through meditation helps him overcome fatigue, boredom and pain

what I have taught myself over the last years is to go totally into the mental zone what I do is this I go into a room at home where I have my training bike, even when I am late home from work I go to that room and start warming up then I light maybe one or two candles and I turn off the light and put on my headphones and I will listen to New Age or classical music or some meditating type music and then I pedal in the darkness I then put my arms on my bull bars and I close my eyes and keep pedaling when I close my eyes I start by seeing a total blank I imagine a void of nothing and just concentrate onto the music I believe this helps from tiring the mind and therefore the body too once my mind is in the mode of seeing a blank and in the music zone, I get in a meditating zone and I can fall asleep while I pedal when I started doing this I could fall asleep for maybe 15 or 20 minutes, but I am better at it now my best time is eight and a half hours I had come home from work at 10:30 feeling really tired, but I got onto my training bike and got into my mental zone and I fell asleep on the bike still pedaling when I woke up I felt really rested and didn't know how long I had been asleep for, but I saw the time on the clock and was amazed, and then I saw from the speedo that I had pedaled for 115 miles I knew I had been asleep because I felt rested as a normal night sleep when I was in work the next day so when I am in a race and I feel tired I focus on the road ahead or whatever and I just think really hard about being back in my training room and I can smell the candle and maybe I will put the actual music on my headphones in the race as well (UM17, Deca-interviews, 2002)

With regard to mentally preparing for pain:

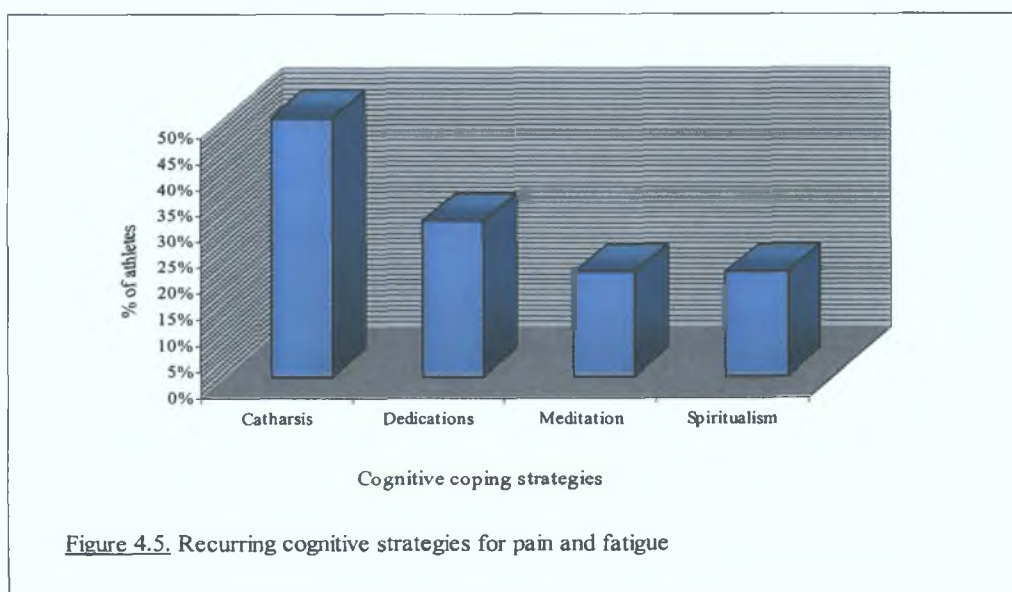
For two months prior to the deca-ironman race, UM6 told himself ‘you’re going to suffer, you’re going to be in pain...you’re going to suffer, you’re going to be in pain’...so whenever he started the race he was in pain but he had prepared himself so he knew he would feel pain and could just keep going (UM6, Deca-ironman interviews, 2002).

Sexual thoughts

Finally thoughts of a sexual nature accounted for 20% of the cognitive strategies used for the “triple” concept: “...relationship or having sex, whatever, you know just a nice feelings which make you feel proud or happy...they just keep you going for ages...you can just get an emotion, its basically an emotion you’re looking for, once you’ve found that emotion, just you hold onto it.” Concerning the deca-ironman specifically, UM2 reported: “[I was] wondering what it would be like to have sex with (girl’s name) and would she be impressed...thinking of her smile, her laugh and the way walks and her long black velvety hair...” (UM2, Deca-ironman interviews, 2002).

4.3.2 Cognitive strategies specifically to cope with fatigue and pain

Four cognitive strategies were highlighted by the triathletes for specifically overcoming pain and fatigue. These were catharsis (50%), dedications (30%), meditation (20%) and spiritual orientations (20%), (Figure 4.5).



Catharsis

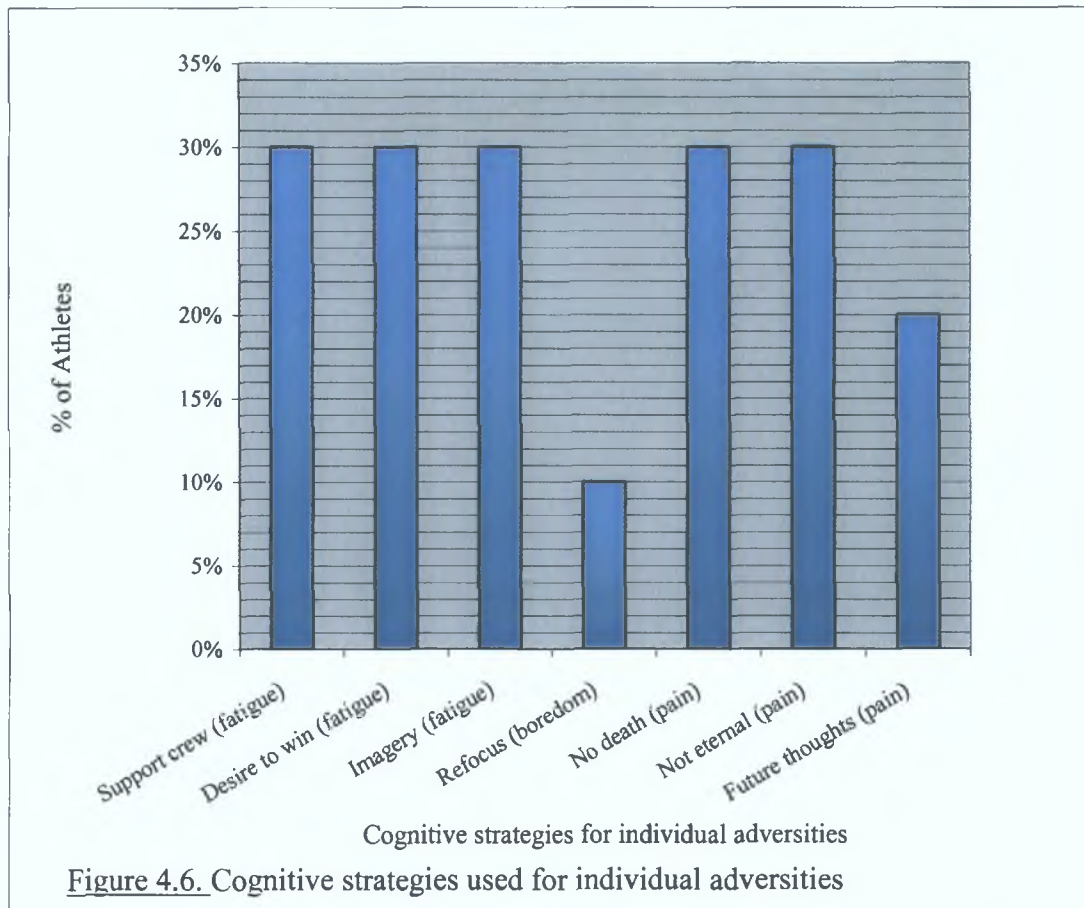
Five of the athletes experienced catharsis, which refers to a release of emotional tension resulting in stress reduction. An example of a cathartic reaction occurred when UM5 received an e-mail from his youngest son telling him that he was proud of his father. “It produced in me no more pain, it was like a surge – the body sometimes does some stuff that gets rid of the pain and for that time it was no pain. I was so emotional about my children and I kept this in my mind for a long time and it helped me to get more and go further” (UM5, Deca interviews, 2002). Cathartic reactions can be deliberately generated also, as UM2 explains

you deliberately make yourself angry, you remind yourself of something that really pissed you off – you know like an incident at work or whatever and that just snaps you out of the mood you were in and suddenly you just lose your temper and you say ‘oh that fucking bastard!’ – you really lose your temper and then as you calm down, it’s just like an energy rush – you just go shuuump and you start thinking nice things again and you bring yourself back, which is a damn sight better than just being lethargic, which is the state you’d have got yourself into if you’d just stayed run down, you’re lethargic and you can’t be bothered – you need something to give you a turbo boost, a kind of energy (UM2, Deca-ironman interviews, 2002)

Dedications

Three of the triathletes participating in the deca-ironman revealed that dedicating the event to a charity or specific person encouraged them to persist through tougher parts of the deca-ironman. For example, when asked how he overcame fatigue, UM2 reported

The best one that’s ever worked is you’re doing it for someone else – doing it for charity is by far one of the best motivators, it gives you the energy to keep going – dedicating it to your support crew or your girlfriend or whatever – that’s



taking away the emphasis on yourself, you're not doing it for yourself anymore, so you're going to let someone else down if you don't do it... (UM2, Deca interviews, 2002).

4.3.3 Cognitive strategies specific to individual adversities

Cognitive strategies which triathletes recorded incorporating into their deca-strategies for coping with individual specifics, for example a system for overcoming solely pain or fatigue as opposed to using dual-usage strategies can be seen in Figure 4.6.

Initially strategies for solely coping with fatigue are covered, followed tactics for overcoming pain.

Support crew

Evidence from the results demonstrated that 30% of the deca-triathletes coped specifically with fatigue through assistance from their support crews UM2 [when fatigued] “ had rest and absorbed energy from support crew and other competitors” (UM2, Deca interviews, 2002) UM3 concurred with this saying “the support crew really help the athlete they give mental support to the athlete, the big thing triathletes want from support crews is feeling loved and being told they are doing well being encouraged”(UM3, Deca interviews, 2002) Finally UM4 commented “I know that some people admire what I do, I don’t think they understand perfectly because they don’t live it, the only people who can understand is my support crew they are my support crew and they understand how I feel”(UM4, Deca-ironman interviews, 2002)

Desire to win

Triathletes (30%) inherent desires to win brought them through moments of fatigue “I want to win so I know I have to keep going this is enough for me to get over the tired feeling I knew UM20 was not too far behind and I knew if I sleep maybe he catches me ” (UM11, Deca interviews, 2002) A fellow triathlete concurred with UM9’s attitude “ my wife woke me and said you should get up because when you lose more time the one behind you will get you [catch up], so that was enough motivation ” (UM9, Deca-ironman interviews, 2002)

Unique fatigue coping strategies

Unique fatigue coping strategies were relayed by UM11, who reported that during the double deca-ironman he slept while he was walking

I walk but I sleep one person here and one person here [*describes people propping him up*] they don’t march me I just rest my head and I sleep for 40 kilometres I walked and I sleep for 40 kilometres in the pool too really for 200 metres, when I stopped to eat, the people, the team say ‘wow is there a problem your time was one minute each 50 metres and now its 2 minutes,

what's the problem' and I tell them 'its OK that I just sleep' and I sleep for 25 metres, my eyes opened and I tumble turn and I sleep again and so on for 200 metres it was the first time and the last time, I have never been able to do this sensation again it was very amazing for me (UM11, Deca interviews, 2002)

4.3.4 Cognitive strategies to specifically cope with pain

The field notes and video footage recorded that the deca-ironmen appear to have the ability to overcome extreme levels of pain, which was exemplified through facial expressions, limping or awkward gaits and general observations of extreme sores and swollen muscles. Primarily 40% of the triathlete's interpreted pain as not being life threatening or everlasting, as the following excerpts demonstrate

“ and then you think its OK, (laughs) i'm not going to die this will finish the day will end” (UM3, Deca interviews, 2002) UM18 concurred with this view “ if it would be a pain which puts my life in danger, you know something really dangerous, I would say, 'no that's it, I quit', but as long as its just pain, and I know that in one week, two weeks it will be gone, its just an awful pain, but it will not kill you, why should I quit?” (UM18, Deca interviews, 2002) UM6 “argues with himself and he says you have a pain and after that its going to be another pain and its going to be worse and there is going to be another worse pain after that, but then after that you are going to be fine, you're going to be OK”(UM6, Deca-ironman interviews, 2002)

The second strategy which 20% of the sample used involved contemplating positive thoughts of the future. As UM3 relayed “ a very important thing is, just think for example, what happens in a few days more this will be finished how do I want to be happy? happy because I can finish because I did it or sad because I quit? and then I decide OK, then pay the price” (UM3, Deca interviews, 2002)

Cognitive coping final dimensions

Cognitive coping strategies / progressive knowledge

This final dimensional category (Figure 4 7) involves cognitive strategies which the deca-ironmen have specifically learnt and strive to continuously improve, through training specific and experiential mediums, i e past ultra-endurance events and training regimes. It concerns cognitive strategies such as imagery, meditation and overcoming reaching limits.

Cognitive coping strategies / progressive enlightenment

This higher order theme involves cognitive strategies which, although continuously enhanced throughout the athlete's lives, occur and evolve more naturally to the individual, compared to codings in the “progressive knowledge” category (Figure 4 8). The subject matter in this final thematic category involves concepts such as target setting, attentional directives, self-deception and spiritual orientations, catharsis, self-talk and sexual thoughts.

Coping / deliberate practical planning

To cope with an ultra-endurance event such as the deca-ironman, competitors speculate potential problem areas and endeavor to counteract these problems by installing pre-planned strategies into action during the event. These strategies involve predetermined plans such as deca-specific tactics, customising equipment, support crew and medication requirements. It is these aforementioned concepts which make up this final dimensional category.

Coping / deliberate mental planning

For numerous months, and in some cases years, the deca-triathletes had been preparing mentally for the deca-ironman. This final dimension encompasses these constructs involving areas of pre-race mental training, such as mentally preparing the body specifically for the inevitable pain and fatigue encountered during in the event.

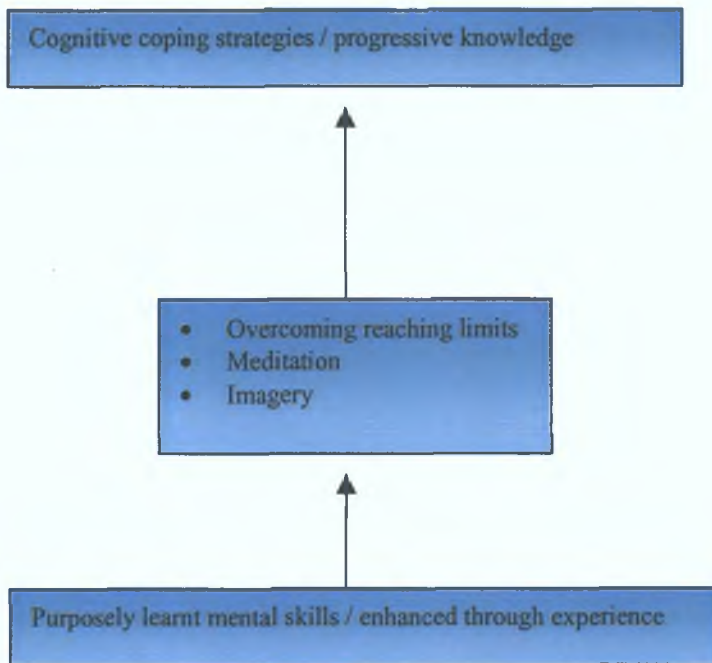


Figure 4.7. Overview of final dimension progressive knowledge (Coping)

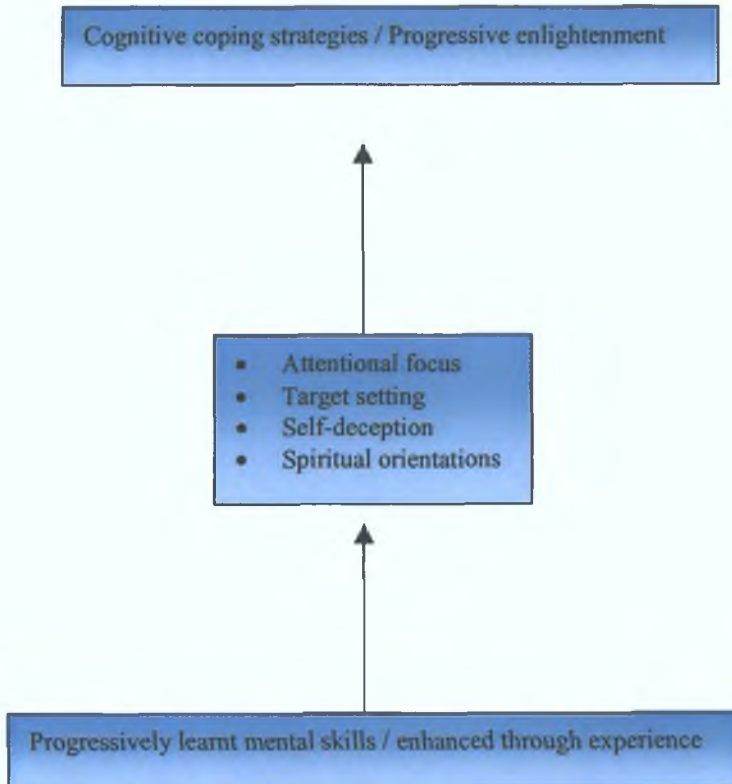


Figure 4.8. Overview of progressive enlightenment (Coping)

4.4 Performance impactors

Findings concerning traits which influenced the triathlete’s performance levels are revealed in the following section, while an overview of category emergence can be seen in Figure 4.9.

Personal assets

The personal assets inherent in deca-ironman competitors will obviously play an important role in the individual’s performance and attitude to the event. Although there was a wide range of assets mentioned by the triathletes, some were not mentioned by all individuals, however, it is the opinion of the researcher that the specific qualities mentioned were most probably inherent in all the deca-competitors perhaps to varying degrees. Personal assets reported by the triathletes included determination, mental strength, competitiveness, adequate preparation (mental and physical), plus the ability for positive thinking (Figure 4.10).

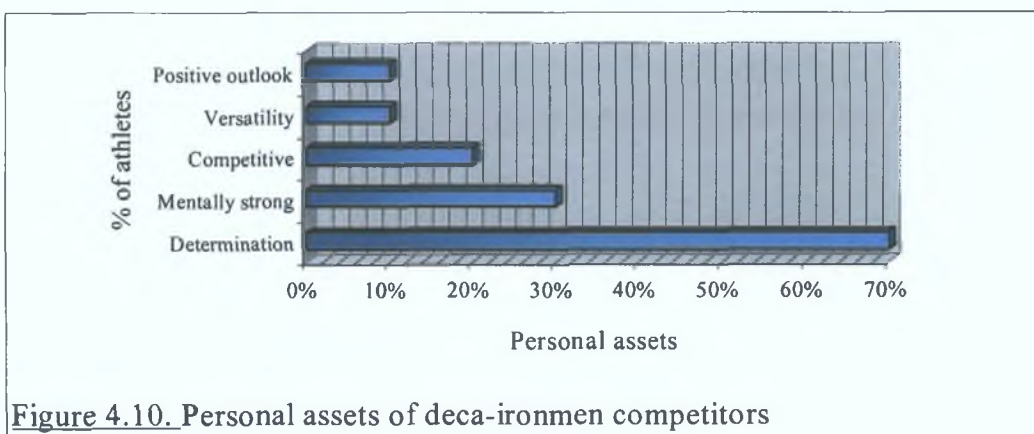


Figure 4.10. Personal assets of deca-ironmen competitors

Determination was listed by 70% of the sample, for example, UM5 stated:

“Determination...I know I have this...for me the determination is the key for each time I do an ultra-triathlon...I am not a specialist in any one of them [the three disciplines] so I think it’s my determination that I am able to do it...” (UM5, Deca-ironman interviews, 2002).

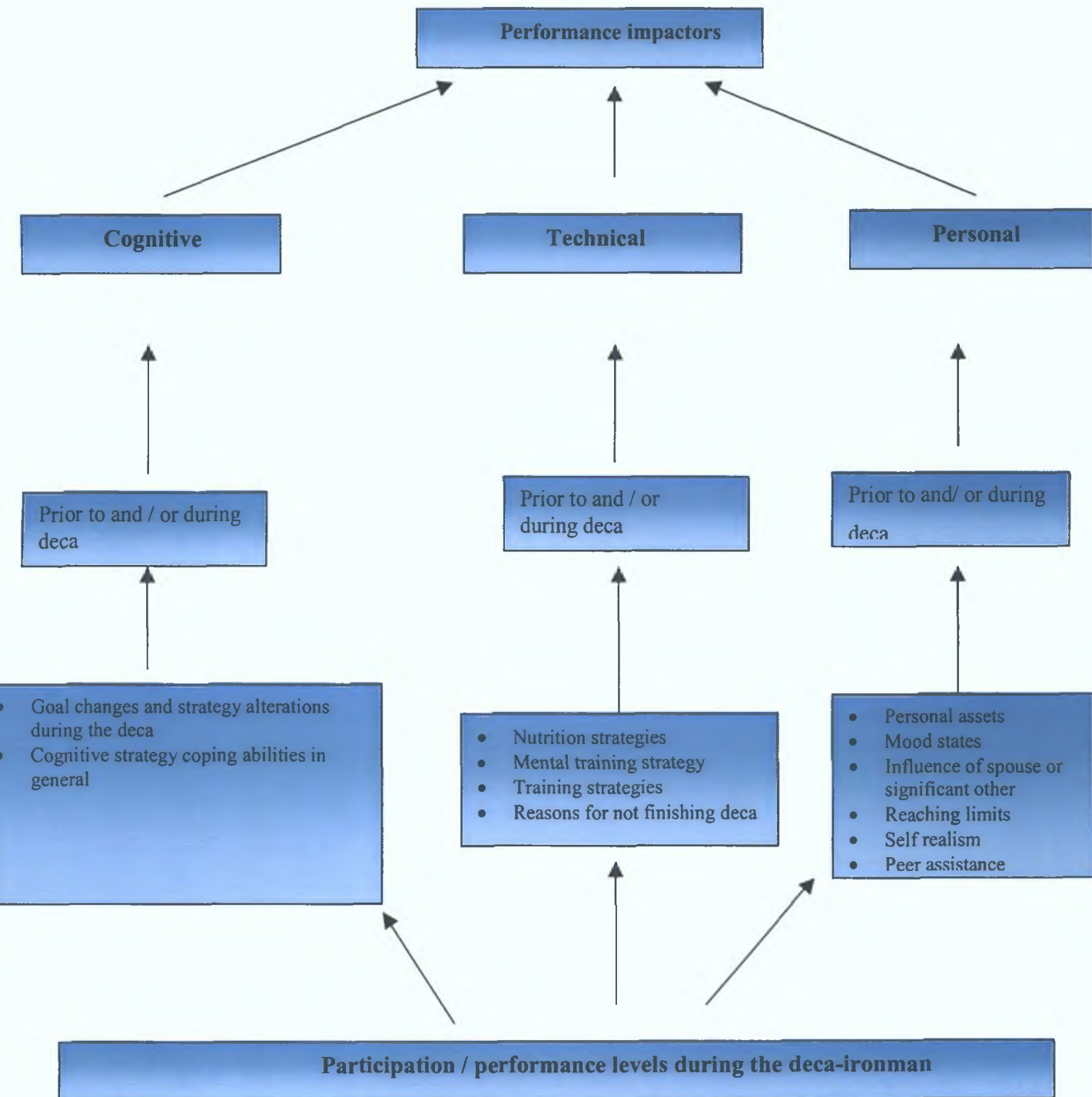


Figure 4.9. Diagrammatic representation of the emergence of general dimension

Similarly, UM12 says “I clench my teeth and keep going” (UM12, Deca-ironman interviews, 2002) Additionally, UM17 reported “I managed the pain and my courage was so hard and I really wanted to get to the finish line no matter what, it doesn’t matter if I died after the finish line, I had to get there and I really suffered everything was hurting me ” (UM17, Deca-ironman interviews, 2002)

Although results illustrate that mental strength was defined specifically as a personal asset by only 20% of the sample, the researcher feels that as 60% of the sample portrayed mental preparation as a primary factor influencing overall completion of the deca-ironman during the interviews, that more than the recorded 20% obviously have the personal asset of mental strength

Competitiveness was allocated as a personal asset by 30% of the sample “Mostly I just concentrate on the race and on winning ” (UM11, Deca-ironman interviews, 2002) Additionally “[UM6 wants] to leave behind his trace behind as a champion [in the world of ultra-endurance] ” (UM6, Deca-ironman interviews, 2002)

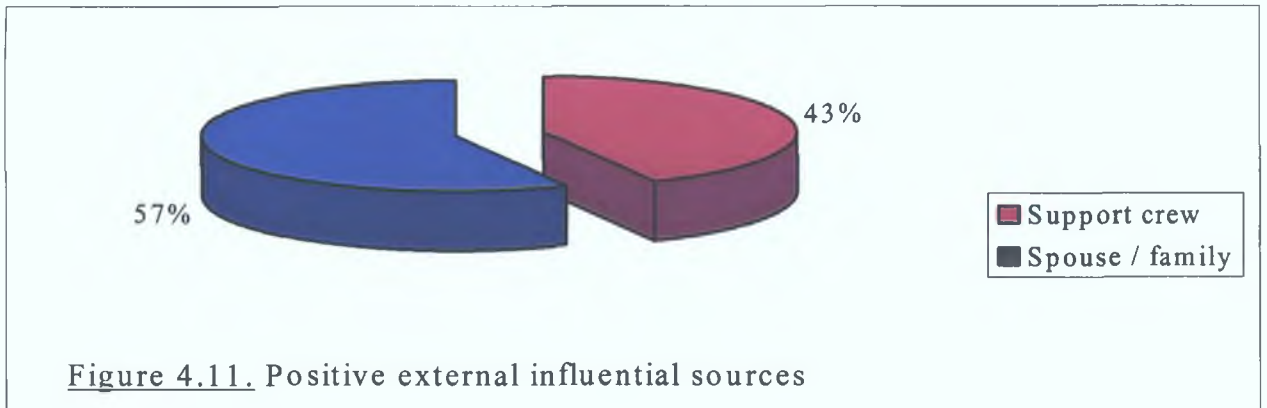
Interview findings demonstrate that 80% of the sample group felt mentally and physically prepared for the deca-ironman Two of the sample recognized the fact that they had not done adequate physical training “I do an average of ten hours a week of training and I know its not enough and I know its the reason I got so many problems during the deca” (UM5, Deca-ironman interviews, 2002), plus “I was meant to tram between fifteen and forty hours a week and it was less than that work took over and things I didn’t tram enough for the deca but I said ‘I will come here and I will finish it with my mental’ and that what I will do I know this ” (UM4, Deca-ironman interviews, 2002)

A further personal asset concerned positive thinking, for example when UM12 was asked how he overcame a mentally tough period, his reply was “I think positively” (UM12, Deca-ironman interviews, 2002)

Spouse /friends influence

Spouses and family members play an integral part in encouraging 70% of the triathletes to persist in the deca-ironman (Figure 4 11) Spouses, family members and the

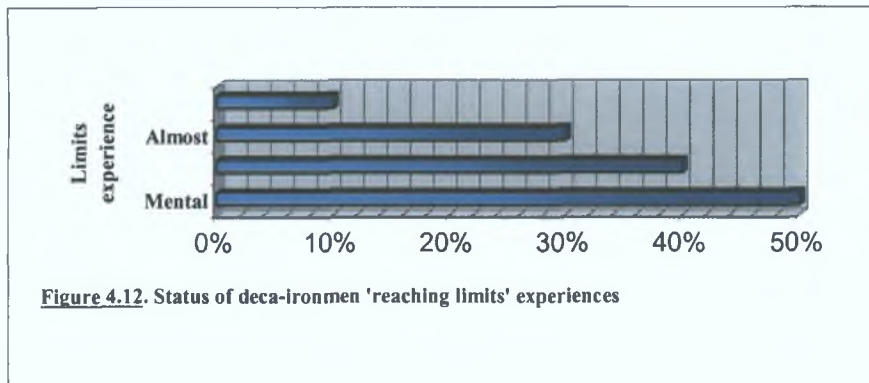
triathlete worked as a team, discussing race tactics together, counting and timing laps and encouraging as well as all the necessary regular support crew duties of feeding and bandaging.



An example of a husband and wife team is demonstrated in the following excerpts: “...with SC7 [UM5’s wife] we said we can do it [complete the deca] if we have an idea how to do it...I was in a big problem and SC7 was there and said you have to do something if you want to finish and she said something to cheer me on...”(UM5, Deca-ironman interviews, 2002).

Additionally, UM11 discussed race tactics with his wife:

...yesterday I talk to SC4 and we decide that from now on this [race focus] is to change” (UM11, Deca–Ironman interviews, 2002). One of the triathletes who regularly has his brother as part of his support crew recognized his brother’s positive influence on the triathlete’s performance: “...because sometimes in the race you are not here, you are tired, you are like a zombie ..you don’t think about nothing and its the support crew who think about you...like my brother...they are your head because you lost your head for all of the race and you know that you have lost your head, but you know you have to put your confidence on your support crew to think about everything... (UM4, Deca–Ironman interviews, 2002).



Reaching limits

Physical and mental limits are extended throughout the deca-ironmen, with some athletes feeling they had reached particular limits, the extent of which are personable to the individuals. Results indicated that from the sample group, 50% reached their mental limits, 40% reached physical limits, 30% felt they almost reached their limits, while 10% claimed they had never reached their limits in the deca or in any other ultra-event (Figure 4.12). Two of the sample had experienced hallucinations, specifically UM11 and UM6. The following excerpts describe their experiences: “I said to my doctor there are big problems... I have seen a dragon in the trees...I’m sure there is a dragon in the trees...I think I was so tired and my head went crazy” (UM11, Deca–Ironman interviews, 2002), while in UM6’s case: “it happened mostly during the nights...he saw some grass and thought it was a squirrel, but there was nothing there...there was one part of the race he was cycling with UM19 and he goes ‘hey look there’s a crocodile’ and as he got further he found it was a bench...(UM6, Deca–Ironman interviews, 2002).

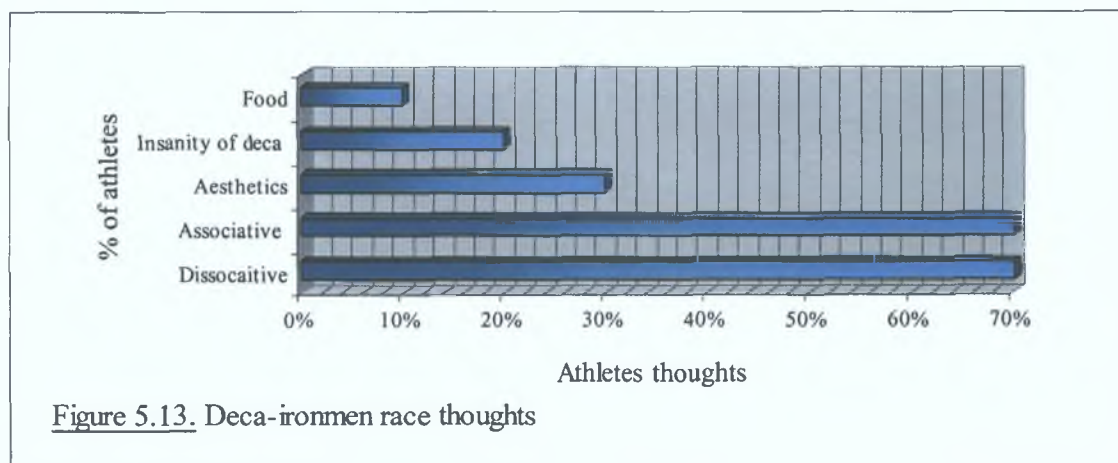
Conversely, one triathlete who has extensive ultra-endurance experience has never reached his limits: “I always know my own limits, so I never went over my limits...no I have never reached my limits”(UM9, Deca–Ironman interviews, 2002).

Race thoughts

The deca-sample primarily had dissociative thoughts (70%) which involved thoughts of friends, family, normalities of home and God, while 70% of the triathletes also felt they had associative thoughts throughout the event, such as perfecting technique, calculating time and laps while also contemplating time and pacing (Figure 4.13).

One triathlete, UM3 at times had both dissociative and associative thoughts: "...I think of my family , previous races, previous good experiences, good hopes for future times." Alternatively, UM3 had associative thoughts: "...I listen to my body...if I am going too fast I know now what my body should be feeling..." (UM3, Deca-ironman interviews, 2002), and UM6 who reported: "basically he is thinking he is focusing on the road, but at times he was thinking what he was going to eat at the next lap..." (UM6, Deca-ironman interviews, 2002).

Aesthetics accounted for 30% of the thoughts, while 20% relayed thinking how insane the deca-ironman actually was, while finally 10% thought of upcoming food.



Reasons for not finishing

Three of the sample group did not complete the deca-circuit. Specific quotes will not be produced here to protect their anonymity, however suffice to say that one did not finish as he was not managing to attain his main motivation for participating, which was to break the world record. The second individual had to retire due to injury, while the third failed to complete the circuit in the allocated time.

Performance impactor final dimensions

Performance impactor / personal / coping enhancers

Personal influences which affected the deca-triathletes performance levels come under the parameters of this final dimension. The positive and negative influences which the triathlete's spouse, friends or families played both prior to and during ultra-endurance events plus personal repercussions of individual mental strength training strategies are encompassed into this final dimension.

Performance impactors / "personal cognitive"

Cognitive factors specific to each individual, and the personal degrees to which the triathlete can handle the pressures of pain and fatigue etc. during ultra-endurance events and their effects on the triathletes performance levels, are entered into this final dimensional category. This dimension also involves the extent to which each deca-ironman can go before they feel they have reached their mental and/or physical limits, as well as their personal thoughts and their ability to convert negative situations and thoughts into positive circumstances throughout the deca-ironman event.

4.5 Phenomenological impactors

Throughout the raw data some personal views, opinions and insights of the triathletes provoked interesting insight into the triathletes attitudes and beliefs and the effects these had on their deca-ironman performances. How this thematic category emerged can be seen on Figure 4.14.

Specific personal experiences

One triathlete, UM11, demonstrated strong performance orientations and had become disillusioned about his competitive approach to ultra-triathlons, feeling he had lost intrinsic enjoyment, while also admitting to placing himself under immense pressures.

to win and break records, however he was actively planning alterations in his approach for future races

the problem is now I love to win, I like to be first, I think its like all champions, we want to be better and all the time the best and that is difficult when you are here for your personal challenge it is the challenge that makes it, but when you are here to win its not the same challenge and I think its more difficult because you have the pressure, the depression and I think its better to find a solution to stay in the personal challenge area all the time to take this pleasure and enjoy it more (UM11, Deca-ironman interviews, 2002)

Furthermore UM11 goes on to emphasize how his performance orientations are influenced by his mental capacities UM11 demonstrates high self-efficacy, but only when his mental capacities are in a positive frame of mind UM11 explicitly explains the necessity of having strong mental strength if one wants to perform well

I hope for me that I can stay and concentrate for pleasure, because all the guys here they know that I can win the race, or they know that I can break the record but I think they are afraid of my performance but I am afraid too by my performance, can you understand that? because I know that I can do good, great things but I know that if my head is not OK that I will be a bad guy and I will not race well (UM11, Deca-ironman interviews, 2002)

The following excerpt not only portrays an example of the benefits of experiential learning, but also UM2, recommends that one shouldn't compete in an ultra-event if the athlete has just experienced a disappointment as one may have

negative thoughts and negative emotions going in [to the race] and when you do events you're burning off your sugar levels and you go into bad moods and you go into depressions it's like cyclones you get into you feel

bad, very kind of inwards but its all psychological mind games you learn, you get through a few bad ones and you suddenly learn how to stop them, you see them coming and you learn how to handle them (UM2, Deca-ironman interviews, 2002)

To overcome these negative spirals, UM2 sighted two strategies, firstly nutritive aspects, such as increase in sugar level intake, and secondly mental strategies, such as a cathartic experience to provide an energy boost

With regard to using mental strategies to overcome pain, UM17, who has strong beliefs regarding the strengths of “mind over matter” techniques, believes that there is a point where one should be honest with oneself not too push the body excessively to a point where irreparable injuries occur

you are so focused on getting that goal that you don't want to let it go, so the hours are still running and the pain is there and you are thinking if the pain still stays like this I can finish but sometimes during so many hours there is a time that you have to realize where you are you have to be honest with yourself and with your body because you can, well you can learn to lie to mind or body and you can be lying to you and your body for so many hours but there is a time, I don't know where or when , but you have to realize where you are what you have and what you don't have (UM17, Deca-ironman interviews, 2002)

While UM4's reported personal motivations which were orientated towards the future

I don't want to be eighty years old and be in my chair and have nothing to talk about to my grandchildren they will ask me 'what did you do papa?' and I will say 'I did an ironman, a double ironman, a triple ironman, a deca ironman' and they will ask a lot of questions and I will have a lot of questions to talk about' (UM4, Deca-ironman interviews, 2002)

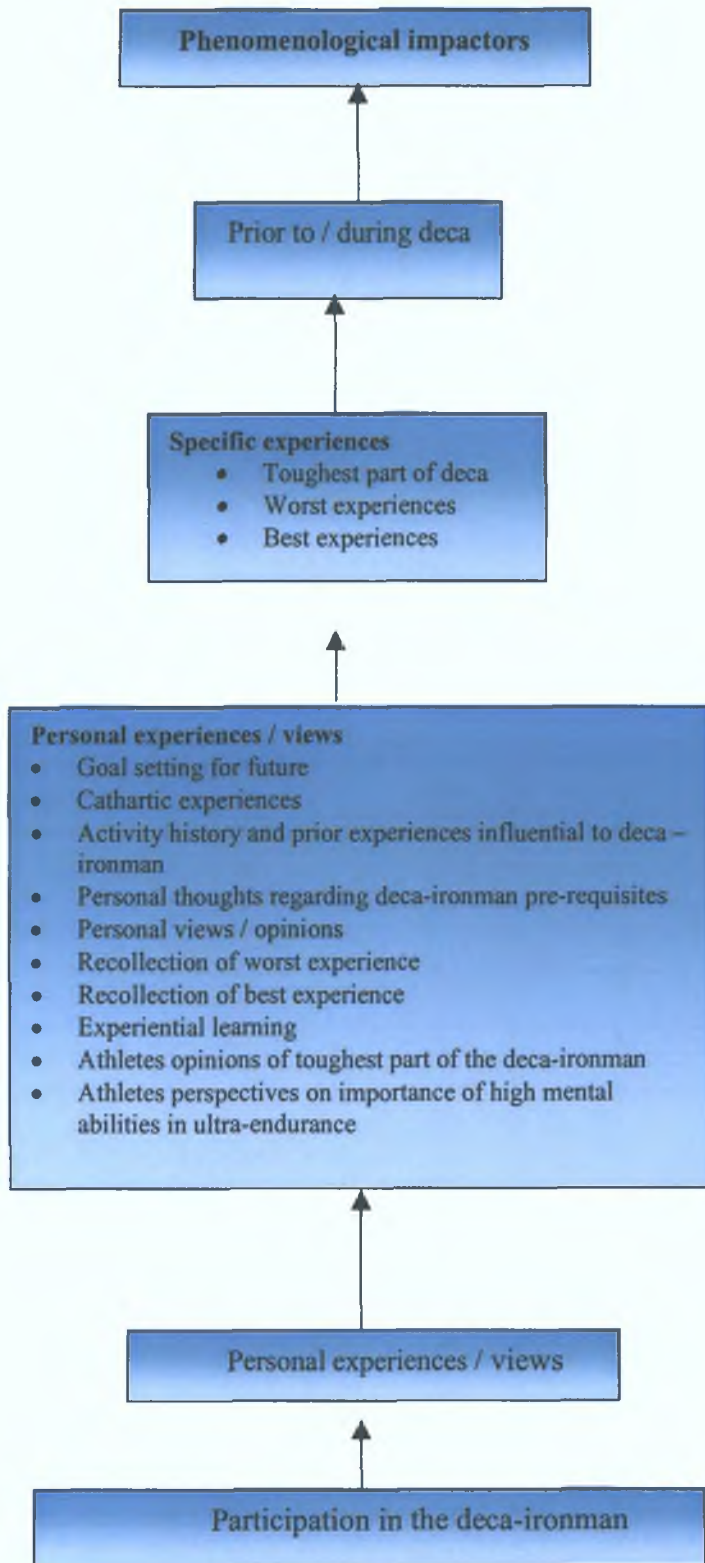
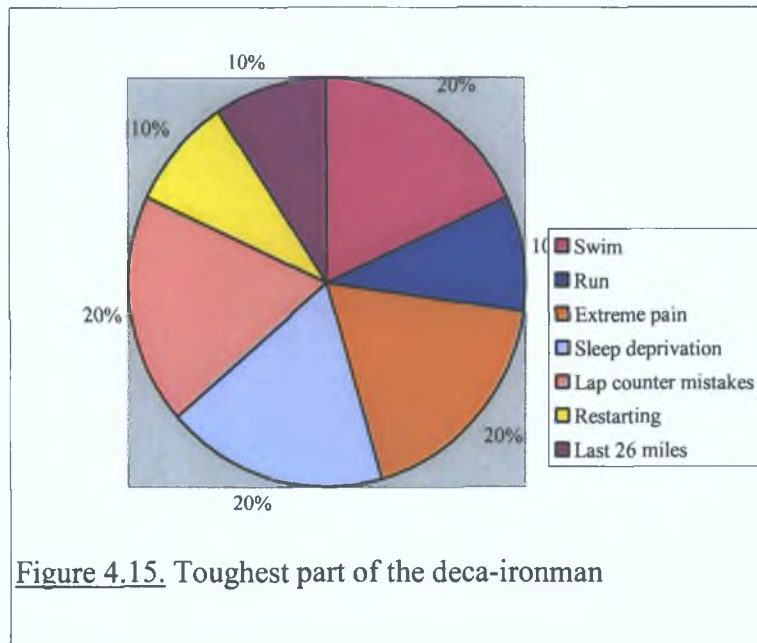


Figure 4.14. Diagrammatic representation of the emergence of general dimension Phenomenological Impactors

Toughest part of the deca-ironman

When questioned about what the deca-triathletes found to be the toughest area of the event, a wide range of findings were evident as can be seen from Figure 4.15. One



athlete named two specific areas as the “toughest part”, hence the total percentage values

adding up to 100%. Pain variables were an area cited by 50% of the sample which is demonstrated in the following excerpts:

After the swim I got a lot of pain here [in shoulder]...it was horrible, [then when] I finished the bike I got problems in my tendons...my Achilles tendon, so when I began to run I got...early in the run I got swollen here[points to lower leg] so no more running...(UM5, Deca-ironman interviews, 2002).

Furthermore, one triathlete found that the interconnection of pain and boredom experienced during the deca-ironman, resulted in extreme difficulties:

..I think its the pain, the hurt, there’s a lot of pain you have and you have to fight with it and its more difficult to fight it with the mental because its boring, the boring makes it harder to fight the pain... (UM4, Deca-ironman interviews, 2002).

Separating the mental and physical zones was one example given by UM17 “ I think that when you get into a good mental zone that you will find it much easier to keep going and that you will make it more enjoyable for you” (UM17, Deca-ironman interviews, 2002) While UM2 sited that the last 26 miles were the toughest

The last 26 miles being on the last tenth of the foot section, the body relaxes and the aches and pains really had their effect it is then that you want to stop but have to push because mentally you have finished but you still have 25 miles to go (UM2, Deca-ironman interviews, 2002)

Worst experiences

The deca-triathletes were questioned about their worst ultra-experience, to assist the researcher in gaining further insight into their motivations for participation in triathlons, and their concepts of unenjoyable experiences throughout ultra-endurance events Results demonstrated that 60% of the worst experiences were internal in nature, while 30% were external One athlete claimed he could not recall a “worst experience” (Figure 4 16) A further breakdown of the findings provided evidence that 40% of the sample pointed to aspects of the deca as being the worst experience, with three of this group citing painful occasions

He says it’s here [in deca 2002] it was in the swimming because he was really in pain the pain was located in his arms the pain was so intense that if it wasn’t for his mental he wouldn’t have been able to finish (UM6, Deca-ironman interviews, 2002)

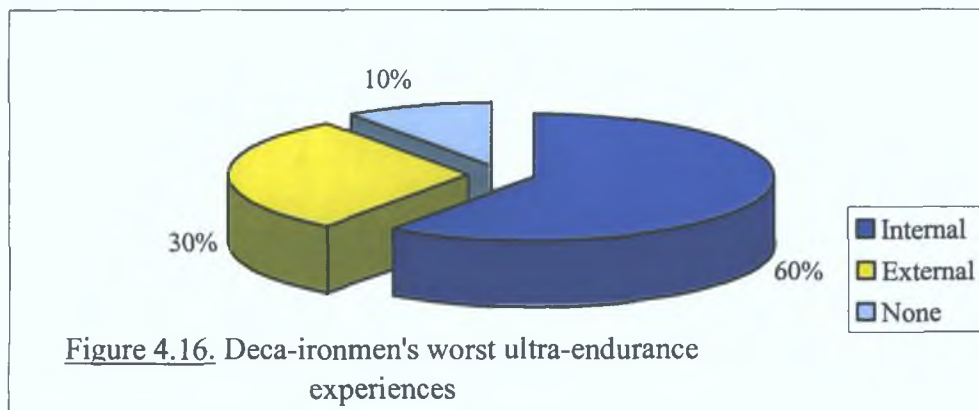
When questioned about his worst experience, UM5 simply replied “The deca because the sore was so long” (UM5, Deca-ironman interviews, 2002)

Twenty percent of the sample referred to past ultra-experiences where the external adversity of weather conditions caused problems for the triathlete This is illustrated by UM3’s quote

..I was trying to run 1,000 miles for the first time...I was running until the sixth day...running very well for the first half of the race, but then the road was very bad, it was raining raining raining...my shoes were always wet, and I started to get blisters and the blisters got infected and I was in pain all the time...I didn't quit...I didn't complete the 1,000 miles, there was 80 miles still to finish..but I didn't quit, I just didn't finish [by the cut off time]... (UM3, Deca-ironman interviews, 2002).

A memory involving bad performance was given by UM9:

...last year here in Mexico at the world championship (triathlon event)...I hoped to be among the best three, but during the cycle I made some mistakes with changing clothes, it was cold and I didn't put on enough clothes...eh and I didn't eat adequately so in the run, when I was in third position...I had to start walking in order to finish the race, I was in the end second last...it was not the highlight of my career (laughs) (UM9, Deca-ironman interviews, 2002).



Best experiences

When asked to recall their best ultra-experiences, 40% referred to personal achievements, 30% recalled winning ultra-races, while 10% cited aesthetic experiences, previous races and support derived from the ultra-endurance scene (Figure 4.17). With

regard to personal achievements, UM9's experience in a triple ironman explains the concept

Yea, this was in [names an ultra-competition], nobody knew me, I came there as a nobody and I went there just to look and try and get the time below 24 hours and then after the swimming I was in third place and then in the cycling I fell behind to place 8 or 9 and then in running I improved, I got one place after another then the best 5 dropped out, they were worn out and after about one marathon I was at place 4 [I thought it] might be possible and that I could even improve, I could get faster and I was in second place and it was very unbelievable and then the leader began to walk and I was still running he reached the finish line about half an hour before me but that was such a great feeling (UM9, Deca-ironman interviews, 2002)

Winning was mentioned by 30% of the sample, including UM11 “The deca, yea I think it was my win here [2000] I think if you are in good condition, it's a nice race because you go in the maximum of your limits” (UM11, Deca-ironman interviews, 2002) Additionally, UM3 recalled an experience when they won an event “My best was the 2,000K [running race] because I won, because there were the strongest men triathletes I beat the men as well I am proud, very proud of that race because it's the longest on an 800 meters track ”(UM3, Deca-ironman interviews, 2002)

One of the sample mentioned an aesthetic experience as their best experience

in the Hawaiian Ironman and I was swimming in the ocean in the waves a baby whale came and swam with us and at first I was nervous, but then I like it the whale was so amazing she was beautiful and it was a great experience (UM17, Deca-ironman interviews, 2002)

One triathlete, UM12, felt that his previous race was always the best experience “The last race you do is always the best one” (UM12, Deca-ironman interviews, 2002)

Athlete's perceptions of the importance of mental skills

When the triathletes were questioned about their opinions regarding the importance of participants having strong mental skills in the deca-ironman, the response was unanimous, with all the respondents reporting their views that mental skills were of primary importance. The following excerpts demonstrate this view:

the most important is the mental, definitely the mental, you must have a your mind must be really strong if you have not got this you will not finish I think ” Furthermore, UM11 claims “ it’s the head, it’s all the time in your head if there’s a part of your head, even a little part of you head that isn’t OK, all is history it won’t work it’s too difficult (UM11, Deca-ironman interviews, 2002)

A fellow competitor, UM4 concurs with this view:

I think the first [most important factor towards deca-ironman success] is you have to have a very big mental and I don’t think everybody has this a good mental means you have experience and you know yourself, you know where you can go and for how long you can do something (UM4, Deca-ironman interviews, 2002)

The importance of mental strength to complete the deca-ironman was allocated 51% by UM18 who reported:

your head must be eh 51% is in your head if your legs fail you can say ‘oh I feel lousy’ you can quit, but you can also say ‘my legs hurt, it’s an experience, let’s see how far I can go with these legs’ and this is all in your head (UM18, Deca-ironman interviews, 2002)

Experiential learning

To mentally and physically prepare oneself for an event such as the Deca-ironman, results demonstrated that one needs to go through other ultra-endurance experiences where experiential and progressive learning provides a strong framework from which the triathletes can learn and improve coping strategies and race tactics.

An increase of knowledge regarding mental preparation gained through previous

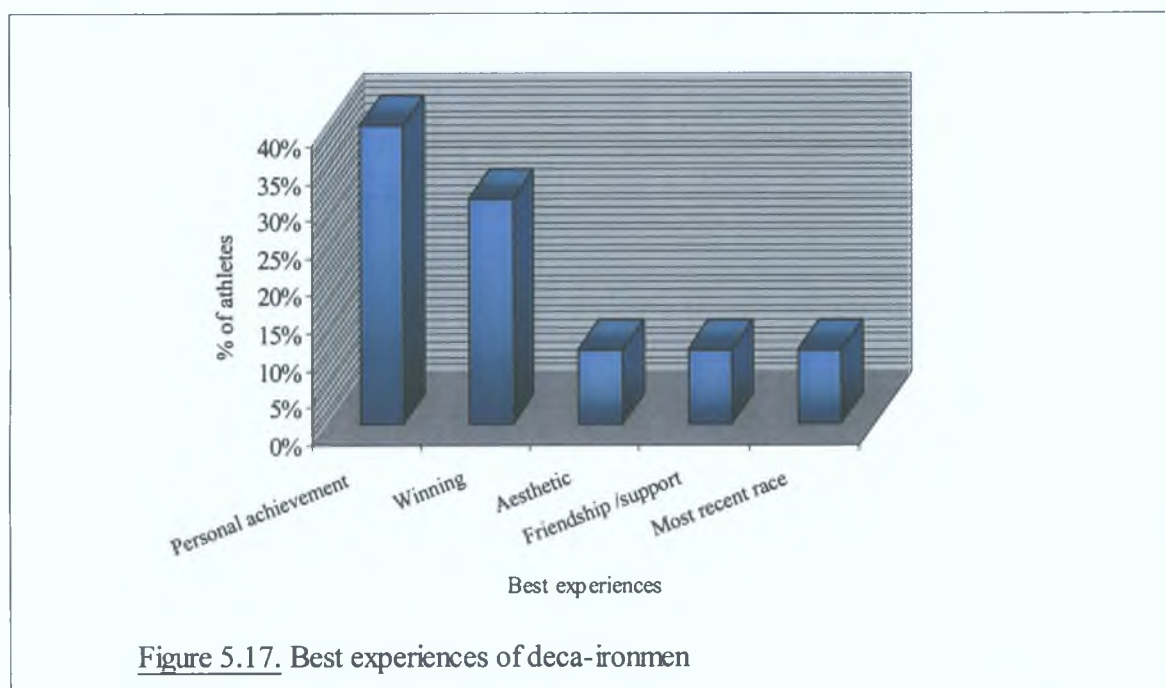


Figure 5.17. Best experiences of deca-ironmen

ultra-races was noted by 40% of the sample. For example the following excerpt involving thought stopping: "...if I feel I am going too long [without a food break in the swim] I use a skill I have learnt over my time doing these ultra-races...I have learnt the ability to convert negative to positive thoughts..." (UM17, Deca-ironman interviews, 2002).

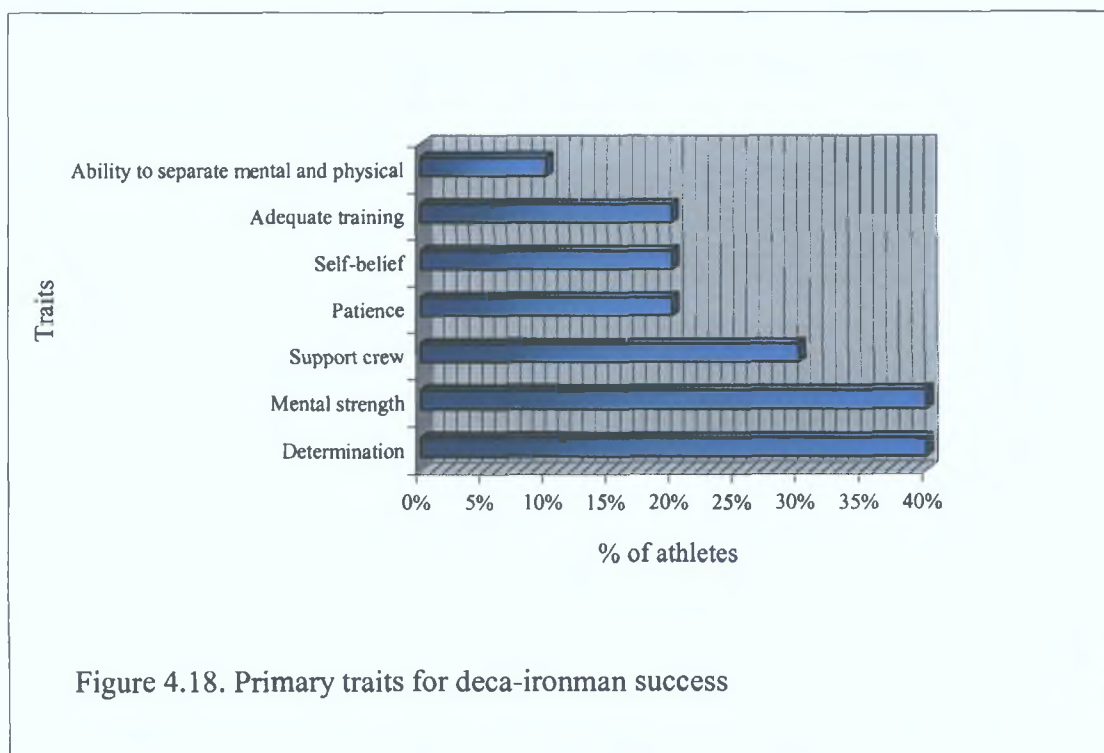
Additionally the benefits of experience gained through past races was explained by UM9 and UM2:

...now after so many races I know how to manage the situations and its quite easy...I know at which speeds I would swim, I know at which speeds I should cycle and run, I know when to change shoes and things and its now routine... (UM9, Deca-ironman interviews, 2002).

...the preparation is in the materials and the equipment and the other thing is nutrition...that's a huge thing for these ultra-distance and that's an area that I've really been struggling with for a long time [nutrition] and I'm getting close, well getting better and better, and I've virtually cracked it now for myself... but everybody's different and every race is different... em that [nutrition] combined with things like, well normal things like blisters... blisters...one race you use a philosophy and it works and you don't get a blister, you try that for the next ten races and you get a blister every bloody time...there's no hard and fast rule.... the main thing which I've discovered is to cover as many options as you can...when you go into an event, it's to keep your options open...it's not a case of in this race I'm going to do this this this and this, its a case of going in there and saying, well these are the things which could happen, these are my solutions if they do...bang...(UM2, Deca-ironman interviews, 2002).

Most important factors for deca-completion

When questioned on what they, the sample triathletes, felt were the three most important factors towards deca-completion, the answers were broken down by content analysis provide an overview of what the triathletes felt were integrally important traits required for deca-success. These can be seen on (Figure 4.18) below.



Determination

Four of the deca-ironmen cited determination as being one of the most important traits for deca-ironman completion. Determination was cited as a requirement to enhance one's abilities to get through the tougher periods of both the competition and pre-race training routines. As UM11 explains: "To finish these races you need determination because sometimes you are tired and you want to sit down and quit, but you can't if you want to finish" (UM11, Deca-ironman interviews, 2002).

Mental strength

The importance of prospective deca-ironmen having strong mental abilities was reiterated by four of the deca-ironman. Mental strength was cited as being important as: "you have experience and you know yourself...you know where you can go, how far you can go and for how long you can do something..." (UM4, Deca-ironman interviews, 2002). Furthermore UM11 reports: "The most important is being good in the head...definitely the head...your mind and your mental must be really strong...if you have not got this you will not finish I think..." (UM11, Deca-ironman interviews, 2002).

Support crew

Three of the sample reported that support crews were amongst the top three most important factors for deca-success. UM3 reported that support crews not only physically help the athletes, but they also assist them mentally through encouragement and mental support.

Patience

Due to distances involved in the deca-ironman, two of the sample highlighted that competitors must have the patience for the duration of the race entirety and pace themselves accordingly. This is explained in an excerpt from UM18's interview: "First of all you have to be patient because the distance is very very long...you really have to be

patient, you do lap by lap by lap you just wait and sooner or later the last lap will be done patience ” (UM18, Deca-ironman interviews, 2002)

Self-efficacy

Two of the sample reported that having belief in oneself was of utmost importance when attempting a race of deca-ironman caliber “It is possible for everyone to do anything they dream of if someone has a dream they must have self-belief and also courage ” (UM17, Deca-ironman interviews, 2002)

Adequate training

Before even contemplating a race such as the deca-ironman, sufficient and correct training regimes are amongst the grouping concerning factors of utmost importance in deca-ironman competition, a fact that was reiterated by two of the sample “ You have to be trained, you can’t do a deca with 5 hours of training a week for three months ” (UM18, Deca-ironman interviews, 2002)

Ability to separate the mental and physical

To achieve optimal performance during the deca-ironman, one deca-triathlete reported that it was of utmost importance for athletes to have the ability to separate their mental and physical constructs By treating mental and physical aspects separately, UM17 reported that it encouraged the athlete to get into “a good and condition for the race” (UM17, Deca-ironman interviews, 2002)

Phenomenological impactors final dimensions

Phenomenological impactors / personal / experiential wisdom

This final dimension involves personal learning experiences of the deca-ironmen, where they have experientially learnt skills which ultimately assist them in coping with adversities presented during ultra-endurance events of deca-ironman caliber For example, unique deca prerequisites, their opinions regarding the toughest part of deca

plus examples of specific lessons learnt through past experiences which play beneficial roles in their deca-performances

Phenomenological impactors / personal / historical influences

Throughout the lives of the each of the deca-ironmen participants, events which have happened throughout their personal everyday lives, as well as the ultra-endurance aspects of their experiences, which play influential roles in their ultra-endurance performances come under the auspices of this dimension. It concerns instances involving activity history, cathartic incidents, personal views, plus the triathlete's best and worst experiences

4.6 Deviant cases

One deviant case which emerged from this research investigation, was cooperation from fellow triathletes. This was finally coded as “peer assistance”, under the auspices of the final dimension “performance impactors”. The researcher recorded in their field notes that there was great cooperation between the triathletes, if they could help each other in any way, for example lending a bicycle wheel or medication they would willingly assist their fellow competitors. This is portrayed in the following excerpts: “It is difficult for other people to understand what you are doing and so here are the same people thinking the same, doing the same, its easy and when they have the possibility they help each other” (UM9, Deca-ironman interviews, 2002). UM4 experiences encouragement from fellow triathletes: “usually every triathletes will encourage the other triathletes in this environment everybody is positive, everybody comes here to finish it” (UM4 Deca-ironman interviews, 2002).

An additional deviant case involved advice for a triathlete for after the deca-ironman. When an individual has brought his or her body through mental and physical barriers, exceeding normal levels of pain and sleep deprivation, they must almost debrief their minds after the deca-ironman is finished according to one of the subjects. UM2 commented

...when you push yourself to your own limits, your emotions are very kind of wild for a long time, unpredictable almost, and its like you have to calm yourself down...em you have to go through that em... you imagine I suppose a cat or something which has been brought through a very traumatic experience....you have to regain its trust or whatever, and you go through a very similar kind of thing... (UM2 Deca-ironman interviews, 2002).

4.7 Observations regarding deca-ironmen specific strategies

The following comments incorporate advice directly given by the deca-ironmen for future upcoming ultra-triathletes intending to attempt the deca-ironmen.

- One example of advice for future athletes was to ensure that the individual realised that ultra-endurance is not suitable for everyone and that people should persist only in ultra-distances where they gain enjoyment.
- Individuals should persevere to overcome barriers, while continuously having belief in oneself. Nothing is impossible.
- It is important for individuals to set goals to attain their dreams.

The deca-ironmen employed specific deca-tactics relevant to the race which included the following:

- The deca-ironman is the a unique event and should be treated as one. Competitors must pace themselves, accept the fact that the race continues for many days and not hurry.
- Results from the sample group show that 100% of the triathletes realised the importance of having strong mental capacities to complete race of the deca-ironman caliber.
- With regard to unique strategies to overcome pain, competitors discussed various means of practical improvisations. For example, during the cycle UM5 reported extreme pain in his shoulder after the swim and improvisation was a strategy used: “...I cut it [an American football] in half and I put it on my bull bars and I turned my

bull bars out there for my chest, my chest leaned against it and so my shoulder was not under tension...I improvised a way to let my shoulder...take pressure off my shoulder...” (UM5, Deca-ironman interviews, 2002).

- Furthermore evidence illustrates the importance of comfortable and suitable and wide ranging equipment choice to prevent chaffing, blisters and sores.
- To cope with pain, boredom and fatigue, pace adjustment proved of utmost importance for the sample.
- A positive mental attitude for training and race preparation is essential
- Awareness of the ‘goldfish syndrome’. With regard to running around a track, UM2 referred to the repetitive motion: “people call it the goldfish syndrome, coz it’s like a goldfish...you just wipe your brain every couple of seconds, so your long term memory is fine but your short term memory is just confused, you can’t remember anything for more than a couple of seconds” (UM2, Deca-ironman interviews, 2002).
- In ultra-endurance races, when cognitive strategies fail to overcome the incessant pain, athletes reported using other strategies. For example, taking a shower and momentarily altering the scene, emotional release through crying, changing clothing, taking a rest and ‘feeling human again’.
- Avoid restarts as much as possible as when the deca-competitor sits down to rest, one of the reported hardest factors involved the restarts back into competition due to, amongst others, pain and muscle stiffness.

Researcher observations perceived that sleeping requirements ranged widely in duration, relating to the individuals needs and deca-goals during the event, which resulted in sleeping times ranging from six hours nightly to the 8.5 hours which one athlete took throughout the entire event. (This individual won the event

- In comparison to other shorter triathlon distances the researcher observed that the race atmosphere and change over between disciplines was relaxed and not rushed. A high percentage of the triathletes took the occasional shower during the competition, while one competitor shaved every day (FN).
- The placings were posted up twice daily, whereupon all of the competitors would almost immediately transport themselves over to see the present position results. This may demonstrate competitiveness? Unlike other sports which the researcher has witnessed, the positions may change dramatically overnight (FN/V).
- During the run triathletes would take breaks to immerse their feet into buckets of ice to soothe and cool them. One triathlete was so exhausted he continuously put his feet in the ice while his socks still remained on (FN/V).
- The field notes and video footage recorded that during the night there was an air of a “war-zone” around the track, especially during the run, as everything was quiet while silhouettes of triathletes ran, walked, and staggered around. A high proportion of the deca-ironmen would continue to compete during the night, which appeared to be tough for some of the triathletes. Some of the competitors were wandering around the track wrapped in a blanket to fend off the cold night air, while everyone’s pace seemed generally slower in a quiet, eerie silence, except for sporadic lap counters announcement of a triathletes number while they passed the lap counter tent. Reasons for continuing through the night may possibly be to gain a psychological edge on their competitors, as while others slept, miles were increased and positions of the placings board changed, even if it was momentarily. The author feels that this self-deception seemed to motivate the athlete to try harder and push further. More simplistically, reasons may have been simply to gain distance in the cool of the night.
- Swimming (24 miles)
In preparation for the swim, which is further than the English Channel, the triathletes tape their nipples to prevent burning or abrasion from the wetsuits and the water. The

full compliment of 2002 athletes donned wetsuits to commence the swim, while sporadically taking the wetsuits on and off throughout the twelve to thirty-two hour swim, depending on personal body temperatures. Alternatively to taking off the wetsuits, three of the athletes put ice down their wetsuits to cool themselves down. Furthermore, although the wetsuits provided additional buoyancy for swimmers who naturally swim lower in the water, video footage and field notes demonstrated that for some of the athletes, they would have swum more effectively without wetsuits as their swim action was at times above the water surface when in the wetsuit, which counteracted their efforts of propulsion through the pool.

- Biking (1120 miles / 940 laps)

Specific to the biking discipline, the main problem appeared to be derived from saddle sores. From being immersed in a pool for such extensive durations, it is obvious that athlete's skin will be soft for quite some time until the body 'dried out'. Athletes used various methods to prevent and treat saddle sores, ranging from applying vaseline or nappy rash cream to the appropriate areas, to taping up the athlete's rear quarters entirely. All the deca-triathletes had gel saddles for extra comfort. UM2 tightly wrapped thin cord around the neck of the gel saddle to prevent movement, hence preventing further friction. Handle bar set-ups were personable, with 60% of the athletes used bull-bars, while UM12 used a non-standard set-up, using upright, swiveling bars, which the author assumes, was to prevent stress on his back.

- Running (262 miles / 227.7 laps)

During the running section of the deca-ironman filed notes and video footage demonstrates that only three of the present sample consistently ran during this discipline. Of the remaining sample members, two had retired, while five primarily walked throughout this phase

4.8 Motivation

The following section provides results concerning motivations which deca-ironmen have for three specific areas, namely completing the deca-ironman, participating in ultra-endurance and the pertinent motivational aspects of training. A diagrammatic representation of how the category of motivation emerged can be seen in Figure 5.19.

The relevant “hows” and “whys” individuals take part in ultra-endurance and events of the deca-ironman caliber ultimately emerged as extrinsic (80%) and intrinsic (70%). Findings revealed that 80% of the sample partake in ultra-endurance activity for extrinsic values, while 100% of the individuals are motivated through intrinsic means. Furthermore, self-efficacy motivates 60% of the sample (Figure 4.20).

Motivation for deca-ironman

Reasons why the sample triathletes participate in the deca-ironman are derived intrinsically or extrinsically, which was succinctly coined by UM5:

It's hard for everyone, each one is doing it against the distance. It's the same target, but some of them has a second target to win, but for others there is the finish and do the best they can. (UM5, Deca-ironman interviews, 2002)

Extrinsic motivation for participating in the deca-ironman

Results illustrate that 80% of the sample have extrinsic values for participating in the deca-ironman event. One triathlete, UM11's motivation for competing in the deca-ironman was reported with great clarity: “This year I come to win the deca and break the world record for the deca.” (UM11, Deca-ironman interviews, 2002)

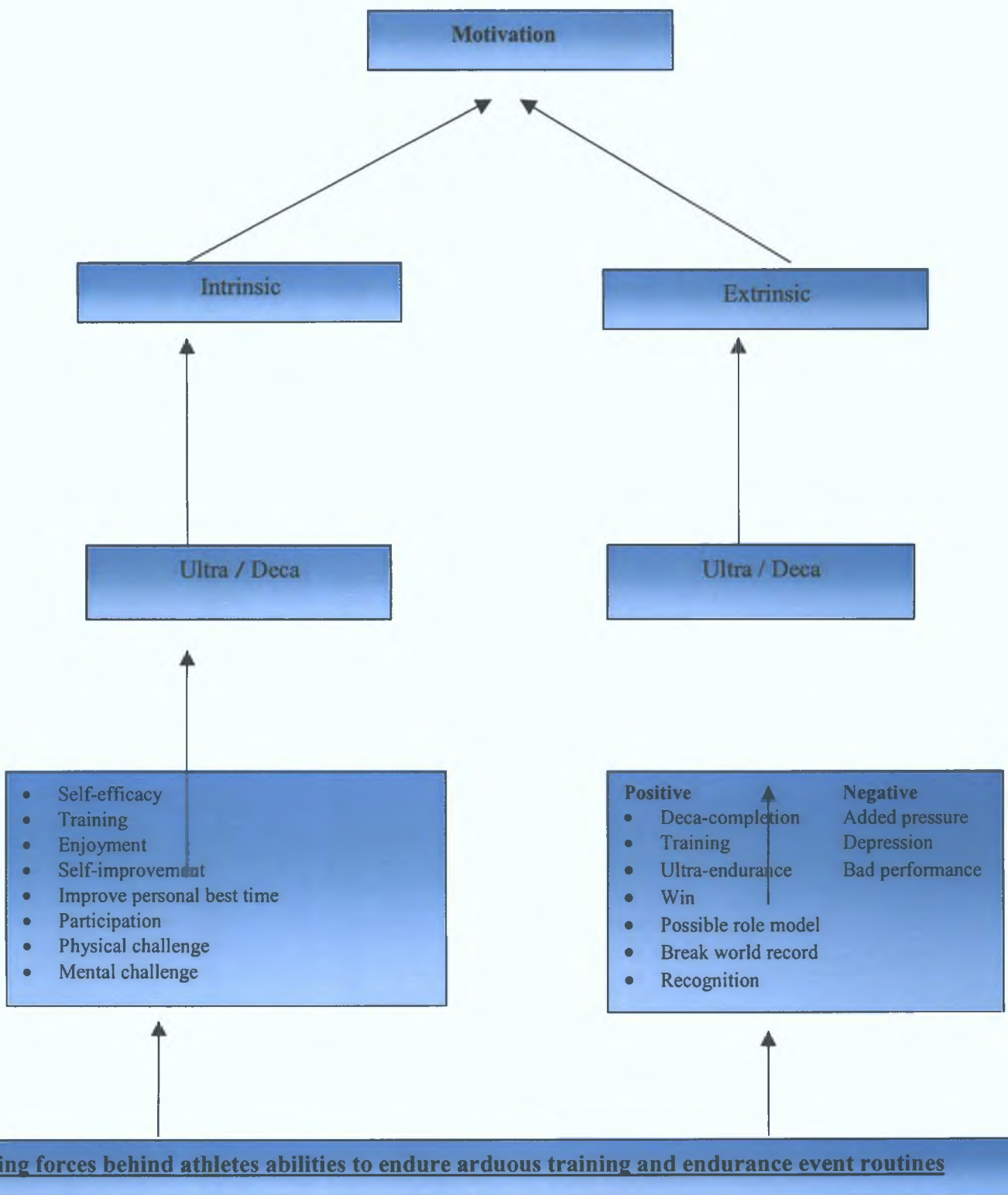
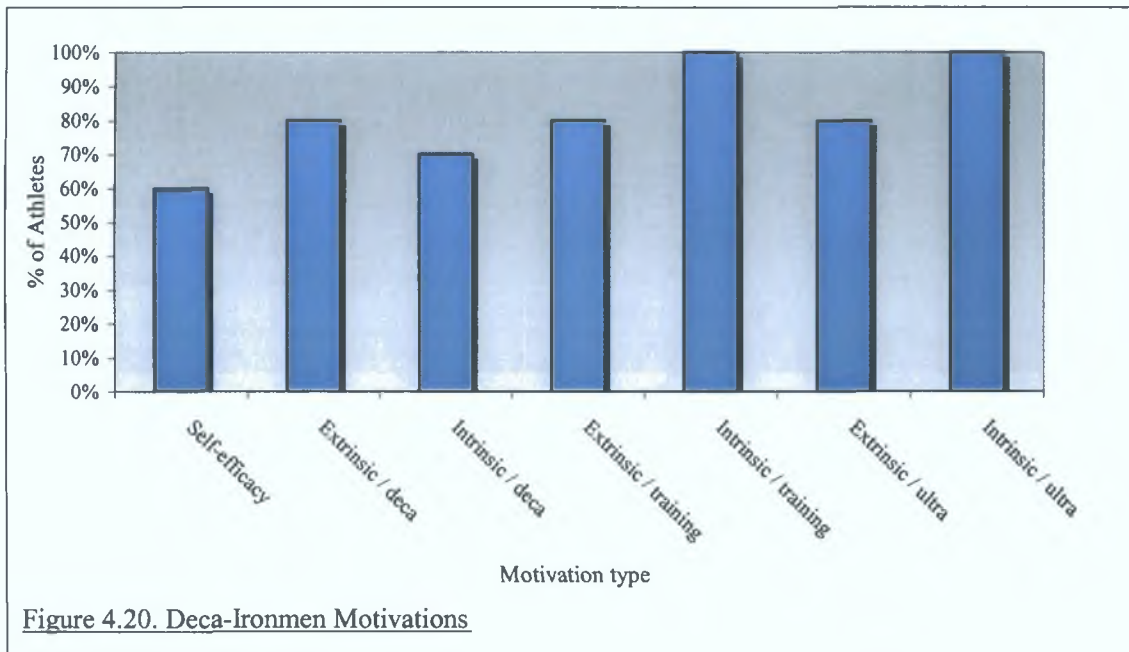


Figure 4.19. Diagrammatic representation of the emergence of general dimension Motivation



A fellow like-minded triathlete reported that his reasons were not solely for participation factors, as was demonstrated, through the translator, that UM6 also wanted to win:

His motivation is to leave his trace behind as a champion... basically what motivated him was that he was world champion of the double ironman and a world champion of the triple ironman and now he is world champion of the deca... (UM6, Deca-ironman interviews, 2002).

Intrinsic motivation for the deca-ironman

Findings demonstrate that 70% of the sample have intrinsic values for participating in the deca-ironman which included enjoyment, to finish, and a sense of personal achievement. Details of these are described in the following excerpts: “I just want to enjoy it and to experience it all... I just want to be part of it and feel my body, my head and just go to the limits..” (UM18, Deca-ironman interviews, 2002), plus “My first

aim is to finish and my second aim is improve my personal best time” (UM9, Deca-ironman interviews, 2002) Additionally, UM4 gave the reason that he wanted to push his body “That’s why we are here , because we have a lot of experience in this kind of race and we want to go further and we want to experiment with something else and see what we can do [and after the deca-ironman] I know I will be a better man, a better father with my daughter (UM4, Deca-ironman interviews, 2002)

In addition to winning, UM6 also competed in the deca-ironman for social support while meeting his fellow competitors and friends “50% of his motivation is that he’ll see his [fellow competitors], like a family that he sees competition after competition ” (UM6, Deca-ironman interviews, 2002)

Feelings of accomplishment motivated UM5 to compete in the deca-ironman “It’s because its when you did it you said I have done it it’s a personal achievement it’s really a great feeling it’s like pride, I feel proud that I succeed ” Alternatively, UM5 also describes that once he has completed the deca-ironman, that goal is accomplished and returning to attempt that same goal was not, at the time of the interview, an option again in the future “If I did the deca I don’t have to do it again I can say I did it it was a success because I got to the finish line, but never again I am sure of that (UM5, Deca-ironman interviews, 2002)

For the deca-ironman and ultimately the double-deca, UM3 compared the event to life in its entirety

[I realise] I am going to be here for a month [at the track for the double deca], but what is a month in the whole life of a person its nothing, nothing this will be passed I want to do it i am going to be the first woman in the world we are so few because we start with six people and we finish with four people it’s another challenge, a major challenge because it’s longer its adventure (UM3, Deca-ironman interviews, 2002)

Motivation for ultra-endurance

Extrinsic motivation for ultra-endurance

Motivations given by the deca-ironmen competitors for taking part in ultra-endurance generally as opposed to endeavoring to complete the world's longest triathlon, (with the exception of the double deca- ironman which has only ever been held on two occasions), provided insight into how the individuals maintain continuous motivation for training and other ultra-events. Motivations given by the triathletes for participating in ultra-endurance, from an extrinsic perspective, were derived from a variety of sources. For instance, UM9 used his exploits as an example to others:

I am a doctor and I like to use myself as an example to others who say they haven't the time to do certain things, whether it is sport or other things. I say to patients who say they haven't time to exercise 'look at me, everyone has time when they make time' (UM9, Deca-ironman interviews, 2002)

Another perspective was provided by UM4, who reported that he always sought reward and recognition for his achievements. "You know me I am like a dog, when I do something, I want recognition, and a gift after it's OK like you did it, you can have a beer now it's like a reward" (UM4, Deca-ironman interviews, 2002). Additionally, UM5 also liked the recognition. "They are proud [his workmates] the company has 2,200 people and there are people there I don't know and when they meet me they say "hi UM5" and it's really encouraging for me." (UM5, Deca-ironman interviews, 2002)

One of the triathletes, UM11 was feeling disillusioned about his motivational values and perspectives and was in the process of attempting to alter his approach and motivations:

The first reason is the personal challenge when you know that you can win or when you know that you are serious, your challenge changes and maybe it is better for you to stay with the personal challenge, this is better I think take pleasure to run and its not so difficult because sometimes when you have a bigger objective and big target you don't think the same its not that you don't enjoy it but your motivation

is not the same...when you are here for the challenge its the challenge that makes it, but when you are here to win its not the same challenge and I think its more difficult because you have the pressure, the depression and I think its better to find a solution to stay in the personal challenge...and enjoy it more...(UM11, Deca-ironman interviews, 2002).

Intrinsic motivation for ultra – endurance

Intrinsic values for participating in ultra-endurance were accounted for by the full compliment of triathletes in this research investigation. Intrinsic values primarily involved challenging the body and mind to go further throughout ultra-endurance ordeals, examples of which are cited in the following excerpts:

“I love the personal challenge...I love to challenge my body and also to compete” (UM11, Deca-ironman interviews, 2002). Concurring with this, UM9 reported: “I love to push my body, being a medical doctor I love to see how far the body can go, I love to see how the system copes in different situations...I also love being outside, whether it is on my bike, running in the hills or whatever...” Additionally, “...as a medical doctor in a clinic we are always inside and sometimes in a sterilized atmosphere and this is not my favorite atmosphere so every minute I can I want to be outside in nature... (UM9, Deca-ironman interviews, 2002).

“...It’s the challenge to my body and my mind, seeing what I can do, also it’s a privilege that I have been given to use...by God”(UM17, Deca-ironman interviews, 2002).

I love pushing my body...I also love the physical...I also think its good for women to be able to participate in a sport on equal levels to men...it is up to some women to take the chance to compete with men equally (UM3, Deca-ironman interviews, 2002).

When asked why he loved ultra-endurance so much, UM4 replied: “Because you have to always think of the race and dig deep inside...you always dig inside and you see

something new at every step and after you have seen this you know yourself better because it was a new experience ” (UM4, Deca-ironman interviews, 2002)

One triathlete cited that one of the benefits of ultra-endurance was that it teaches individuals to cope with general, everyday problems more efficiently

I think its not for public recognition, I think its personal, to be a better man afterwards, because after a race like this you don't see life in the same way afterwards and if you have problems in life, its easier to get through those problems (UM4, Deca-ironman interviews, 2002)

Furthermore, UM2 explained the intrinsic values of an ultra-endurance package in its entirety

It the challenge its not so much the competing, its the amount of work you have to do before, during and afterwards the preplanning, the evaluation of what went wrong the time before , improvements for new things coming through, new technologies (UM2, Deca-ironman interviews, 2002)

Triathletes of the caliber in this investigation have, in the mainstream, had years of ultra-endurance experience, for example one of the sample has completed over seventy marathons It is therefore understandable that 30% of the sample cited progressive boredom with shorter distance as an aspect of their motivations for ultra-endurance

I had been running in marathon running for a few years, then it was kind of boring, I knew I can run a marathon so I tried an ironman and after a while it became boring and I said to myself if I can do an ironman I can do a double and the story went on I said if I can do a double I can do a triple (UM18, Deca-ironman interviews, 2002)

UM9 concurs with UM18's thoughts "I started running smaller races and then I became bored with these and then I did many marathons also this became boring for me so I entered a triple ironman and I loved it "(UM9, Deca-ironman interviews, 2002)

I began with a short triathlon and you know when you do something and you succeed so during the year each year I tried something harder [then]I did the double and I said I would like to do something more I want to do something I think is the most hardest and challenging it's the challenge and you keep in motivation that way (UM5, Deca-ironman interviews, 2002)

Self efficacy

Results illustrated that 60% of the triathletes' motivations for ultra-endurance were influenced by self-efficacy The following two excerpts demonstrate the triathletes self-belief of deca-completion "I am mentally strong because I did a double and a triple ironman and I knew that I could finish it and I finished it and it the same thing for the deca I know I will finish it" (UM4, Deca-ironman interviews, 2002), while UM18 reported "Maybe this is my last big race but I want to finish it and I guess I will finish it" (UM18, Deca-ironman interviews, 2002)

One triathlete, UM9 reminisces about past times when he seemingly had higher levels of self-efficacy " In some years I was so good it was my goal to win I was regularly among the first three, but nowadays I just go for fun, so this means I go at the race and try and do my best (UM9, Deca-ironman interviews, 2002)

Dedications

Dedications were cited as a motivation for persistence in ultra-endurance events by 30% of the sample, for example

Yes sometimes its one for motivation for me, [dedications], but not always its in the head, its all the time in the head you can have a big motivation, you can have some personal dedication, but if there is a part of your head , even a little part of your

head that isn't OK, all is history, it won't work (UM11, Deca-ironman interviews, 2002)

Additionally, UM18 was partly dedicating the deca-ironman to her deceased husband [Karen are you dedicating this deca to your husband?] “yea more or less” (UM18, Deca-ironman interviews, 2002)

Motivation final dimension categories

Motivation / deca completion

The deca-ironmen reported various underlying personal reasons for their specific desires of deca-ironman completion, which were derived both intrinsically and extrinsically. These concepts plus reports of the athlete's references to self-efficacy are covered in this final dimension.

Motivation / ultra-endurance

As opposed to solely involving motivations for completing the deca-ironman, this particular final dimension encompasses the extrinsic and intrinsic motivations the triathletes have for participating in ultra-endurance generally. Self-efficacious values of the athletes are also presented under this final dimension.

Motivation / training

The motivation behind the deca-ironmen continuously overcoming tough training routines, which is required to compete in ultra-endurance events, comes under this final dimension. It contains the extrinsic and intrinsic values which the deca-ironmen referred to in particular reference to enduring their training schedules.

Chapter 5

Discussion

“You simply could not get through [the Vendee Globe] if your motivation was money or fame. It wouldn’t be enough in toughest moments – anything short of total commitment and you will probably fail” (Turner, 2001, p. 85)

5.1 Overview

The quote above mirrors the findings from the present research, whose purpose was to examine the cognitive strategies ultra-triathletes use to cope with the various adversities experienced throughout the deca-ironman. Additionally, the deca-triathletes’ underlying motivations for participating in the deca-ironman and other ultra-endurance events were also explored, providing the investigator with an opportunity to gain an understanding of what is required to compete in events of deca-ironman caliber.

The deca-ironman triathlon was chosen as an area for investigation as it incorporates an ultra-endurance event requiring extreme levels of perseverance and mental strength. The deca-ironman entices a unique class of triathletes who, at the time of writing, totaled a quorum of less than fifty successful circuit competitors, all of whom inevitably had to push themselves towards their physical and mental limits throughout the event.

In the following chapter the results concerning the cognitive strategies used by deca-ironmen are discussed. This is followed by a section examining the findings concerning the motivational profiles of the sample group which emerged through the analytical process and concludes with an insight into personal requirements necessary to complete the deca-ironman. Finally, recommendations for future deca-competitors and coaches are presented. All results are discussed in light of the current research.

Introduction

Findings illustrate the ceaseless mental and physical challenges faced by the deca-ironmen throughout the event, as are described in section 6.2.1, plus the continuous distractors each of the deca-triathletes had to overcome, derived from both positive and negative sources. Results demonstrate that to overcome such adversities, the triathletes used various coping techniques, such as avoidance, emotion and problem focused coping strategies. Findings also demonstrate that the deca-ironmen appear to have the ability to convert potential stressors into less threatening situations, by incorporating, for example, avoidance or detachment coping strategies, providing support for Anshel et al's (2001) research involving elite athletes.

The manner which deca-ironmen convert adversarial, negative sections of the deca-ironman into positive, more manageable concepts, utilizing cognitive techniques such as goal setting and attentional techniques, assist the individuals in overcoming the tougher, more challenging sections of the event. These findings provide further support for Koivula and Falby, (2001) and Anshel et al's (2001) research involving elite athletes. Finally, the fact that the deca-ironmen overcome some adversities which were unpredictable in nature, dictates that the deca-ironmen incorporate flexible coping strategies into their race routines, where the individual can switch from one cognitive technique to another with apparent ease. This appears to be beneficial as versatile coping strategies assist the competitors in overcoming multi-variable adversities which emerge in no organized manner, so it is therefore necessary that the deca-ironman can adjust their coping techniques accordingly.

5.2 Adversities / Cognitive Coping Strategies

5.2.1 Adversities

The results of the present thesis demonstrate that adversities, evolving from various sources, potentially created negative impactors, thus causing performance depreciation, and may, in many cases, have reduced athletes' psychological functioning. The findings illustrate that the adversities deca-ironmen experienced not only evolved from internal physiological and psychological sources, but also were derived from

external variables. A high proportion of the adversities reported by the deca-ironman sample were generally predicted by the deca-triathletes, specifically areas involving pain, fatigue and boredom. However, contrary to the extensive ultra-endurance experiences of the sample, some unpredicted adversities did emerge, such as the unhygienic pool conditions and ducks on the track, highlighting the fact that acquiring coping mechanisms required for ultra-endurance triathlon involves a continually never-ending learning process.

5.2.2 Cognitive coping strategies

The coping section is divided into the two final dimensional categories, namely “progressive knowledge” and “progressive enlightenment”. These refer to the learned or natural cognitive strategies athletes have for coping with adversities. This following category ‘progressive knowledge’ incorporates cognitive strategies deca-triathletes specifically learn to improve their overall performance levels in endurance sports.

Meditation / relaxation

Meditation involves consciously relaxing the mind, while the physical aspects follow, thereby potentially enhancing performance. Even though past research has primarily investigated the physiological aspects of meditation, the fact that 60% of the present sample reported using meditative techniques as a coping strategy exemplifies the inexplicable void of knowledge concerning the psychological aspects and effects of meditation in sport. The fact that such a high percentage of the present elite sample group incorporate meditative techniques into their endurance performance strategies surely replicates that it is most probably utilised in other sports, and if not, this is an area which future athletes and their coaches should introduce into their mental training packages. Gathered deca-data explains that the various meditative techniques promoted relaxation and focus, assisting the deca-triathlete’s coping strategies in various ways. Through meditative techniques, the deca-triathletes endeavored to lower their heart rates and run or cycle or swim in a more relaxed manner to conserve energy. The findings demonstrate that the relevant deca-ironmen were able to maintain a steady, almost monotonous rhythm, which helped them maintain “painfree” progress when possible. In a race of

such longevity as the deca-ironman, the part which these meditative concepts play seems of utmost importance for the triathletes concerned

The fact that meditative techniques used by relevant the deca-ironmen appear to have assisted their coping capacities, supports Jones and Hardy's (1990a) findings that elite athletes incorporate relaxation techniques into their routines for improved performance. Even though Taylor and Taylor (1998) support the benefits of meditation, specifically for pain reduction, the fact that two of the present sample, who are from the top elite group reported never using meditation, highlights the reality that meditation does not prove to be an essential cognitive ingredient for deca-success

Imagery

Imagery usage did not amount to the high percentages found in other investigations involving elite athletes, such as Orlick and Partington (1998, 85%). However although there are some researchers who are doubtful of the benefits of imagery (Raglin & Wilson, 2000), 50 % of the present sample found that imagery produced beneficial results, assisting their coping capacities for the deca-ironman

The findings from the deca-ironman would suggest that external imagery appears to provide more beneficial results compared to internal imagery, as it is more widely used by these experienced deca-ironmen. The fact that the deca-triathletes imagery usage was primarily external or transportive in nature appears to be an attempt by the competitors to remove themselves from the deca-environment and to regain images of comfortable and pain-free environments. Although Bull (1989) found that his subject used kinesthetic imagery to cope with the extreme hot and cold temperatures present throughout the ultra-run involved in his investigation, the present findings did not display any similar references, even though at times there were excessive extremes in both ends of the temperature spectrum. Perhaps kinesthetic imagery was used by the deca-ironmen for temperature regulating purposes. Perhaps this is an area which could be introduced into future deca-ironman competitor's mental training packages

When asked to describe specific mental coping strategies, one of the deca-ironmen, (UM17), described cycling on his training bike in a situation specific environment, with candles, smells and soft, rhythmic music. The fact that this individual

had, over six years, trained themselves to fall asleep while on the training bike, not only demonstrates the dedication, duration and focus of training, but also illustrates how one can utilise mental transference of locations to benefit oneself. By utilising transportive imagery and relocation techniques, this individual demonstrated the benefits of relocative strategies, where, when an individual feels the onset of fatigue or pain, they can lock the mind into this “zone” of familiarity, encouraging positive, comfortable feelings, thereby distracting the mind from the present problem area.

Furthermore, significantly 30% of the sample visualized themselves crossing the finishing line demonstrating positive thoughts and self-efficacy regarding deca-completion, while also enhancing motivation and encouraging the triathlete to persist with their task of finishing the event. Additionally, visualisation to put pain “aside” proved to work for 20% of the deca-sample, supporting similar findings from Dale’s (2000) investigation involving elite decathletes. By visualising the pain away from the body, feelings of pain would subside, allowing the triathlete to concentrate on maintaining adequate progress. This strategy could be widely used in practically any situation, which must prove significant for other sporting disciplines.

Cognitive coping strategies / progressive enlightenment

Progressive enlightenment involves coping strategies which deca-ironman have obtained naturally throughout their lives, where the skills are continuously enhanced through lifetime experiences.

Target setting techniques

It is clear from the findings, that the full complement of deca-ironmen allocate significant durations, in their thoughts, if not physically writing down, setting goals which they plan for both training and specific events such as the deca-ironman. Additionally, all the deca-triathletes sample, without exception, broke the deca-ironman into smaller more manageable goals, with a high percentage of the triathletes constantly calculating laps remaining, present positions, time, ironman distances covered etc., concurring with the ultra-swimmers in Acevedo & Hollander’s (2000) investigation. It seems that this not only assisted the deca-ironmen in breaking the event into

comprehensible and manageable distances, but additionally the process acted as a dissociative strategy, at times assisting in abating problem areas such as pain, from their minds

With regard to types of goal setting, findings demonstrate that that no particular goal setting format proved prominent amongst the deca-ironmen sample. The individual preferences were wide ranging and personable to each triathlete's deca-ambitions, incorporating time, place, process, performance or outcome goals throughout the deca-ironman, which concurs with Kingston & Hardy's (1994) investigation, who reported that differing goal strategies are beneficial in varying situations. Although the deca-ironman sample compartmentalise continuously, a small section of the sample (30%) spent time focusing on the outcome goal of deca-completion, which concurs with Durand's (2001) research, whose results demonstrated that a high proportion of the triathletes focused on process goals as opposed to outcome goals. Some of the deca-ironmen, whose priority was winning or place goals conflicts with the ultramarathoners in Acevedo et al's (1992) investigation who set time, achievement and self-set goals as opposed to winning or place goals. However, although the goal choices vary, results demonstrate that deca-ironmen were open to goal alterations if the competition was not going according to plan. Versatility in goal setting was evident when required by the deca-triathletes, for example, time goals were decreased in duration, place goals were altered to completion goals when injury set in and winning goals were changed to circuit completion goals. This reiterates the longevity of the event and the higher probability it presents for problems to occur.

Results clarify that six of the sample, the top elite, set very high personal goals and standards, an essential dimension of the multidimensional concept of being a winner. However, one of the six portrayed that the pressures of goals to be first and external win expectancy was placing the individual under excessive pressures, resulting in decreases in performance levels, which supports past research which demonstrated that for elite athletes, discrepancies between goals and actual performance are likely to be large, which can lead to increased stress levels (Krane, Greenleaf and Snow, 1997). This decrease in performance levels could be due to numerous factors, such as excessive winning situations nurturing additional pressures to continue to win from the athletes themselves and peers who "expect" the individuals in question to not only perform well, but also to

win. As the athlete in question is a professional, pressures also probably mount from their sponsors. This burden of expectancy to win appears to have been detrimental to performance, decreasing their intrinsic values and love of the sport, while also negating their chance for future high performance accomplishments.

Attentional directives

Attentional directives were highlighted by the deca-ironmen as a cognitive strategy for coping with adversities of the deca-ironman, where competitors reported having the ability to narrow their attentional focus during the deca-ironman. This was clearly identifiable from the data gathered, concurring with past research involving endurance athletes (Dale, 2000, Brewer et al, 1996). By focusing on positive dissociative thoughts, or refocusing associative kinesthetic thoughts, the deca-ironmen could allay and ignore irksome influences, pervading adversity while maintaining positive progression. For example, by narrowing attentional directives towards a specific thought and disjoining oneself from the pain, the ability of deca-ironmen to tolerate pain apparently increases, ultimately improving endurance performance levels, which supports research involving soldiers carried out by Couture et al, (1994). Furthermore, deca-ironmen appear to have high capabilities to interpret and counteract signs of potential distress in an unemotional manner. By doing this, the triathletes are provided with the opportunity to utilise the task-relevant cognitions and cope with the adversity efficiently, for example deca-ironmen adjusting their pace, while concurrently monitoring optimal progress.

Associative and dissociative techniques used by deca-ironmen partially support early sport psychological research carried out by Morgan and Pollock (1977). The notion that elite athletes use high percentages of association as a cognitive coping strategy conflicts with the present findings, which demonstrates that deca-ironmen predominantly dissociate, which may possibly be due to the fact that the event is of such a long duration, involving athletes who have mental approaches unique to ultra-endurance sportsmen and women. A high percentage of the deca-ironmen conformed to Callen's (1983) dissociation's classification of passive or "floating" dissociation, where the triathletes went into a state of autohypnosis and persevered seemingly effortlessly at times. Additional endurance dissociative techniques involved deca-ironmen holding

conversations with imaginary people (which could be also be classified as a form of self-talk), or playing mind games. These strategies assisted the triathletes coping abilities, concurring with Morgan's (1988) findings. The present findings also endorse Acevedo & Hollander's (2000) findings concerning ultra-swimmers, in relation to deca-ironmen portraying that dissociation assisted in increasing coping and perseverance capacities. Deca-ironmen dissociative techniques are further dimensionalised into the 60% who specifically used music as a dissociative strategy, which unequivocally helped to overcome obstacles they encountered during the deca-ironman, supporting findings by Karageorghis and Jones (2000).

There are two primary reasons for variables in the findings regarding the usage of varying states of attentional directives. Firstly, it appears that dissociative techniques prove beneficial for coping with a particularly stressful section of an endurance event, and perhaps this is the key for explaining the deca-ironmen approach. It seems necessary for deca-ironmen to primarily utilize strategic dissociative strategies to cope with the longevity of the event and all it entails. Alternatively, associative techniques were incorporated only by a small proportion of the deca-ironmen sample (30%), which conflicts with Kirby (1996) whose ultra-marathoner sample's cognition's proved to be 70.6% associative. Perhaps, by means of explanation, this is due to the fact that even the competitors whose deca-desires involve either winning or placing in the top three cannot possibly associate continuously for nine or more days. Secondly, the event's potential boredom may hinder associative techniques being beneficial to performance as the boredom may override the association over time and leave the participant mentally fatigued. Finally, it would appear that although the deca-ironmen use high proportions of dissociative techniques, associative strategies were also involved, perhaps suggesting that deca-ironmen shift between dissociative and associative techniques depending on physiological demands.

Moreover, two additional concepts emerged from the present data, where the deca-ironmen reported using two further mental techniques to overcome pain. A number of deca-ironmen (30%) reported coping with pain through their interpretations of the concept. By perceiving the pain as not life threatening or everlasting, these triathletes believed they could and must push the pain barrier ever further, which assisted them in

completing the deca-ironman while maintaining pride. Conversely, two of the deca-triathletes conflict with all the aforementioned data, explaining they were too realistic to endeavor to “deceive” their minds and therefore took pain as it presented itself. Once again this demonstrates how realistic and personable the findings proved to be through utilising a phenomenological approach.

Interestingly, as previously mentioned, one novel aspect of this research demonstrated that one of the deca-sample, UM2, while describing their focus in associative and dissociative terms, reported their interpretation of each concept was different from other athletes. UM2 reported focusing on technique when feeling bad, while focusing dissociatively when feeling good.

Self-deception

Self-deception strategies were used by 40% of the deca-triathletes, providing further support for the extensive role mental strength and “mind over matter” techniques play in overcoming adversities to permit completion of the deca-ironman. By converting negative situations to positive outcomes, or by deceiving the mind through mentally derived persuasive powers, deca-ironmen use the concept of self-deception to, among others, motivate, increase pace plus ignore pain, fatigue and boredom. The beneficial coping traits highlighted by self-deception supports Baltzell and Sedgwick (2001) who found Olympian rowers reported positive repercussions from interpreting external stressors as a motivating force.

The fact that 40% of the deca-ironmen sample could deceive their minds into thinking that a situation was easier or less painful demonstrates the high levels of mental power inherent in these deca-ironmen. Significantly, findings suggest that these mental skills did not come naturally to the relevant triathletes and were learnt over time, implying that all athletes have the potential to learn the technique.

Spiritual and existential orientations

Concurring with the present investigation, the concept of spiritual orientations emerging from Acevedo et al’s (1992) research involving ultra-marathoners, was revealed through qualitative research methods. Furthermore, Acevedo and Hollander

(2000) and their investigation involving ultra-swimmers, defined the concept of existential and spiritual orientations as being unique cognitive strategies not found in traditional sports. The present findings demonstrate that 20% of the deca-ironman sample reported that praying, conversing or seeking assistance from God acted beneficially as a coping strategy. Through communicating with God, the relevant deca-ironmen appear to utilise the benefits of external coping strategies such as dissociative and self-deception techniques. By convincing themselves that God will look after them and abate the pain or fatigue levels served as a means to ignore the adversity. Additionally while the relevant triathletes are communicating with God, it would appear to take their minds off the problem area, dissociating their minds from the negative influences of that moment.

Sexual thoughts

Thoughts of a sexual nature proved a beneficial dissociative strategy for two of the deca-ironmen competitors. By contemplating sexual desires with a particular individual, the triathlete was not only motivated to continue, wondering if the significant other would be impressed, but also, fantasies about the person distracted the triathletes from the potential negative impactors, primarily boredom and pain.

Catharsis

Through various means, such as crying, anger and diverse emotional releases, 50% of the deca-ironmen found cathartic reactions assisted their coping adversities. The emotive reactions not only snapped the triathlete out of whatever somber mood they were in, but also distracted them for long durations, *over-riding* sensations of pain or fatigue etc. It seems that the adrenaline rush resulting from the cathartic reaction provided the deca-ironmen with a purging facility, which extricated negative feelings from the system, while providing a momentary “turbo boost”, thus giving the individual energy to continue the deca-ironman feeling stronger and faster. With these rejuvenated feelings, the triathlete developed new thoughts or distractions which would help them overcome elements of boredom.

Self-talk

Conflicting with researchers (Gould, Eklund & Jackson, 1993, Morgan & Pollock, 1977), who found self-talk to be one of the most beneficial cognitive strategies of motivation in elite athletes, none of the deca-ironmen directly reported using self-talk at any stage. Although there is a high probability that perhaps the deca-ironmen did, at some stage of the event, speak words of positive or negative self-talk to themselves, results illustrate that this was not considered by the triathletes to be a primary cognitive mode for coping, as it was not an area referred to in any way throughout the deca-ironman from any of the data gathering processes. The only reference to self-talk was during mental preparation for the deca, when UM6 continuously told himself that he was going to experience pain and suffer pain in the deca-ironman, a strategy which appeared to work beneficially for this particular triathlete. Another possible explanation for the minimal references to self-talk usage being made by the deca-ironmen, is perhaps due to occasions of self-talk being interpreted as, or referred to, as something else, for example, attentional directives or imagery. Perhaps sub-consciously, while the triathletes reported that they incorporated attentional directives of imagery strategies as if the techniques just “happened”, there is a possibility that during the interview the triathletes omitted to mention, or didn’t even realise that these cognitive actions were guided and executed through self-talk. Additionally, there are possible instances where the triathletes were incorporating self-talk directly into their coping strategies, but referred to the technique differently, for example when one individual reported speaking imaginary conversations with her mother to distract herself from the pain and boredom. Although the individual claimed they never used “self-talk”, this could be a prime example where the competitors interpreted concepts in a different context.

5.3 Motivation

Results demonstrate that motivation was one of the most influential factors towards deca-ironman success. Deca-ironmen are driven predominantly by intrinsic values for training, which concurs with Bell and Howe’s (1988) investigation on triathletes, while both extrinsic and intrinsic motives encouraged participation in both ultra-endurance and the deca-ironman. Although present research findings do not support Morgan and

Pollock's (1977) results concerning elite primarily utilising associative strategies, this investigation does concur with the aforementioned authors in areas concerning motivation. Morgan and Pollock also found that elite athletes in their study were essentially intrinsically motivated, while also being driven, to some extent extrinsically, competing because it made them feel good and because it was a prerequisite for competition, which supports evidence from the present research.

In addition, a strategy which appears to be unique to the ultra-endurance athletes, as it emerged both from the pilot investigation plus this main research paper, concerns the area of gathering motivations from dedications made to a charity, loved ones or an individual. Results demonstrated that by deca-ironmen (30%) dedicating the event to someone or something, extra external pressures were placed on the triathlete to complete the event as now the race completion was not just for them alone, and if they did not achieve their aim, they felt they would be letting other people down.

5.3.1 Motivations for deca completion

Although motivations reported by the sample with regard to taking part in ultra-endurance, are similar to the findings for participating in the deca-ironman, the author felt it was appropriate to treat both concepts separately. The reasons for this was that the triathletes, generally, only take part in the deca-ironman on one occasion, and therefore may have had varying motivations for this specific event. Alternatively, the sample continuously choose to participate in ultra-endurance, therefore, their motivations for the arduous trail of ultra-endurance activity may have proved variable.

In past research involving triathletes, Bell and Howe, (1988) found that the individual's primary motivations were to compete with oneself, fitness, and enjoyment, while a small percentage of motivations were to compete with others, concurring with the present findings. Although the 80% of the deca-ironmen cited extrinsic motivations for deca-ironman participation, with 70% competing for intrinsic values, their motivations were definitely not for monetary reward. This is supported further by the fact that entry fees for the 2002 deca-ironman totaled \$US1250 (plus travel expenses, accommodation, food, support crews etc.), while the top prize money reflected the entrance fee amount, \$US1250. Although each competitor got medals and trophies, intrinsic values emerged as

the primary motivation for competing in the deca-ironman, concurring with Acevedo et al, (1992) who found that ultra-runners primary motivations are derived from personal needs to achieve self-set goals. However, as the findings suggest that deca-ironmen are ultimately responsible for their own motivation towards performance, extrinsic values alone would not be enough to maintain motivation through continual training and event sessions, demonstrating that a healthy combination of intrinsic and extrinsic motives are required to get through the tougher times of training and racing, supporting the need for athletes to maintain high levels of intrinsic motivation to overcome external adversities. Additionally, the fact that 20% of the sample group thought about the aesthetic beauty during the deca-ironman suggests that the individuals also think about and enjoy the race surroundings, further substantiating intrinsic values.

5.3.2 Motivations for ultra-endurance

One of the questions posed by this present research was to explore why individuals take part in such arduous and, according to some individuals, apparently pointless activity. All the deca-ironmen sample appear intrinsically motivated for ultra-endurance primarily participating to enhance self-values and promote personal health, while setting difficult and challenging goals. Personal goal achievement and achievement motivation is illustrated by the deca-ironmen who demonstrated behavioral intensity (trying hard), and persistence in the face of failure and demonstrating pride with accomplishments.

In Lester's (1983) investigation involving a sample of mountaineers who climbed Mt Everest, results demonstrated that the climbers motivations included finding self-values, challenges, muscular joy of vigorous physical movement and experiencing living more vividly and intensely, all of which requires focusing attention and dedication of purpose. Although the deca-ironman does not involve any real life threatening challenges, and the longevity is minimal in comparison to an Everest expedition, the underlying motivation behind taking part in both ultra-endurance activities is mirrored by the present findings.

Additionally, deca-ironmen take part in ultra-endurance for psychological well being and “the feel good factor”, concurring with ultra-distance runners motivations.

(Acevedo et al, 1992) Roberts (2001) argued that ego involvement is essential to elite performers, this certainly seems to have been demonstrated by a high percentage of the deca-triathletes because, as with all triathletes competing at high levels of competition, extremely high levels of motivation is required to maintain motivation through injury, equipment failure and sponsorship setbacks in both training and during competition

In 1996, Chantal found that females have higher intrinsic motivation Comparative levels of intrinsic motivation are beyond the scope of this thesis, as only two of the sample were female, which could only provide unbalanced and inaccurate results However, the females in this research sample clearly appreciated the intrinsic values of endurance activity, both independently recommending that all women should take part in some endurance discipline to reap the personal rewards obtained through taking part, whether it is a 10K run or a deca-ironman

Finally, Hardy and Parfitt (1994) found that elite performers maintain intrinsic motivation throughout their careers, which is demonstrated by the present sample However, the triathlete's motivations would require reassessment throughout future years to establish a definite correlation

5.3.3 Motivation / self efficacy

One specific concept of motivation which proved prominent throughout the deca-ironman data gathering process, is that of self-efficacy The deca-ironmen sample demonstrated a certainty of completion and belief in their abilities, further strengthening prior evidence which demonstrates the strong relationship between self-efficacy and endurance sports (Hardy, Jones & Gould, 1998) Over half the sample (60%) specifically cited the factor of self-efficacy being a definitive motivating influence, providing support that triathletes require high levels of self-efficacy to overcome adversities and maintain perseverance

5.4 Performance impactors

Performance impactors played an important role towards deca-ironman completion as reported by the triathlete interviewees Concepts which directly influenced deca-ironmen cognitive coping strategies are discussed in this section

5.4.1 Performance impactors/ personal cognitive

Personally derived factors which influenced the deca-triathletes performance levels come under the auspices of this category

Personal assets

To complete the deca-ironman one must have numerous personal qualities to persist through the hardships of both training and competition. Interestingly, the findings concerning personal assets all proved to be mentally orientated, specifically traits such as determination, mental strength, competitive, versatility and a positive outlook. This again provides further evidence for strong mental skills being a primary necessity for deca-ironman completion.

Race thoughts

In Lester's (1983) investigation involving endurance climbers attempting to summit Mount Everest, evidence found that his subjects tried to block out thoughts of home and family, conflicting with this research investigation. Findings demonstrate that the deca-triathletes think of home, family and friends while competing and furthermore, these familiar thoughts reputedly assist 60% of the sample to cope with adversities. Approximately 30% of the deca-triathletes also took time out on the Internet contacting friends and family during the actual event, demonstrating that family and friends are never far away from their thoughts. These findings provide further support for the aforementioned results concerning dissociative strategies utilised by the deca-ironmen. Perhaps the reason why a high proportion of the deca-triathletes communicate and think of home, family and friends, is to assist them in coping with the longevity of the deca-ironman and the potential problems that can cause, such as boredom etc. Additionally, the fact that some individuals utilised the email facility may be simply due to the practicalities and mundane responsibilities of the working class'. The fact that six of the ten deca-ironman sample are non-professionals and obviously need to work to support themselves financially, dictates that perhaps communications were, at times, work orientated. Being away for almost three weeks, with traveling, settling in, and then the

event itself, may dictate that members of the sample are required to spend brief moments answering queries about work concerns. This would also serve a beneficial purpose as the individual would then have something concrete to ponder about while continuing their race around the track. An example of a deca-competitor using e-mail facilities during the cycling discipline can be seen in Photo 5.1.



Photo 5.1. Deca-ironman competitor using e-mail facilities during the event.

Failure to complete the deca-ironman

The final relevant performance impactor concerns an individual's reasons for not completing the deca-ironman. Even though pain quantification is extremely difficult to clarify as pain is so personable, with each individual having variable pain levels, pain was the common denominator explaining why two of the sample did not finish, reinforcing Anshela & Russell's (1994) findings that pain defines successful and non-successful endurance athletes. As can be seen on Figure 1.1, one of the potential prohibitors of completion is that of extreme injury. The third non-finisher in the sample retired primarily due to their inability to achieve goal attainment in the 2002 deca-ironman, which was to break the world record. This further illustrates the varying motivations the sample had with regard to completing the deca-ironman. While some of the individuals simply wanted to complete the course, others wanted to win it, even break records, and nothing less would suffice.

5.4.2 Performance enhancers / coping enhancers

Direct external influences which assisted the athletes in coping with any adversities, such as people providing positive influences, thereby enhancing the triathlete's performance levels, came under the auspices of this category

Positive influential people

Even though positive personal assets play an important role in deca-ironman success, results demonstrate that one's performance and decisions can be greatly influenced by external support from either a spouse, family or friends. As Masters et al (1993) succinctly explained, "ultramarathoning is not a trivial event in the lives of either the runners or those with whom they have significant relationships" (p. 135). This concurs with findings from the present research, where specifically, spouse support appears to play an important role, which for some of the deca-ironman sample, influences the athletes' ultra-endurance adherence. The role that spouse and family play appears insurmountable. Spouses and their counterparts not only act as support crews for their respective partners, friends or siblings, they also play substantial roles in decision making and tactical procedure, which proved to be very beneficial according to reports from the interviewees. However, this concept proved to be not a compulsory requirement for deca-ironman success, as two of the present sample did not have any support crew for their deca-ironman ordeals and succeeded admirably, one of whom became the overall deca-ironman champion.

Phenomenological impactors

Results demonstrate that deca-triathletes' coping abilities and capacities were influenced by their own personal experiences in both the world of ultra-endurance and life in general. It is these factors which come under the auspices of phenomenological impactors.

5.5.1 Phenomenological impactors / experiential wisdom

Reaching limits

Real life personal experiences and related areas played an imperative role for deca-ironman success. The ability to cope with pushing boundaries further and reaching mental and physical limits emerged as one area which potentially could hinder performance levels. The fact that results confirm that 50% of the sample reported reaching their mental limits, while 40% reached their physical limits clearly illustrates the extent of difficulty the deca-ironman involves, while also demonstrating the mastery orientations of the sample. Interestingly one of the top elite sample, who has extensive ultra-experience reported never reaching their limits, which is perhaps partially explained by the fact that the individual in question does not utilise self-deception dissociative strategies, choosing primarily associative techniques, which would potentially make them terminate activities prior to pushing the body too far. However, as this individual has had many ultra-successes in the past, this also perhaps dictates this individual's pain threshold levels are higher than other average ultra-endurance athletes.

Experiential learning

Experiential learning played a primary role in the deca-triathletes abilities to participate in the deca-ironman. Although there were numerous references to past races, where mental and physical timings and techniques were referred to, triathletes also reported general life experiences which had influenced their capacities for endurance. For example UM2 worked during his university days stacking shelves at night after a full day of lectures. This, UM2, felt helped to build up endurance and fatigue capacities. All these endurance experiences appear to positively and progressively strengthen the triathlete's mental endurance capacities.

Toughest part of the deca-ironman

When queried about what they felt was the toughest part of the deca-ironman, the deca-triathletes provided wide ranging replies, ranging from a specific discipline to extreme pain or fatigue, external factors outside their control such as lap counters, or restarting after a short rest. Variants of the findings go further to illustrate the numerous

difficulties which deca-ironmen can potentially face during the longevity of the event ordeal. The fact that six of the seven reasons given were internally oriented, with only one being externally derived (mistakes made by lap counters, seen in Photo 5.2), provides further support for the need for exceptionally strong mental skills being required by deca-ironmen competitors. Pain and fatigue were highly represented in this category, with pain and fatigue both being central to three examples given respectively. This provides further evidence that if one can define and enhance methods for overcoming pain and fatigue, their chances for completing the deca-ironman are increased substantially.



Photo 5.2. Lap counters for the deca-ironman event.

5.5.2 Phenomenological impactors / historical influences

Best experiences

Further insight into the deca-ironmen perspectives and motivations were gathered when the triathletes were questioned to recall their best ultra-related experiences. Interestingly, only one of the sample specified the deca-ironman, citing the year when they were the winner, all the other triathletes specified other occasions. Personal achievement accounted for 40% of the total, while winning accounted for 30% of the samples best experiences. This concurs with Dale (2000) who found elite decathletes most memorable performance involved an occasion where the athlete had overcome adversities and performed well, as opposed to a situation where they had won an event.

Other values involved event surroundings such as aesthetics and friendship, providing further support for dissociative techniques described earlier, while also providing additional evidence that deca-ironmen compete in ultra-endurance events for intrinsic, as opposed to extrinsic values. The author feels that without this intrinsic motivation, it would be almost impossible for an individual to endure the continuous pressures and challenges faced throughout ultra-training and event regimes.

Worst experiences

Results reflect that deca-ironmen experienced their worst experiences as primarily internally (60%) derived. Reported worst experiences essentially involved the individual struggling to complete an event due to painful experiences derived from muscle injury or blisters, losing placings or failing to complete a competition circuit. This not only reflects the determination and high need for achievement laid down by the triathletes, but also this mirrors demotivation and performance decline due to not attaining their goals. External adversities which influenced the worst experiences evolved from situations out of the individual's control such as weather conditions or remaining distances to be completed. The fact that 40% of worst experiences were directly related to deca-ironman exemplifies either the difficulty of the event, or the fact that, as they were being interviewed during the actual event, immediate feelings may have overshadowed other past experiences.

Three most important factors towards success of the deca-ironman

In 1914, when Shackleton was heading to Antarctica, he picked 27 men with the following qualities: "I put them in order of their relative importance: first, optimism, second, patience, third, physical endurance, fourth, idealism, fifth and last, courage" (2002, nationalgeographic.com)

With the exception of idealism, this quote in many ways relates to the factors of importance which the deca-ironmen allocated to deca-success. Results clarified that to complete a deca-ironman, one requires determination, strong mental strength, patience, self-efficacy, adequate training and a support crew. Deca-ironmen have an inherent "mental toughness" (Acevedo and Hollander, 2000), which provides adequate

determination and persistence to persevere through the adversarial situations experienced during the competition.

The mental and physical aspects listed are derived from within the individual, only gained through extensive mental and physical training. The support crew, then acts as a team player, encouraging and looking after the athlete's basic needs. The dedication of independent training and intensity plus the optional extra supportive team player, results in a package which has the potential to complete the deca-ironman. More details of this can be seen in 6.10.2.

5.5.3 Deviant case / Peer Assistance

The one deviant case which ran counter to emerging themes and codings, involved the significant camaraderie and support amongst the deca-ironmen. Throughout the entire deca-ironman competition, the competitors continuously helped each other in any way they could, through encouraging words of support or physical aid through either lending a fellow competitor a wheel or perhaps medical first aid supplies. Even after competitors finished, they all waited around the track area and were on the finish line with support crews, photographers, kitchen staff and organizers to congratulate the latest successful deca-ironman. As this is such a specialized event, the ultra-triathlon circle seems to be relatively small in comparison to other sports and most of the individuals know each other. Raw data illustrates that 90% of the triathletes consider themselves as part of a sub-culture, as they alone can fully appreciate what their peers have endured and know exactly what can help fellow competitors through the tougher times.

5.6 Data gathering procedures

The pilot investigation provided a comprehensive platform from which the main research procedures could be established. It guided the author to incorporate the interactions of various fugitive documents, such as interviews, field notes, video and DVD analysis to provide an extensive insight into the mental strategies of deca-ironmen. Additionally this approach allowed for phenomenological experiences to be gathered thus providing realistic information and allowing unique conceptual cognitive strategies to emerge. Even though the author recognizes that the methodological approach chosen has

not been used vastly in sport psychological research, the benefits of incorporating a detailed qualitative phenomenological approach, influenced by grounded theoretical aspects were rewarded in the findings. Results highlighted numerous unique aspects of cognitive strategies deca-ironmen use which may not have been exposed by more constrained, quantitative means. This view concurs with Dale's (2000) study investigating an elite decathlete, where Dale defined that a phenomenological approach offered an extensive opportunity for obtaining valuable information from samples such as athletes.

The unique opportunity of having continuous direct contact with the triathletes as a support crew member, while concurrently being in an optimal position for gathering appropriate data, provided the investigator with numerous benefits gained from conducting data gathering procedures primarily on location at the deca-ironman event. The fact that it was possible for the author to interview the triathletes actually during the event, allowed for recording accurate accounts, a benefit highlighted by Kirby (1996), who felt that retrospective reports might not give accurate accounts as they were merely memories. The investigator genuinely feels that honest and in-depth responses were given by the deca-triathletes throughout the interviews. Additionally, the fact that the information portrayed could be supported, or not, through field notes and video analysis, assisted the author in achieving accurate results from this investigation.

5.7 Unique applications for the deca-ironman competitors

The following section discusses additional coping strategies used in specific situations of the deca-ironman competition, while also delving into unique cognitive techniques used by the deca-ironmen, throughout the event.

Sleep deprivation/fatigue

The present findings demonstrate that the deca-ironmen establish personal sleeping patterns, increasing their sleep times as the event progresses, perhaps due to the fact they are getting increasingly fatigued or maybe as Snoeyenbos (2000) claims, to rest their feet for longer durations during the running section. Although the top elites did not regularly stop for rest, the elite momentarily paused for catnaps of approximately 10-20

minutes duration, approximately every three or four hours, which appeared to rejuvenate the triathlete to some extent, concurring with Giam's (1997) findings involving army and navy personnel. However, whether one can categorically define if the deca-ironmen would concur with Giam's findings concerning decreases in motivation, attentional directives and task performance because of sleep deprivation was beyond the scope of this thesis. The fact that Misner (2000) found that athletes deprived of only 48 to 72 hours sleep experience hallucinations, reflects the fact that deca-ironmen who allocate even small amounts of sleep regularly, perhaps don't have to push mentally so far as those triathletes who take minimal amounts of sleep. The three triathletes who had hallucinated both during the deca and in other ultra competitions were present and past deca world champions. Interview analysis reflects that they had excessively pushed themselves to exhaustion. Furthermore the fact that these triathletes did not stop to rest when they were hallucinating demonstrates that they were driven by personal goals and their determination to win the event.

Furthermore, the fact that these triathletes did hallucinate goes some way to support Boza's (2003) findings that hallucinations are caused by sleep deprivation. Although the relevant deca-ironmen members would account for their hallucinations by extreme fatigue, one cannot categorically state that this was the sole derivative of the circumstance, however, it is more than likely the case.

Overcoming pain

O'Conner (2002) reported that endurance athletes have higher pain tolerance thresholds compared to less taxing non-contact sports. Even though pain thresholds were beyond the scope of this thesis, the author observed the deca-ironmen sample appeared to concur with O'Conner, maintaining high pain tolerance levels. From the researcher's observations regarding apparent pain levels, the deca-ironmen can endure extensive pain levels, from grotesque blisters and saddle sores, to swollen calves and ankles, supporting Anshel, Kremer and Bell's (1998) findings that elite can, and must push through the pain barrier.

Three of the pain coping variables found by Sullivan et al (2000) involved the degree of life interference, future athletic potential and goal importance, directly

concluded with the present investigative findings, where the deca-triathletes realized the pain was not life threatening and eternal and hence would continuously push themselves. Additionally, one of the sample, UM17, realized that they might have been pushing the pain barrier too far which may have resulted in more permanent muscle damage, and hence they retired. This reiterates the concept that although deca-ironmen reported incorporating numerous cognitive coping strategies to overcome various adversities, they also realized that, in general, it was not a life threatening situation, so they had the opportunity to push their bodies to extreme and at times, excessive levels. Nevertheless, their apparently high pain thresholds, in the authors view, was most probably built up over time and through past ultra-endurance experiences. Furthermore, the desire to complete the event most likely overshadowed some of the pain, perhaps through additional dissociative strategies.

Goldfish syndrome

The goldfish syndrome discussed by UM2, exemplifies how the short-term memory is obliterated when one continuously circles around a track for days on end. The fact that one's short term memory retreats, suggests that having a variety of cognitive coping techniques may perhaps provide more beneficial results. If the mind wipes the short-term memory clean as is suggested, incorporating one or two strategies, such as goal setting or imagery, it may not prove sufficient to prevent the effects of boredom or pain emerging and perhaps overpowering the athlete's abilities over time. Additionally, mental capacities may experience apathy and require new sensory inputs and diversions, supporting the notion that a versatility of cognitive techniques appears paramount.

Change of scene

Unlike most athletic disciplines, the longevity of the deca-ironman encourages unique tactics. By taking a shower, changing ones clothes and feeling refreshed, as one of the top elite deca-triathletes reported, athletes can deceive the mind and body of feeling fresh through feelings of rejuvenation. Even if the break is only short in duration, once an individual has encountered this complete change of scene, the triathlete's race approach

is reinvigorated. This would not be viable in many other athletic disciplines, as it would not be competitively feasible due to the shorter durations of other races.

Mental preparation

The emphasis placed on mental strength proved to be significant throughout all data gathering sources. This mental strength has to be built up over time and through experience. Mental preparation prior to the event plays an important coping role for the deca-ironmen, reportedly assisting 60% of the sample. Although the triathletes chose differing approaches, they all endeavored to achieve the same aims, specifically to cope with adversity. It is the author's opinion that by training the mind to enter a relaxed and comfortable mental zone through meditative dissociation or through continuously mentally psyching themselves for extreme adversities for two months prior to the event, the triathletes found it easier to cope with predicted adversities during the deca-ironman competition.

5.8 Cognitive and practical advice for future athletes

Numerous concepts specifically related to deca-ironmen participation emerged from the data gathered. To gather the total complement of all the prerequisites for deca-participation is beyond the parameters of this discussion, however the primary aspects will be discussed in this section.

Cognitive concepts

- Many of the experienced deca-ironmen, highlighted the fact that the deca-ironman is a unique race and should be treated as one. Deca-ironmen must have inherent patience to pace the event according to distance remaining and the individual's physical and mental well-being. Additionally, one must be prepared mentally and physically for the variety of internal and external adversities which they will encounter throughout the deca-ironman, many of which, according to deca-ironman sample can only be learnt through previous ultra-triathlon experiences.

- In contrast to most regular sporting events, placings throughout the main duration of the deca-ironman proves irrelevant as the deca-ironman is such a long race, positions can, and do change all the time. For example, UM19 finished the swim in 12hr 10mins, while it was 20hr 18mins before the overall winner of the 2002 deca-ironman left the pool. In any other event, an eight-hour lead would prove of utmost significance, however in a race such as the deca, this is simply not the case. The longevity, triathletes personal disciplines forte and injury or other adversarial concepts can play a crucial role, even the psychological aspects of positions and times can have an influence on the performance of some of the competitors.
- When the body has been pushed for such a long duration, and then one sits down for rest or food, results highlighted that restarting posed great difficulty. Not only did the deca-ironmen report this fact, but additionally, video analysis and field notes reiterated the fact being depicted through the grimacing faces and hobbling gaits as the triathletes recommenced, endeavoring to get nearer to the finishing line and deca-race completion. This is perhaps why the top elite male contingent rarely stopped, except to sleep.
- Results from this research demonstrates that the deca-triathletes approach to the event is overwhelmingly positive, with observational findings demonstrating the extremely rare occasions involving complaints, anger or bad sportsmanship. This concurs with Hemery (1991) who found that one distinguishing characteristic of elite ultra-endurance athletes appears to be their capacity to cope with and recover from bouts of pain and / or fatigue, “there are no ‘poor me’ attitudes. If they do have negative thoughts they can catch themselves immediately and turn their mind to what they can control, the best they can do with where they are” (p. 17).
- To compete in events such as the deca-ironman, the importance of having strong mental skills appears to be a prerequisite for success, concurring with Kozar and Lord’s (1983) findings who found 80-90% of elite success is due to psychological

skills, however the present research would dispute Kozar and Lords other claim, that only 10-20% is accountable to physiological concerns Results from this investigation demonstrate that although psychological concerns are imperative for success, without the dual partnership of physical ability intertwined with the mental aspects, completion of the deca-ironman would not be possible The two deca-competitors who highlighted the lack of training as causing them problems further supports this notion

As mentioned in Chapter 1, an overview of the results (Figure 5 21) demonstrates that for a triathlete to successfully complete an ultra-endurance event of deca-ironman caliber, they must not only possess various inherent qualities, but are also dependent on the extent adversities, such as injury or sleep deprivation, affect their performance levels In summary, for an athlete to complete the deca-ironman, they must pass through three phases The first phase is to have the focus and motivation to get through years of continuous, arduous and dedicated training regimes The second phase is three-fold, firstly the triathletes must demonstrate sufficient personal abilities and deliberate preparative planning and hardships presented throughout the deca-event The third phase, ceaseless in nature, involves the triathlete endeavoring to avoid severe injury, both prior to and during the event, which potentially could curtail or even terminate the individuals attempt at deca-ironman completion

Practical concepts

Although this research primarily concerns cognitive coping strategies, the author feels that it is worth recording an overview of the practical coping strategies which were implemented to the deca-triathletes programs for the sake of future potential ultra-endurance triathletes There were numerous strategies which deca-triathletes employ to cope with adverse situations presented specifically throughout the three disciplines of the deca

Deca-ironman specific tactics

During the swim, personal choices made regarding whether to wear wetsuits or not, appeared to be primarily dictated by the present temperature. A photo showing some of the deca-ironmen donning wetsuits can be seen in photo 5.3. The fact that Mexico's climate was extremely hot at the time of the event, during the day the pool area would be extremely hot, while at night the temperature dropped substantially. The fact that the two of the sample cut up various parts of their wetsuits during the swim to prevent chaffing or decrease the heat by cutting the legs off, further supports another unique aspect of deca-ironmen, i.e. customizing equipment.



Photo 5.3. Preparatory phase just prior to deca-ironman swim start.

During the cycle, the fact that saddle sores presented so many problems for the deca-sample provides further evidence that although one can be fully prepared in a practical manner, for example having all the medication and tape to prevent abrasions such as saddle sores, there are times when all this preparation appears untenable. Deca-ironmen during the cycle can be seen in photo 5.4.

During the third discipline, only four of the sample ran high percentages of the running section, a sample of which can be viewed in Photo 5.5, accountable by numerous factors. Firstly, two of the sample had retired due to injury before they began the running stage. However, factors such as the inevitable fatigue which must be present by the time the individuals get to the running phase must have played a part. Furthermore, it was apparent that three of the sample were in extreme pain throughout the run, primarily due to either extreme blisters and / or muscle problems.



Photo 5.4. Deca-ironmen during the cycling discipline.

Additionally, although some of the triathletes began running after the cycle, this, with the exception of the four aforementioned sample caused severe muscle cramp and strain, further demonstrating how physically fatigued the individuals were before the running discipline began.



Photo 5.5. Running phase of the deca-ironman.

In regular ironman distances, the changeover from each discipline are tactically crucial and rapidly carried out. However, due to the long duration of the deca-ironman, changeovers from each discipline were not rushed in any manner. When a deca triathlete

completed one discipline there were great cheers and support from support crews and fellow athletes, whereupon the triathlete may immediately head for the next discipline, or alternatively take a shower, or take perhaps a rest

Simple concepts such as ice played an essential role throughout the deca-ironman. During the swim some competitors put ice down their wetsuits to cool down, ice was continuously used in drinks and fruit smoothies liquidised by support crews, plus during the run, many of the triathlete availed of buckets of ice to immerse their feet into when taking breaks to prevent swelling and soothe their sweaty feet.

In conclusion, athletes who partake in the deca-ironmen are a specialised breed of sportsmen and women who have immense capabilities to withstand excessive mental and physical pressures, which lasts, for some of the competitors, fourteen days. The investigation demonstrates how the imperative role of having strong mental abilities can be, for a triathlete who has extensive physical fitness, a deciding factor between the individual's success and failure. As the script in section 5.9 of chapter 5 exemplifies, the deca-ironman event can essentially be an obstacle course of adversities, and only triathletes with the integrity, determination, appropriate mental and physical strengths plus a little bit of luck, will achieve the honorable title of a fully fledged “deca-ironman”.

Chapter 6

Conclusions and Future recommendations

6 0 Overview

It is only relatively recently that scientists have recognised the fact that athlete's performance levels are influenced dialectically, in other words, emerging from two contrasts, body and mind. It is this concept of utilizing the strength of the mind to overcome physical deterioration, specifically during the deca-ironman, that was investigated throughout this research.

As can be observed throughout Chapter 2 of the present thesis, investigations concerning cognitive coping strategies of triathletes and ultra-endurance athletes in general is minimal. Additionally, motivational profiles and endurance athlete's motivations for both training and participation has been mostly sidestepped. The present investigative findings enlightens social scientists, coaches and athletes alike, by providing substantial insight into cognitive coping mechanisms and motivations of ultra-triathletes. This not only goes some way towards promoting further investigation into area specifics, but additionally directs development of appropriate intervention exercise packages.

The following chapter presents conclusive comments regarding the investigative aims and the suitability of the overall research approach used throughout this thesis. Furthermore it divulges recommendations for future researchers concerned with ultra-endurance, while also providing guidelines which coaches and athletes could follow if they so choose.

6 1 Conclusions regarding investigative aims

Specific aims set out by the author prior to the investigation taking place were successfully achieved, demonstrated by the comprehensive findings which were accomplished from the investigative procedures. The aforementioned listed aims seen in Chapter 1 and conclusive comments are interlinked in the following section.

6 1 1 Mental strategies used by athletes to perform successfully in the deca-ironman

As demonstrated in the findings of this thesis, mental strength and the capacity of athletes to constructively execute cognitive skills is of paramount importance to an endurance triathlete's success. The findings from this investigation clearly demonstrate that deca-ironmen not only use coping strategies found in mainstream sports such as target setting, attentional focus and imagery, they also incorporate techniques apparently unique to extreme levels of ultra-endurance, such as meditation and various methods of self-deception. As demonstrated from the collected data, the fact that these cognitive coping strategies which deca-ironmen incorporate into their ultra-endurance events and training schedules can be, to varying degrees, purposefully learnt, demonstrates that it is potentially possible for any individual who has the necessary commitment, to learn these strategies. These qualities enhance the individual in improving their abilities to overcome adversity and withstand enduring situations. Additionally, this research demonstrates that mental strategies used by the deca-ironmen which are derived from a more personal perspective such as spiritualism, cathartic reactions or sexual thoughts can be channeled into providing positive repercussions regarding the athlete's performance. Furthermore, the triathlete's ability to convert negative thoughts to positive ones plays an instrumental role in their success in overcoming adversities during the deca-ironman.

6 1 2 Motivational profiles of deca-ironmen

For the sake of this thesis, motivations of the deca-ironman were broken down into three categories. These included motivation for competing in the deca-ironman, training for ultra-endurance and participation in ultra-endurance activity.

In summary, deca-ironmen were found to be motivated by both intrinsic and extrinsic values. Findings demonstrate that an imperative factor involves the necessity of triathletes having inherent motivation for training and for participation in events such as the deca-ironman. Although intrinsic values played a paramount role in motivating the sample group for ultra-endurance, extrinsic aspects appear to provide external encouragement promoting the triathletes continuation in continuously putting themselves through arduous and at times unsociable training and event schedules. Extrinsic motivation primarily is derived through ego orientated factors, such as impressing a

significant other, as opposed to monetary gains. Nevertheless, these extrinsic motivations are somewhat overshadowed by the intrinsic motivations of self-satisfaction, promoting self-health and pushing personal limits.

Self-efficacy proved a prominent theme throughout the deca-ironmen sample. The self-belief which deca-ironmen inherently contain appears to drive them through tough times, motivating them towards event or training session completion. Furthermore, the motivational concept concerning tributes, proved to assist some of the triathletes, where the triathlete was motivated by dedicating an event to a charity or significant other, in persevering with their plight was a novel finding of this research.

6.1.3 Adversities experienced and the strategies used to cope with them

This research found that adversities which deca-ironmen encountered were derived from predictable and unpredictable sources, which originate internally or externally. Internal adversities were derived from within the competitor themselves, for example through pain or fatigue. External adversities were those adversities which were not generated directly from the deca-competitor, but came from sources such as lap counter mistakes or bad weather conditions.

To cope with predictable adversities, for example fatigue, the deca-triathletes incorporated coping strategies such as target setting or meditation. Unpredictable adversities were at times more difficult to contend with as the athlete had not forecasted the problem area, for example, stray ducks crossing the track during the cycle or running disciplines. The fact that findings suggest that the athletes could cope with these unpredicted adversities, for the most part, incorporating techniques for expected adversities, demonstrates versatile coping strategies where the athlete uses preordained coping mechanisms to handle these random adversarial situations.

In addition, although not specifically intended as an aim of this research, practical aspects of particular relevance to the deca-ironman were revealed in the research findings. For example the importance of customizing equipment or adequate prevention for saddle sores proved to play an important role in the athlete's success, a fact which was highlighted for the sake of future ultra-endurance and deca-ironman triathletes.

6.2 Methodological procedures

The methodological format involving phenomenological concepts guided by a grounded theoretical approach, provided the researcher with the opportunity to gain a real insight into the cognitive coping strategies incorporated by deca-triathletes, while also exploring the motivations behind their actions. The qualitative exploits provided capacity for gaining in-depth information from the sample which may have been lost if tackled from a quantitative angle. In retrospect, with regard to limitations of methodological procedures for example the interpretative process and the language barriers, the author recognizes that there were perhaps some alternatives which perhaps may have improved the overall findings in different research circumstances.

With specific reference to the methodological format, although qualitative procedures definitely proffered direct and true accounts of the coping mechanisms and motivations deca-ironmen incorporated into their ultra-endurance strategies, some input of quantitative data may have enhanced the study further. Perhaps specifically chosen questionnaires would have produced additional insight into the investigation, where triangulation and the process of comparing qualitative and quantitative data could have confirmed specific concepts which developed throughout the qualitative data gathering procedures.

The interpretative process incorporated into this investigation worked constructively providing true insight into the athlete's cognitions. In retrospect, perhaps by introducing a member checking procedure with even four or five of the triathletes more interpretative accuracy may have been established. Alternatively, perhaps technical language used in the scripts, for example imagery or process goal setting techniques, may have confused the 'member checking' triathlete thereby only producing confusion in the interpretative process. In conclusion, it is felt that the interpretative procedures revealing accurate findings throughout this thesis.

With regard to the researchers positioning in the field of data collection, the fact that the author was directly involved with one of the competitors allowed for direct insight into the event and all it entails, while also experiencing first hand what the deca-competitors have to endure during the deca-ironman event. This inside presence ensured that the author never had to pressurise the athletes for information, due to the fact that

being on site for the entire event meant that the triathletes could approach the researcher whenever they felt inclined to divulge information or conduct an interview. This ensured that when data was gathered directly from the competitor, as opposed to the researcher taking field note observations, the data gathered was given generously and not under duress.

In the time available for an MSc, the author feels the data gathering process could not have been better, however, if additional time and funding had been available, second or third interviews pre and post the deca-ironman event may have provided further information. Also a researcher with fluent English, French and German for catering with direct and fluent conversation with all the deca-ironmen in their own native tongue, would definitely be an asset to the overall study. Furthermore, the fact that this investigation used participants directly involved in the area of research, i.e. ultra-endurance triathletes, as opposed to groups which may not be optimally relevant such as collegiate triathletes, enhances true representation and factual findings.

It should be noted that although these limitations may have improved the study in general, the presented thesis produced optimal information and incorporated the most beneficial techniques for the time available for the investigation. In the future a further study expanding on the presented information, or a more in-depth investigation in the construct of a Ph.D. would provide additional insight into cognitions, coping strategies and motivations deca-ironmen utilize for ultra-endurance sporting activities.

6.3 Future research

Although this research does increase our understanding of ultra-triathletes motives and coping strategies, it only truly serves as an introduction into the boundless concept of the psychological conditions of ultra-endurance triathletes. The findings also highlight areas which require further exploration by future researchers. The present research is one of the first of its kind involving ultra-triathlete's coping strategies during competition and therefore from a theoretical and practical viewpoint, it can reveal numerous recommendations for future research.

There are vast concepts requiring investigation in future research, both psychological and physiological in nature. Future researchers should ensure that samples

incorporate elite athletes to assist in providing accurate results of relevance to the task in hand and avoid using convenience samples such as college athletes. Areas for potential investigation include mood states providing insight on how mood variants and outlooks influence performance processes and performance outcomes. Moreover, the psychological aspects of training and motivations for training also require further exploration, plus mental training techniques and interventions.

An additional domain requiring further examination is that of meditative practices and their introduction into mental training packages. As observed throughout the present findings, meditative practices appear to prove advantageous for ultra-triathletes, therefore, an investigation as to the true values of meditative practices in ultraendurance-sports should be performed. Moreover, further investigation is required to provide additional insight into specific coping strategies used by endurance athletes, for example a more in-depth investigation into the specifics of goal setting strategies or imagery techniques.

For the aforementioned potential research domains, it is recommended that some longitudinal studies of these potential research areas should be carried out. Carrying out explorative research throughout the ultra-triathletes' season may prove most beneficial as they would provide optimal insight into the mental and physical training exploits of the individual. Finally, the input of deca-ironman success after the achievement on the athletes' lives and perceptions for future sporting and life values and goals are worthy of investigation.

6.4 Advice for future coaches /requirements for mental training packages

Direction for intervention design to enable performance improvement is one the main benefits to be gained from this research, the research has provided directives for social scientists, coaches and athletes, which are presented in this section, to guide towards athletes optimal ultra-endurance performance levels.

6.4.1 Mental training

As was highlighted throughout the review of literature and further enhanced throughout this research, there is a definite need for coaches and sports psychologists to develop mental training packages specifically with ultra-triathletes in mind. This research

accurately defined areas requiring such development, and it is these factors which are now discussed.



Photo 6.1. Deca-triathlete using ice to soothe his feet.

- The number one priority required by future deca-triathletes and individuals from other ultra-endurance disciplines, is that they immediately need to ensure they spend time developing their mental strength. It appears that no matter how strong your mental capacities are, they still need to be stronger. This can be achieved by incorporating mental skill programmes into daily training routines. Regular imagery and goal setting programmes would be a good place to commence. Throughout the imagery intervention, coaches or sports psychologists should ensure to include transportive and kinesthetic aspects into the programme. This will help the athlete handle, among other factors, boredom, pain and temperature extremes. The ability for flexible goal setting strategies should be emphasized, so that as situations change, the triathlete ensures they have the versatility to act as required.
- As the results demonstrate, the three main potential adversarial areas which deca-ironmen will most likely encounter involve pain, fatigue and boredom. Therefore, the

present author believes, that if one focuses on the psychological interventions required to overcome these potentially problematic areas, it would provide future deca-triathletes with a far greater chance for deca-success. Additionally, the mental skills learnt to overcome these areas would, for the most part, also cover most of the additional potentially adversarial areas which may evolve throughout the event.

- There are numerous benefits from meditative and relaxation interventions. By training the triathlete to meditate throughout the various disciplines, will provide many advantageous effects for the competitor. Not only will the athlete be able to relax the mind and therefore perform more economically for all actions, it will also act as a form of dissociation, transporting the athlete from the boredom or painful situation, to a zone of calm or comfort.
- Learning to narrow one's attentional focus to concentrate on specifics, for example pace or music on headphones will benefit future deca-triathletes. Having good capacities for adjusting and narrowing their attention, will assist triathletes in overcoming adversarial problems during the event. Additionally, coaches and sports psychologists need to work with the athlete to develop their techniques of self-deception. This could be done by progressively training the mind to believe pain is actually removed from the body, or training the mind to convert all negative to positive thoughts.
- Specifically to overcome fatigue, triathletes need to practice having "power naps". This may involve taking part in overnight ultra-endurance races and confining the athlete to a 10-minute power nap approximately every four hours, which will assist the athlete in preparing for sleep deprivation coping strategies. Some athletes chose relatively primitive sleeping sites, as seen in Photo 6.2.
- Regarding motivation, it appears important that the potential deca-triathlete has high intrinsic motivations, however, strategies such as dedicating the event to a charity or to someone in particular should enhance the triathlete's motivations.



Photo 6.2. Deca-ironman competitor’s sleeping facilities beside the track.

6.4.2 Practical

- Tough, endurance involved physical training programmes need to be developed and followed by the potential deca-triathletes. During these physical sessions, mental aspects as listed above should be introduced progressively throughout.
- Potential deca-ironmen need to decide whether they will bring support crew with them to the event. Although the author would advise one should bring support crew for physical and mental assistance, the competitor should be aware that this will involve additional costings to the athlete. The deca-ironman world championships has been held in Mexico for the last number of years, and the athlete usually pays the support crews flights and accommodation. Some deca-triathletes will also pay for food, while also paying the support crew member(s) a salary. Additionally, although some deca-ironmen have one support crewmember, others have two support crew with them during the competition. Again this would appear to be a personal decision.
- One strategic tactic future deca-ironmen should employ is to take a rest after the swim. This would not only rejuvenate the body, but would also give the individuals

skin, which is extremely soft after numerous hours immersed in the pool, the opportunity to “dry out” properly, perhaps decreasing the chances of severe saddle sores. Photo 6.3 demonstrates how pliable the skin can become during the excessive duration in the water. Saddle and handle bar set-ups proved personable to each competitor, demonstrating that no specific set-up proves exceptional. The fact that one of the strangest and unique set-ups of the entire bicycle range belongs to the present overall ultra-triathlon world champion only serves to support this fact.



Photo 6.3 Deca-ironman competitor during the swim

- One of the underlying factors for completion of the deca-ironman, in the author’s opinion, is participant’s capacities to progress at low intensity. Although there are times when the athletes advance to what appears to be 80% of their maximum effort, generally 60%-70% maximum effort seems to work for the bulk of competitors.
- One prerequisites involves having the versatility to customize equipment, for example cutting up runners to accommodate the ever increasing amount of, and size of blisters or jury rigging other equipment to make the distances more comfortable, for example UM5 and UM4 strapping American footballs to their handlebars to ease biking shoulder pressures.

- There are numerous personal practical strategies which deca-ironmen may choose to use which may enhance their performance levels. For example, one of the athletes, as seen in Photo 6.4 wore a set of magnets, which apparently helps increase blood flow around the body.



Photo 6.4. Deca-ironmen health check plus personal performance enhancers (magnets).

6.5 Summary

In conclusion it is hoped that information obtained from this thesis may help future deca-competitors, as although the deca-ironman is not a life or death situation, the personal investment of time and energy is high and the personal cost of failure can be massive. Furthermore, cognitive techniques which deca-ironmen utilise, exposed in this thesis should guide future ultra-triathletes plus other endurance athletes from other

sporting disciplines, constructively in their mental preparation throughout their training and event routines. Finally, it provides directives for future researchers and coaches to assist in producing what every sportsman and sportswoman desires, optimal performance levels.



Photo 6.5. The researcher with five of the deca-ironmen.

Appendix 1.1 Pilot interview consent / procedure script

Firstly I would like to begin by thanking you for taking part in this interview. My name is Karen Weekes and I am a postgraduate student at Dublin City University in Ireland. I am currently carrying out research on motivational and mental skill strategies of endurance athletes and sailors.

Before we start, let me tell you a little bit about the interview process. You will be asked questions regarding your reasons for participating in endurance triathlons and what mental strategies you use throughout an event.

It would be very helpful if you could answer the questions as accurately as you can, so please feel free to take your time in answering. Please ask me to clarify further any questions you do not fully understand.

Any information obtained from this interview will remain fully confidential. Throughout any future written or verbal references your name or personal information will never be mentioned, codings are immediately put in place.

The mini-disc recorder will record the interview if permissible by you. The reason for this is solely for the purpose of allowing me to transcribe the interview material with accuracy. However, if you would prefer me not to use it please let me know or if you would like to turn it off at any stage throughout the interview.

If at any stage of the interview you would like a break or would like to terminate it altogether, feel free to do so.

Finally, if you would like me to forward you a copy of either the transcript of the interview for your perusal or clarification, or if you would like a copy of the final report please let me know.

Any questions?

If you are in agreement with all the above, please sign below. Thankyou

A N Other _____

Date _____

Appendix 2 1 Journals used throughout literature review

Acta Sociologica
American journal of physical medicine
American psychologist
Applied human science
British journal of psychology
British journal of sports medicine
Canadian journal of applied sports sciences
Cognitive therapy and research
Contemporary thought on performance enhancement
Educational researcher
Ergonomics
European review of applied psychology
Forum qualitative social research
Human learning
International journal of clinical experimental hypnosis
International journal of educational research
International journal of intercultural relations
International journal of sport psychology
International journal of sports medicine
International review for sociology of sport
Irish marketing review
Journal of advanced nursing
Journal of applied sport psychology
Journal of consulting and clinical psychology
Journal of humanistic psychology
Journal of leisure research
Journal of mental imagery
Journal of motor behaviour
Journal of personal assessment
Journal of personality and social psychology
Journal of research in personality
Journal of scientific medicine and sport
Journal of sleep research medical science in sports and exercise
Journal of sport and exercise psychology
Journal of sport and social issues
Journal of sport behaviour
Journal of sports medicine and physical fitness
Journal of sports sciences
Leisure sciences
Medical science research
Medicine and science in sports and exercise
Olympic coach
Perceptual and motor skills
Personality and individual differences
Psychiatry manual
Physician in sport and medicine
Psychological review
Qualitative health research
Qualitative inquiry
Quarterly journal of experimental psychology

Quest
Research quarterly for exercise and sport
Scandinavian journal of medicine and science in sport
Scientific American
Social science and medicine
Sociological theory
Sociology of sport journal
Sports medicine
The Australian journal of science and medicine in sport
The sport psychologist
Thornfield journal (Psychological journal of UCD)
Track and Field News

Appendix 3.1 Sample of theme emergence spreadsheet

Sailor codings	TOTALS	Sailor 1	Sailor 2
STATUS*		Vendee x 2	Vendee x 1
Reached physical limits	95	6	4
Reached mental limits	56	4	2
Fearful	44	2	4
Dampness / wet	42	6	3
Loving / enjoying the voyage	34	4	3
Survival	32	1	1
Knockdowns	31	1	2
Lonely	29	2	2
Thoughts of giving up	29	0	2
Fear of southern ocean	29	2	1
In awe of southern ocean	28	0	4
Pain / hurt	25	2	6
Life on board is simple / real	25	1	3
Depressed	24	1	2
Likes pushing limits	24	3	4
Happy alone	21	0	2
Feel obligation to shore team	18	1	3
Not naturally a loner	16	1	5
Aesthetic outlook	14	2	3
Finance battle	13	0	1
Need for adventure	11	1	2
God	11	0	3
Felt at home in environment	11	2	1
Rounding Cape Horn – Huge psychological factor	10	2	1
Vigilant to detail	10	2	2
Evasive re retraining to society	7	1	1
Capsize	7	1	0
Feeling boat and sailor are one	7	1	1
Yoga	5	0	0
Loves being alone	4	1	1
Parental / spouse encouragement	3	1	1
Need stubborn willpower	2	2	2
Feeling of self-fulfillment	2	1	3
<i>What they found really hard</i>			
Stressed / mental pressure	16	1	2
Noise of rigging / bashing	9	1	3
Fear of climbing mast	8	2	1
Competitors better positions	7	1	1
Race pressure	6	1	1
Growlers pressure**	6	1	1

Notes: *Status includes solo sailing race details specific to content analytic area researched; ** Growlers are icebergs;

Appendix 3:2. Potential question areas for original interview script.

	PRIOR*	DURING*	POST*
SAILORS BACKGROU ND	nature/nurture		
	intro to sailing-when/by whom/encouraged to continue?		
	Age		
	Gender		
	general info		
MOTIVATIO N	what mot sailor to want to enter VG?-self discovery/push limits etc?		
	what mot skills use to remain focused in race prep?	what mot skills used to remain mot throughout VG?	mot area = instinct/DRT/arousal/incentive etc?
	how are high levels of mot generated by sailor?	how are high levels of mot generated by sailor?	qualities learnt from race re personal mot/mot techniques?
	mot area = instinct/DRT/arousal/incentive etc?	mot area = instinct/DRT/arousal/incentive etc?	mot qualities sailors would not use again
	general drive for life? Feelings of inherent overall mot?	priority to achieve success or avoid failure?	use self determined mot? Influenced by freedom/money/travel/other?
	intrinsic – why/where derived from/what % vs extrin?	use self determined mot?	how mot to repeat race experience/either VG or other races
	extrinsic – why/where derived from/what %vs intrin?	utilise flexible mot strategies for constant environmental changes?	mot strats to recuperate?
	priority to achieve success or avoid failure?	Nach?-high or low?	does race completion remot for higher challenges? (increased SE and SC)
	use self determined mot? Influenced by travel/money/freedom/other?	association/dissociation strategies for racing mot?	Feelings of euphoria/letdown?
	sailors inherant need for extreme sailing?	underlying driving force	Feelings of success/failure?
	task orientated-interact with EO?	what mot some VGS to continue while other retire?(not from breakage's etc)	Nach?-high or low?
	ego orientated- interact with TO?	what mot strategies used through injuries/sleep dep etc?	what mot for alternative sailing/ career change/life itself?

Appendix 3 2 Potential question areas for original interview script (contd)

	PRIOR	DURING	POST
	utilise flexible mot strategies for constant changes?	sailors need for sailing in extremes?	underlying driving force for future
	responsible personally for mot?	demotivation - when is enough enough? -how can they tell?	demotivation - when is enough enough? -how can they tell?
	Nach?-high or low?	what goals set for SO to get through unscathed?	does sailor believe mot is one of most nb factors for success?
	how mot for on water training? How often? Quality level?	does fear motivate? how?when?	gender differences re mot strats for future?
	how mot for gym sessions? How often?Quality level?	fear of massive seas/icebergs/being alone/failure?	
	association/dissociation strategies for training mot?	mot for solitary confinement living conditions? Damp/cold/wet/cramped/	
	gender differences re mot strats?	mot to overcome psychological thoughts of abandonment?	
	past performances direct present motivation status?	gender differences re mot strats?	
		mot re coping with no human contact for over 90 days?	
MENTAL SKILLS	cognitive strategies used for mot	cognitive strategies used for mot	mental skills used to enhance mot
	cognitive orientations re mot	cognitive orientations re mot	mental skills used to remotivate for next race
	mental skills used to enhance mot	mental skills used to enhance mot	mental skills sued to overcome result of race ie not finishing?
	ever had professional psychological mental skills training?	if had MST did it help?/ how did it help?/utilise these skills?	psychological mental games played?
	if had MST did it help?/ how did it help?/utilise these skills?	does sailor use self talk technique for mot-cog or mot ST?	cognitive strategies used for mot
	does sailor use self talk technique for mot-cog or mot ST?	psychological methods used for 'blocking out'	cognitive orientations re mot
	psychological methods used for 'blocking out'	does blocking out help?	which mental skills enhanced mot?
	does blocking out help?	psychological mental games played during race?	choice of mental skills for future races?

Appendix 3 2 Potential question areas for original interview script (contd)

	PRIOR	DURING	POST
	psychological mental games played in prep		
GOALS	use goals as motivational strategy?	use goals as motivational strategy?	use goals as motivational strategy?
	what % do goals account for their success?	what % do goals account for their success?	what % do goals account for their success?
	goal setting strategies?	goal setting strategies	goal setting strategies
	Task orientated-interact with EO?	task orientated-interact with EO?	did goal attainment have paradoxical joy and sorrow?
	Ego orientated- interact with TO?	ego orientated- interact with TO?	would they change GSS in future?
	goals learning or performance oriented?	goals learning or performance oriented?	would they set higher goals?
	goals mastery or ability focused?	goals mastery or ability focused?	should they have set lower more realistic goals?
	set definite goals?	set definite goals?	what GSS would sailors never use again?
	direct mechanistic goals?	write down goals?	how would they improve GSS used?
	write down goals?	use multiple goal strategies?	male/female goals different?
	use multiple goal strategies?	utilise flexible goal strategies for constant environmental changes?	did goals help in success/non completion?
	utilise flexible goal strategies for constant changes?	male/female goals different?	what goalsetting strats worked best?
	do they change during race preparation?	what goal process proved most beneficial	use multiple goal strategies?
	process, performance or outcome - or all three?	short/long term goals?	short/long term goals?
	male/female goals different?	self/ coach/mentor feedback	self/ coach/mentor feedback
	which goal process proved most beneficial in prep stage?	did feedback help sailor enhance performance?	did feedback help sailor enhance performance?
	short/long term goals?	do they have clear daily goals?	do they have clear daily goals?
	self/ coach/mentor feedback		were any goals set out for the race unrealistic? What were they?
	did feedback help sailor enhance performance?		
	how long using goal setting skills?		
	do they have clear daily goals?		
	do they or have they set unrealistic goals in the past? What were they?		

Appendix 3 2 Potential question areas for original interview script (contd)

	PRIOR	DURING	POST
ATTRIBUTION	how do sailors explain success/failure?		
	stable /unstable?	stable /unstable?	ability/effort focused attributions?
	controllability-internal/external	controllability-internal/external?	strategies used to change attributions when required?
	ability/effort focused attributions?	ability/effort focused attributions?	
	strategies used to change attributions when required?	strategies used to change attributions when required?	
BURNOUT	how do they pace themselves	plays huge part in demot – how to VGS overcome this?	strat used to overcome burnout of race/recuperation strats
	coping with sleep deprivation etc for continued mot	how do they pace themselves	pick alternative goals to prevent burnout through boredom?
	intolerable stress levels?/physical/emotional exhaustion?	coping with sleep deprivation and how it effects mot	psychological skills sailors use to adhere to rehab?
	prevention strats prior to race?	intolerable stress levels?/physical/emotional exhaustion?	what burnout strats would they use for future races to facilitate mot?
	did sailor start race already burnt out?	prevention strats during race?	
	when do they feel vulnerable to burnout/how effects mot?	psychological skills to help sailors adhere to rehab?	
	do they have perfectionist tendencies/personally disorganised etc?		

Note *Three categories specified – ‘Prior to during’ and ‘post’ the Vendee Globe sailing race

Appendix 3 3 Incipient pilot script with prompts

Ques No	Question
1	How long have you been involved in sports such as sailing and hillwalking?
2	How were you introduced to these activities? club/family/friends/other
3	With regard to mountaineering, what is the longest duration you have remained in the mountains? gives idea of endurance duration capacities/ can compare endurance durations to other subjects
4	Why do you like taking part in endurance activities? what motivates subject- self discovery/push limits/recognition/ finance/self worth/gain relief from societal roles highly achievement orientated?/ self determined?/high self efficacy?/ motivation for living in cold/damp/uninviting conditions? gender differences re motivation task or ego oriented?
5	What keeps you focused in preparatory phase of an expedition i.e getting finance together and getting organised etc motivation to remain focused motivation for mental and physical fitness programmes/ for continued commitment mental/goal setting strategies used in preparatory phase responsible for own motivation or advised from other people/shore team/ expedition members/advisors/friends/others?
6	Does your focus change when you are on the mountain? changes in mental /goal setting strategies/ are they flexible re their mental strategies? What are cognitive skill used? change in motivation for success/are they flexible re their motivation?
7	If you set goals throughout the project how do you go about it and could you give me examples? set definite goals/write down goals/process, performance or outcome goals?/short or long term goals mastery or ability focused?/learning or performance oriented?/ how long using goal setting?
8	Do your goals ever change throughout the expedition?/ if so how? flexible goals for changing environments?/use goals as motivational strategy?/are goals re-evaluated?/ which goal strategies were beneficial?/ did goal attainment have paradoxical euphoria and sorrow?

Appendix 3 3 Incipient pilot script with prompts (contd)

Ques No	Question
9	How do you overcome periods of sleep deprivation or exhaustion?
	use of mental skill to overcome exhaustion/ fatigue?
	psychological games participants use to allay fatigue/pain/exhaustion thresholds?
	do strategies used change during an expedition/voyage?
10	Can you tell me what mind games would you use to get through tougher sections of the climb?
	imagery/ association/dissociation/attention control/relaxation/self talk/compartimentalisation etc
	any unique mental strategies?
11	How do your mind games alter for varying environments?
	do they use flexible mental strategies/how to mental strategy formats change?
	gender differences/ group differences re mental strategies
12	How have your mental techniques ever changed throughout your career?
	improvements in personal strategies/ fine tuning?/reasons for alterations in techniques?/
13	Could you tell me about any specific instance when you genuinely reached your physical or mental limits?
	personal limit levels/ recovery strategies/ do they feel mind or body was most stressed/reaction to reaching limits?
14	Were there any mental aspects that you feel helped you get through that situation?
	which mental strategies proved most beneficial when under extreme pressures/coping and stress levels
15	Could you tell me about your best experience?
	reasons for premier experience/took place in dangerous/ sensation seeking mode or calm situation with no pressures or stress levels
16	How do you feel returning back to normality again after a long trip?
	coping strategies for returning to society/feeling of euphoria or let down?
	motivational/coping strategies for publicity/ attention/ recuperation
	feel hindered by society/ want to return to peripetic lifestyle?/ why?

Appendix 3 3 Incipient pilot script with prompts (contd)

Ques No	Question
17	What would you change for future expeditions that you feel would make success of the trip more easily attained?
	changes in motivational/mental/goal setting strategies/financial/oraganisational levels etc?
18	What do you feel are the most important factors towards the success of a trip?
	get list of participants perogatives re factors important for success of a trip ie motivation, commutment, finance, determination etc
19	Is there anything else you would like to add?

Appendix 3 4 Deca-Ironman interview script

Ques No	Question
	How long have you been involved in endurance sports?
	How were you introduced to these activities?
1	What makes ultraendurance running so enjoyably for you?
2	How do you stay focused during training?
3	What keeps you focused during an ultra-event?
4	What do you feel are the most important factors towards the success of the deca? (could you list the top 3?)
5	Do you ever consciously set goals?/Could you give me some examples?
6	Do your goals ever change during an event?
7	How do you overcome periods of exhaustion?
8	Do you ever experience moments of boredom or monotony during the deca?
9	What would you consider the toughest part of the deca?
10	How do you mentally get through this period?
11	Do you use mind games during training and racing? Could you elaborate on this?
12	What are you thinking of during the deca?
13	Do your thoughts change during tougher times of the deca?
14	Have your mental strategies ever changed throughout your triathlon career?
16	Can you think of any specific instance when you genuinely reached your physical or mental limits?
17	Can you give me a synopsis of the situation?
18	How did you mentally get through that situation?
19	How do you cope mentally with pain during training or in a race?
20	Are there any specific instances in one of the events that stick out in your mind as one of your worst experiences?
21	Can you recall how you managed to cope and keep mentally focused during this tough period
22	Are there any specific instances in one of the events that stick out in your mind as one of your best experiences?
23	What made this experience so memorable?
24	Is there anything else you would like to add regarding your motivation for endurance sports?

Appendix 3 5 Sample of field notes, memos and video footage reports

Field notes

Date / day of deca 10th November, 2002 / Day one of Deca

Time 7 5 hours into swim

Location *Parc de Ninos, Monterray, Mexico /pool*

Details UM13 got back in the pool again (had been on heart rate monitor for 10 minutes as was getting palpitations), and swam two more lengths and stopped again UM4 and UM13 had a chat at the pool end – UM13 say he is finishing, feels so weak – he was quite teary and said his heart wasn't in it – he still smiles when spoken too but is obviously mega disappointed – UM4 is really supportive, saying encouraging words and putting his hands on UM13's shoulders in sympathy – positive interaction between these athletes

Memos

Deca named by many as worst experience due to most recent experience?

Many examples of husband and wife teams

UM18, says time doesn't matter (really?)

Video footage

Date 15th November, 2002

Time 0200

Location *Parc de Ninos, Monterray, Mexico / track*

Details Bike speeds appear very rhythmic, but somewhat slower than during the day, the track is quiet except for the cyclists passing by when you just hear the “whoosh” of the wheels, or someone calling for some food and drink from their support crew The four Canadians are cycling together all night, well wrapped up in layers of clothes for the cool nights

Appendix 3 6 General dimensions and higher order theme categories / category breakdowns

Adversities

Adversities / external / pre deca
Adversities / external /during deca
Adversities / internal / boredom / prior to &during deca
Adversities / unpredicted /external / during deca
Adversity / internal / fatigue /sleep deprivation (and effects of) / during deca
Adversity / internal / pain/ health concerns/ prior to &during deca

Coping

Coping / cognitive strategies /goal setting
Coping / cognitive strategies / attentional focus/during deca
Coping / cognitive strategies / compartmentalisation / mathematical or mini goals / during deca
Coping / cognitive strategies / dissociation / music choice / during deca
Coping / cognitive strategies / imagery / during deca
Coping / cognitive strategies / meditation / prior to & during deca
Coping / cognitive strategies / overcoming boredom / during deca
Coping / cognitive strategies / self deception / prior to & during deca
Coping/ cognitive / overcoming reaching limits / post ultras
Coping / cognitive strategies / spiritual and existential orientations / prior to & during deca
Coping / deliberate planning / deca specific tactics
Coping / deliberate planning/ customising equipment / during deca
Coping / deliberate planning/ support crew
Coping / cognitive strategy / overcoming fatigue / during deca
Coping / cognitive strategies/ overcoming pain / during deca
Coping / deliberate planning / overcoming pain / practical / during deca
Coping/deliberate training / mental / pre deca

Deviant cases

Deviant case / deca specific testing / prior &during deca / not relevant to research
Deviant case / subculture / co-operation / peer respect / not relevant to research
Deviant case / subculture / co-operation / peer respect /not relevant to research
Deviant cases / advice to others

Motivation

Motivation / self efficacy / intrinsic
Motivation for deca completion / extrinsic
Motivation for deca completion/ intrinsic
Motivation for training / extrinsic
Motivation for training / intrinsic
Motivation for ultra-endurance / extrinsic
Motivation for ultra-endurance / intrinsic

Performance impactor

Performance impactor /cognitive / goal setting/ general
Performance impactor / cognitive / goal setting /during deca
Performance impactor / cognitive orientations / personal assets
Performance impactor / cognitive / goal changes & deca strategy alterations / during deca
Performance impactor / technical / nutrition tactics / during deca
Performance impactor / technical / training strategy / mental
Performance impactors / personal / mood states / prior & during deca
Performance impactors / personal / spouse / prior & during deca
Performance impactors / personal / reaching limits (or not reaching) / physical and mental limits /

Performance impactors / personal / race thoughts/ during deca
 Performance impactors / technical / training strategies & thoughts / during deca
 Performance impactors/ personal / self – realism
 Performance impactors/ technical / reasons for not finishing

Phenomenological impactors

Phenomenological impactor / personal / goal setting / future
 Phenomenological impactor / personal / importance of strong mental capacities
 Phenomenological impactor / personal / catharsis /prior to & during deca
 Phenomenological impactors / personal / activity history ~ experiences / prior to deca
 Phenomenological impactors / personal /deca prerequisites
 Phenomenological impactors / personal views /
 Phenomenological impactors / personal / toughest part of deca
 Phenomenological impactors / personal / worst experience
 Phenomenological impactors / personal / best experience
 Phenomenological impactors / personal / experiential learning
 Performance impactors / personal / importance of mental skills

Appendix 3 6 Deca Athletes coding category breakdowns (contd)

Adversities / external & internal / pre deca	Not enough training (4/I) Finding sponsorship (11/I) (2/FN) (5/I) (4/FN)
Adversities / external/during deca	Weather / -rain / wind / heat / cold (9/I) Bike day 2 UM 4 got 2 punctures (FN) Lap counter mistakes (11/I)
Adversities / internal / boredom / prior to & during deca	Bored during deca (18/I) (2/I) Double deca longest race post deca because too boring (9/I) Bored with shorter races (18/I) (9/I) Never (12/I)
Adversities / unpredicted /external / during deca	Unhygienic pool (FN) People and ducks on track (18/I) Spokes breaking on wheel (FN) Resting or sitting down and relaxing when not psyched for rest of race = disaster (2/I) Athletes needs not respected / traffic / disorganisation (9/I) Race mechanic messed UM2's gears night before deca start – caused pre-race tension / stress (FN) Pool 28 degrees (FN) (17/I) Stress etc from external considerations when deciding to retire from race (17/I) Post swim UM2 green mucus came out of his ears in the shower (FN)
Adversity / internal &external / fatigue /sleep deprivation (and effects of) / during deca	Deca 2000 (11/I) 9 5 hours sleep in 9 days (11/I) Fell asleep while biking in 2000 deca (11/FN) UM2 falling asleep on bike so went to sleep for 6 hrs (FN) Biking- day 3 UM7 has slept a total of 2 hours since the beginning of the race (FN) UM2 Frustration as falling back asleep and missing targets (FN) Many athletes spoken to dreaming about blood, nightmares, murder (FN) 1-2- hrs per 24 hrs (3/I)

	<p>4-5 hrs sleep per 24 (5/I) Sleep duration changes as goals change – slept according to physical needs (6/7 hrs per 24) (9/I) Ample recovery time (9/I) Previous deca – every 4-6 hrs = 20 min sleep (9/I) Hallucinating but still no sleep (11/I) (6/I) Walking / propped on two of crew – sleeping (40K) (11/I)</p>
Adversity / internal / pain/ health concerns/ prior to & during deca	<p>Shoulder after swim (5/I) Achilles at start of run (5/I) Blisters on feet (4/I) (3/I) Tendentious in shoulder during swim (4/I) Arms during swim (6/I) Legs from pushing limits while biking (9/I) Really suffered, in great pain (17/I) Breathing restrictions (11/I) Boredom of deca makes tougher to mentally overcome pain (4/I) Saddle sores on backside (11/I) (18/I) (FN) 11 40 hrs into swim UM18 lying down and getting sick (FN) Biking, day 2 UM18 major boil on her rear end (FN) Many athletes leg muscles stiffened up after bike and took approx two days of walking to loosen up – different muscle groups being used etc (FN) 18 hrs into swim UM4 struggling plus severe coughing fits (FN) Illness / bronchitis (9/I) Personal health –cough (11/I) Unable to breathe during swim (11/I) Horrible pressures due to pain (5/I) 3 hrs into swim UM 16 came out and sat outside for a break – roughly 20 minutes after returning to the pool he got out and got violently sick (heavy quantities of water for 6 or 8 bursts) (FN) 19 5 hrs into swim UM16 more vomiting and then back into the water (FN) 11 5 hrs into swim UM11 checked by doctor as can't breathe properly /sat out for 20 minutes and then got back in again (FN) 19 hrs into swim All swimmers coughing badly from adverse pool conditions (FN) Post swim All athletes really itchy after unhygienic pool conditions –retching / coughing (FN) Post swim UM2 can hardly talk after swim as throat totally raw (FN) Biking, day 2 UM2 stomach somewhat upset from the pool water and excesses of redbull and Gatorade (FN) UM 18 expected blisters and sores =but not so many, or such pain (FN)</p>
Coping / cognitive strategies / attentional focus/during deca	<p>Focus on positive thoughts (3/I) Importance of positive mental state for focus (3/I) Kinaesthetic awareness (17/I) (9/I) Chronic and acute technique / endeavoured to make perfect swimming stroke (17/I) Active meditation – concentrate on one theme (4/I) Dissociate – transfer self to another space (4/I) Time limit (9/I) Difficult – many distractions e g tents etc (4/I) Achieving objective (12/I) Focus on food / association (9/I) Focus on how body feels / association (11/I) (9/I)</p>

	<p>Focus on winning (11/I) Focus on lap times (11/I) Focus on race / association (9/I) (11/I) Positive future thoughts (12/I) Positive thoughts (12/I) Happy thoughts (2/I) Necessary to attain outcome goals i.e. winning (11/I)</p>
<p>Coping / cognitive strategies / compartmentalisation / mathematical or mini goals / during deca</p>	<p>Bike 4 hours / takes break – records details laps / kilometres per hour – then forms goal distance for upcoming hours (5/I) Breaks down race / various disciplines into laps (4/I) (17/I) (2/I) Breaks into discipline / event time dependant categories e.g., laps, 30K, 10K etc (17/I) (2/I) Never uses / none (18/I) (9/I) Bike 400K take rest / self praise on completion of mini goal (3/I) Constant calculations (12/I) (2/I) UM2 approached swim like one big loop (FN) Very rational / mathematical (9/I) Monitors heart rate (9/I) Monitor / calculate speed (9/I) Monitors calories (9/I) Race routine = hunger – eat/fatigue – rest (9/I) UM2 compartmentalises swim into next kilometre (FN) Most of the athletes take each discipline separately –deal with part first - and then break it up into smaller parts / they don't think of finishing bike miles etc but think of the next 10K or 30 K etc – complete sections (FN) UM2 segregating biking distance into Ironman distances (FN) Biking- day 4 UM2's goal today is to cycle 3 ironman distances (FN) Works in marathon distances / multiples of ironman distances (2/I) Uses mileage / checkpoints (2/I) Works on speed over distance (2/I) First marathon run at normal speed, every following marathon , add on one hour (2/I)</p>
<p>Coping / cognitive strategies / dissociation / music choice / during deca</p>	<p>Irish trad (Lord of the dance) / new age (4/I) Celtic / Springsteen / rock easy listening (18/I) Mexican radio playing European pop (radio) (2/FN) New age / mystical (CD) (17/FN) Monty python / Celine Dion etc (tape) (10/FN) Heavy metal / Judas Priest / AC-DC (5/FN) Anything on radio / Mexican or European music (15/FN) Rock from 1970's / various rock bands – Pink Floyd etc (16/FN) Meatloaf /Rock mixes / Anything except classical (13/FN) Doesn't listen to music (9/FN) (6/FN) (12/FN) (19/FN) (14/FN) (8/FN) (7/FN) When feeling good , focus on targets / speeds and thresholds (2/I) Dissociate when feeling good (2/I) Looking at scenery etc when relaxed (2/I) Thoughts of proud or happy thoughts keep athletes going for ages (2/I)</p>
<p>Coping /cognitive strategies / goal setting / during training and deca</p>	<p>Competition focus enhances goal setting (3/I) Always sets goals for training and racing (11/I) (12/I) (17/I) When you focus on a goal you don't want to let it go, but it may be detrimental to your health (17/I)</p>

	<p>Always sets goals (2/I) Sets time goals (2/I) Completion (5/I) Set process goals, not outcome goals (4/I) Beat personal best (9/I) Major goals set during deca (17/I) Outcome goal / Race completion (18/I) 2 marathons per day during run (18/I) Continuously setting goals throughout deca (2/I) Mini goals ensure continual progress (2/I) Pace checks assist in attaining goals (18/I) Mini goals towards competition success (12/I) Outcome goals – finish deca (5/I) Regularly sets goals (12/I)</p>
Coping / cognitive strategies / goal setting / general	<p>Personal life goals (3/I) Training (3/I) Previous races – set time goals (9/I) No real goal setting (18/I) Live full life (4/I) Double deca (4/I) Not as competitive as before (9/I) Relieving pressure on self (11/I) During race = completion / improve time (5/I) Spontaneous to the event (12/I)</p>
Coping / cognitive / goal changes & deca strategy alterations / during deca	<p>Changed goals to complete course (9/I) (11/I) Changed during deca – time goal to completion goal (4/I) Goal change as conditions change (9/I) Review goals when got bronchitis / saw couldn't win (9/I) Goal change to finish within time limit (9/I) Sleep duration's expand (9/I) Prepared to alter goals from original plan (2/I) Changes made to sub goals (2/I) Learn to refocus goals (2/I) Previous race goal was to win, now to finish (9/I) Clarify new goals (12/I) Previously set time goals (18/I) Asses progress (12/I) UM2 claimed will have beer or tequila shot before he sleeps during deca as it cleans out system and gives body a feeling of a boost or kick (didn't happen during deca) (FN) UM2 shattered after swim but keen to cycle and is toggled out in all biking gear / was planning to cycle for a while, but then decided to go for a rest for 50 minutes (FN) Biking, day 2 acute change regarding sporadic progression and self-evolving problematic concerns when UM2 saw lap positions / result = increases focus and speed (FN)</p>
Coping / cognitive strategies / imagery / during deca	<p>Robocop / in time with music / robotic action (4/I) Imagery alterations (4/I) Sees self after finish – drinking celebratory beers / chatting with friends (4/I) Transportive imagery – other places / comfort zones (home watching TV etc) (4/I) Visualised race completion (5/I) (4/I) (17/I) Physical visualisation (4/I) Emotional visualisation (4/I)</p>

	<p>None (9/I) Think nice thoughts (2/I) Positive visualisation (17/I) Thoughts of sex (2/I) Imagery – feelings / emotions (4/I) Fellow competitor and UM5 running for line – like in a movie (5/I)</p>
Coping / cognitive strategies / importance of	<p>Most important asset for ultra-distance (11/I) Mental aspect must be 100% in tune (11/I) Mental approach prioritises everything (11/I) 51% mental (18/I) Must train mentally to know how far etc body can go (4/I) Must be mentally prepared for ultras (2/I) Important to lock into positive emotions (2/I) Very important (11/I)</p>
Coping / cognitive strategies / meditation	<p>None (5/I) Meditated during deca (2/I) Meditate to conserve energy (2/I) (17/I) Lower heart rate (2/I) Meditation / personal conversations with God (3/I) Meditation helps relaxation = running smoothly = conserves energy (2/I) Helps make running etc automatic (2/I) More like yoga than meditation (2/I) Trance – totally focused – in own world listening to music (4/I) Never – personally too specific / too rational (9/I) None – tried once but fell asleep (11/I)</p>
Coping / cognitive strategies / overcoming boredom / during deca	<p>Dissociation / listening to music (3/I) (18/I) (2/I) (4/I) Association – listen to body / focus on how to race more productively (3/I) Dissociation / thoughts re external pressure from friends / work – financial and emotional support (5/I) Boredom means has slowed pace, so must regain focus and forget boredom (17/I) Self deception (17/I) Aesthetic awareness (2/I) Contemplating sexual desires (2/I) Thoughts of prospective significant other (2/I) Dissociation – thoughts of daughter (4/I) Mentally prepared before race for boredom (9/I) Self-talk/mental conversation with mother / friends (18/I) Relax (2/I) Re-association (17/I) Planning future goals (18/I) Dissociation / imaginary conversations (18/I) Always calculating personal times (12/I) Comparisons with other athletes times (12/I) Dissociation – support crew members walked a some laps with athletes (FN)</p>
Coping / cognitive strategies / self deception	<p>Pretend another athlete is catching up (11/I) Too realistic to trick mind (18/I) (9/I) You can lie to your body for long durations re pain (17/I) Telling body pain will disappear (17/I) Deceiving mind that this is last lap ever swimming, biking etc (17/I) Tricks mind to prepare for greater distances (2/I) Setting higher targets than required (2/I) Convinces self that its an enjoyable experience (17/I)</p>

	<p>Converts negative to positive thoughts (17/I) Deceiving mind to complete two more laps and then take rest, but continues on (17/I)</p>
Coping/overcoming reaching limits / post ultras	<p>Must debrief self (2/I) Emotions are wild/ unpredictable (2/I) Regain self trust (2/I) Takes short period of time – up to a week (2/I)</p>
Coping / cognitive strategies / spiritual and existential orientations	<p>Praying / conversing during deca (3/I) (17/I) Seeks assistance from God (3/I) Meditation / personal conversations with God (3/I) Desire to use skills given by God (17/I) None (5/I) (6/I)</p>
Coping / deliberate planning / deca specific tactics	<p>Patience (3/I) (18/I) Goldfish syndrome (2/I) Endeavour to keep motivated (2/I) Focus on next lap (2/I) Pacing / Not rushing (3/I) UM2 drank redbull, shmfast and 'wake-up' caffeine tablets (FN) Build up race profiles (2/I) Decide on specific equipment need for deca (2/I) Psyche up for specific event (2/I) Learn to re-focus (2/I) Unique race therefore needs special treatment (3/I) Pacing / Association / listens to body / knows from past experience (3/I) Walked between 4-6am (5/I) Slept 12-4am (5/I) Prepare through past race experiences (6/I) Knowing the lap will pass (18/I) Walk /chill in heat of day (18/I) Run in cooler times (18/I) Versatility (2/I) Focus on chronic and acute technique (17/I) Have alternative options to overcome potential problems (2/I) Pre swim / All athletes put Vaseline /anti friction cream all over their bodies (FN) Pre swim / Most athletes put plasters / tape on nipples to prevent cracking / friction burns from wetsuits and water (FN) Differing eating strategies while swimming (FN) UM2 during swim-positive thinking (FN) UM2 negative counting from halfway distance in each discipline (FN) (UM11) (UM6) (UM18) (UM16) has organised nutrition lists specific for deca (FN) UM11 has personal masseur (FN) UM2 plus other athletes stay in tent because it keeps him in tune with race / also what he is used to (FN) (n= 15) competitors sleep beside track as want to stay focused etc Others (n=4) return to sports village to sleep (FN) Nutrition Deca food versus personal dietary needs (FN)</p>
Coping / deliberate planning/ customising equipment / during deca	<p>Difficult to get exact gear so cannibalises equipment himself (2/I) Adapt gear for personal specifics (2/I) Cutting up runners (3/I) American football cut up / strapped to bull bars / protected shoulder (5/I) Specialised equipment (FN)</p>

	<p>Cutting up wetsuits during swim (FN) UM2 cut legs off his wetsuit, that's legs and arms cut off wetsuit/ also put one cut off part over his knee (FN) Time spent testing various insoles and styles for blister prevention (FN)</p>
Coping / deliberate planning/ support crew	<p>Recording laps/kilometres / athlete makes goal adjustments through race accordingly (5/I) (18/I) Respect for support crew (4/I) Act as athletes brains - while they are zoned out in deca (4/I) Importance of assistance from support crew (2/I) All athletes appreciate support crews (4/I) Double check / tackle lap counters (11/I) Monitoring swimming lap times / notices something wrong (UM1 1 'asleep' while swimming) (11/I) During swim relies on support crew to stop him every 30 laps for food (17/I) Mutual respect/ appreciation (18/I) Couldn't complete 2000 deca because support crew late (18/I) Conferring with support crew (18/I) UM4 went for a short rest while his support crew changed the tubeless tyres (FN) Drinking bottles grabbed from support crew while on the move and then the athlete throws the bottle back when finished and ready for refill (FN) Support crew making smoothies, shopping, chopping up runners, encouraging etc (FN) UM2 went to bed at 1am and SC9 woke him at 4am to ensure UM2 didn't fall back to sleep (FN)</p>
Coping / cognitive strategy / overcoming fatigue /	<p>In 2000 deca slept for 20 mins / slowing pace, then continued (9/I) Desire to win / motivation for maintaining placings (9/I) (11/I) Slow pace (9/I) When fatigued / sleep (9/I) Phone family /get energy boost / cathartic reaction (12/I) Stops as little as possible (12/I) Nutrition (11/I) Self deception (17/I) Competitive pressure from peers (11/I) Acceptance (18/I) Self deception – pretend not going to make it so pretend to ramble – takes away stress and anxiety (2/I) Deliberately make yourself angry / past anger thoughts experience – snap out of lethargic mood (2/I) Influenced through literary research about Tibetan monks (17/I) Dedicate race to others - pressure to complete race (2/I) Coping (18/I) Enters a 'mental zone' (17/I) Meditates (17/I) Sleeping while walking /propped up by support crew for 40K (11/I) Sleeping while swimming (200M)/unique experience for him (11/I) Compartmentalisation – multiples of ironman distances (2/I) Ensuring progress being made (2/I) Absorbed energy from support crew and other competitors (2/I) Aesthetic awareness (2/I) Sexual desires (2/I) Hoping to impress significant other (2/I)</p>

	<p>Dissociation – listen to music / other thoughts (3/I) Converse with God (3/I) Association – focus on race (3/I) Support crew encouragement (3/I) Focusing on goal targets (5/I) Body fatigued, mind strong (5/I) Peers – joking etc helps rid deca related pressures (4/I) Self makes jokes (4/I) Self deception –not so tough / tired etc (4/I) Dissociation / UM4 props his two arms over the poolside and listens to Lord of the Dance while SC3 massages his shoulders – his eyes are totally closed in meditation (FN) Athletes require various amounts of sleep throughout deca (FN) UM6 and UM11 = determined as kept running even though hallucinating (FN)</p>
<p>Coping / cognitive strategies/ overcoming pain / during deca</p>	<p>Realisation that pain was not life threatening (3/I) (18/I) Realistic pain duration = hours/days etc not lifetime (3/I) (6/I) (18/I) Future thoughts – race repercussions of success versus non success (3/I) (6/I) Meditation (2/I) Mentally prepared for pain (6/I) Internal control (3/I) Told self to just keep going slowly (17/I) Pain management (17/I) Mind over matter (17/I) Sexual fantasies (2/I) Catharsis / emotional release (crying) (3/I) (5/I) (4/I) Emotional release (crying)/Energy surge - from external force– reaction to youngest sons email (5/I) Determination (2/I) (6/I) Hoping to impress significant other (2/I) Compartmentalisation (2/I) Positive self talk / spiritual orientations – seeking assistance from God (3/I) Visualisation / thoughts of finishing line (5/I) Dissociate / put pain aside / abstract pain outside body / try not to think about pain (4/I) (12/I) (3/I) Just deal with it (17/I) Attempted dissociation (18/I) Imagery – thinking of room at home / watching TV (4/I) Visualised natural high (4/I) Frustration not being able to run and complete deca sooner coz of pain (4/I) Live or die philosophy (6/I) Gradual progression (6/I) Argues with self (6/I) Pain expectancy (6/I) (3/I) (2/I) Outcome pain goal (6/I) Mental tactics – breaks/ pace reduction =maintain goal (9/I) Converting negative to positive thoughts (18/I) No mental deception (18/I) Visualising self as being whole (18/I) Acceptance as part of deca (18/I) (17/I) Appreciation when pain levels had reached unacceptable levels</p>

	(17/I)
Coping / practical / overcoming pain / during deca	<p>Change circumstance – shower etc/ feel human again (3/I)</p> <p>Medication (3/I) (5/I) (17/I)</p> <p>Taped up feet (4/I)</p> <p>Slower pace (11/I) (9/I) (4/I)</p> <p>Took break (11/I)</p> <p>Quit race (11/I) (17/I)</p> <p>Encouragement from support crew (2/I)</p> <p>Overcoming blisters different strategies every time (2/I)</p> <p>Stopped and had medication (2/I)</p> <p>Liquid / food breaks (9/I)</p> <p>Change food / clothes (9/I)</p> <p>11 5 hrs into swim UM18 sleep at back of pool area (FN)</p> <p>UM4 burst own abses on inside of mouth while looking into mirror while hanging onto pool-edge (FN)</p> <p>UM2 covered all body parts in sudocream which soothed itchinness after swim (FN)</p> <p>UM2 taped up entire backside (to prevent saddle sores) plus gel saddle (FN)</p> <p>Many athletes treated by SC3 for saddle sores / taping up affected area (FN)</p> <p>UM 19 hurt his leg so got acupuncture on his ear (FN)</p> <p>UM18 boil on backside had it lanced / had rest (FN)</p> <p>4 hrs into swim UM16 got rehydrated after being violently sick and began swimming again (FN)</p>
Coping/deliberate training / mental / pre deca	<p>Pain expectancy (6/I)</p> <p>Preparatory pain threshold increases (6/I)</p> <p>Mentally prepare for extreme pain (18/I) (3/I) (6/I)</p> <p>Repeating mantra during training- I will be in pain/I will suffer' (6/I)</p> <p>Preparatory self talk for pain (6/I)</p> <p>Two months of mental preparation (6/I)</p> <p>Mental preparation though past races (6/I)</p> <p>High mental strength training required prior to deca (18/I) (4/I) (11/I)</p> <p>Happens naturally (2/I)</p> <p>The longer the build up the better (2/I)</p> <p>Need to psychologically lock into the event (2/I)</p> <p>Pre race nerves and psyche help to get you through the race (2/I)</p> <p>UM17 mentally preparing for deca for six years (FN)</p> <p>Extensive literary research re mental strategies (17/I)</p> <p>Train mind to blank out thoughts, increasing energy (17/I)</p> <p>Mental planning /strategy is important (11/I)</p>
<i>Deviant case / deca specific testing / prior to & during deca / not relevant to research</i>	<p><i>Pre swim / All athletes weighed and had blood pressures taken (FN)</i></p> <p><i>Hypocratic test (blood test) and RPE medical test (FN)</i></p> <p><i>20 38 UM2 completed swim / During blood test and psychological testings he looked highly fatigued / Sugar level was 67 where it should be 120 – must eat foods with high sugar content / drink coke etc (FN)</i></p> <p><i>Psychological checks – most athletes give 13-15 (very hard on RSP test) (FN)</i></p>
Deviant case / subculture / co-operation / peer respect / not relevant to research	<p>All competitors deserve recognition from doing ultras (6/I)</p> <p>UM2 cycle alone mostly (FN)</p> <p>Deca athletes not part of subculture (2/I)</p> <p>Respect / admiration / fondness factor (3/I) (FN)</p> <p>Different attitudes to race (18/I)</p> <p>All deca athletes share same emotions and camaradene (2/I)</p>

	<p>Like large family (5/I) 24 hrs pre deca UM10 out biking at 0430 yesterday and today around the tennis courts from 0430-0730 (FN) 24 hrs pre deca UM9 & UM 12 getting photos taken, part of focusing procedure (FN) Subculture (FN) UM 6 well respected by fellow athletes (FN) Similar goals – push limits harder and further (4/I) Appreciation of deca challenge throughout peers (5/I)</p>
	<p>Definite culture here – most athletes remarks on benefits / encouragement / help / support / advice from other athletes – continual help (FN)</p>
	<p>Appreciation of varying targets (5/I) (4/I) Outside people don't understand (9/I) Peers very special people (4/I) Possible isolation from other sport disciplines, but ultra-peers can relate (6/I) Regularly same group of athletes (9/I) Think / act the same (9/I) Mutual understanding (9/I) Friendship (18/I) Positive interaction among athletes on arrival at airport (FN) Comparing past ultra experiences (FN) Peer praise/ appreciation (4/I) Can compare ultras (4/I) High respect for peers (6/I) (18/I) Athletes with positive outlook (4/I) Peer contact / share ultra-experiences (4/I) Respect for peers (2/I)</p>
Deviant case / subculture / co-operation / peer respect / relevant to research	<p>Positive support / peers assist anyway possible (9/I) (FN) (18/I) Athletes helping each other and interact through positive vibes, e.g. – back patting, chatting, cycling together, especially the French athletes (FN)</p>
	<p>UM7 and UM12 spend a lot of time biking together (2 older competitors) and also UM6 and UM19 (who are younger and obviously good friends) (FN) Athletes are unique because they help each other regarding gear / advice / support crews inter assistance (FN)</p>
	<p>Sharing medical equipment (5/I) (FN) UM14 encouraging UM2 (FN) Peers assist in deca completion (12/I) Peer encouragement helps motivation (18/I) (4/I) Peers assist in easing race pressure (4/I) Brings realism – enjoyment – reason for doing deca (4/I) Positive talk from UM4 to UM14 re retiring from deca (FN)</p>
Deviant cases / advice to others	<p>Do a marathon for self discovery – experience pushing limits (4/I) Achieve goals (4/I) Always have positive visualisation (4/I) Exceeding limits is rewarding (18/I) Experience freedom from ultras (18/I) Nothing is impossible (17/I) Don't make excuses, just do it (17/I) Do appropriate distances (18/I) Endurance races especially good for women (18/I) (UM3) Endurance provides feelings of strength (18/I)</p>

	Enjoy it (3/I)
Motivation / self efficacy /	<p>Mentally strong because of past ultra success (4/I)</p> <p>Self belief of continuing until cut-off time (4/I)</p> <p>Increasing personal best for number of ultras yearly – will continue this (9/I)</p> <p>Nothing is a problem (9/I)</p> <p>Knows can complete ultras (9/I)</p> <p>Full belief in ability (9/I) (4/I)</p> <p>Know can achieve being professional (11/I)</p> <p>Self-belief in deca completion (18/I) (4/I) (5/I)</p> <p>Positive self belief (4/I) (17/I)</p> <p>Complete deca with mental capacities (4/I) (17/I)</p> <p>Self belief re personal potential for high achievements (11/I) (17/I)</p> <p>Everyone should have high self belief (17/I)</p> <p>Others admire him (4/I)</p> <p>Success – self orientated (4/I)</p> <p>Self-praise for living full life (4/I)</p> <p>Ultra –specialist (4/I)</p> <p>Boasting about self (9/I)</p> <p>Self-praise re winning (9/I)</p> <p>Hero image at home (4/I)</p> <p>In media demand (4/I)</p> <p>Time usage / organisation (9/I)</p> <p>Achievements (9/I)</p> <p>Sets accurate time goals (9/I) (11/I)</p> <p>Achieve race predictions (9/I) (11/I)</p> <p>Records of placings (9/I)</p> <p>Peers know UM11 can win (11/I)</p> <p>Peers know UM11 can break record (11/I)</p> <p>Peers fear of UM11 (11/I)</p>
Motivation for deca completion / extrinsic / during deca	<p>Recognition (5/I) (6/I)</p> <p>Compares speed to competitor (11/I)</p> <p>To win (11/I)</p> <p>Break world record (11/I)</p> <p>Reaching objective (12/I)</p> <p>External tribute – dedication to dead husband (18/I)</p> <p>Dedication / tribute to others (2/I) (11/I)</p> <p>Was world champion for double and triple, wanted deca too (6/I)</p> <p>To impress significant other (2/I)</p> <p>To be the 2nd Brit to complete (2/I)</p> <p>50% to see his peers (6/I)</p> <p>External pressure – completion for kids / friends / work / financial backers / charities (5/I) (12/I) (2/I)</p> <p>Role model (father) influence (17/I)</p> <p>Finish race [Hawaiian ultraman] for father (17/I)</p> <p>External factor – people generally accept giving in to easily (17/I)</p> <p>Motivated by support crew (2/I)</p> <p>Live up to expectations of friends etc of small hometown population (5/I)</p> <p>UM2 increasing bike speeds when had seen peers laps counts (FN)</p> <p>UM5 totally in love with wife, and 4 kids / dependant on wife for event completion / if she lost interest in the events, he would not continue doing them (FN)</p>
Motivation for deca completion/ intrinsic	<p>Final ultra triathlon (18/I)</p> <p>Exceeds physical and mental limits (11/I)</p>

	<p>Intrinsic / winning other ultras (18/I) Positive experience (18/I) Personal determination (2/I) Not aiming to win (2/I) The will to finish after past event disappointment (2/I) Self- motivation (3/I) Desire for greater challenge / difficulty (5/I) Progressive challenges / difficulties (3/I) Loves ultra concept (3/I) Personal desire for championship status (6/I) Desire to finish race within cut off time (9/I) (2/I) Ultimately there to enjoy it (2/I) A personal dream (17/I) To meet friends / have a good time / meet local people (17/I) Desire to improve personal best (9/I) Loves pushing self / physical aspects (3/I) (18/I) Positive internal repercussions from participation / good feelings plus good health (3/I)</p>
Motivation for training / extrinsic	<p>Desire to complete major challenges/overcome difficulties (5/I) Easier if goal to aim for i.e. competition (3/I) Literary research influenced attitude and increased training schedule (17/I) Chance to get out of work environment (9/I) Competition / increases dedication to training / trains harder (3/I) New tougher challenges/goals (18/I) Specific training for ultra-events (18/I) (2/I) Thoughts re upcoming race (12/I) (17/I) Originally influenced by others (2/I) Relieving some pressures from himself (11/I) Event progressions Doubles/triples/ultra/deca (18/I)</p>
Motivation for training / intrinsic	<p>Intrinsic love / enjoys training (3/I) (12/I) (11/I) (17/I) (2/I) Addiction/reliance – goes crazy if unable to train (3/I) (2/I) Logs and monitors training (5/I) Habit (2/I) Physiological interest (9/I) Simple (9/I) Finds it very hard to stay focused for training (2/I) Understanding health /physiology (9/I) Mental escape (11/I) Post training euphoria (11/I) Opportunity to relax (18/I) Chance to find solutions to external problems (18/I)</p>
Motivation for ultra-endurance / extrinsic	<p>Specialised events- not done by masses (4/I) Recognition (4/I) To be world number one (6/I) Achieve world recognition (6/I) Competing (11/I) External factor Privilege given by God (17/I) Thoughts of daughter checking deca website (4/I) Family bereavement – dedication to son (9/I) Opportunity for women to compete equally with men (3/I) Needs constant external encouragement (4/I) Each year strives to improve ultra ability for fathers sake (17/I) Strongest motivator = dedicating event to others (2/I) Need for external recognition (4/I)</p>

	<p>Thoughts of people in life threatening extreme situations(2/I) Needs rewards (4/I) Not public recognition (?) (4/I) Self example to patients (9/I) Originally to win races (9/I) Maintaining / gaining positions (9/I) Lost enjoyment (11/I) Motivation to win is more difficult / pressures / depression (11/I) Phenomenological tales for grandchildren (4/I) Winning (11/I) Big targets takes intrinsic motivation away (11/I) Originally encouraged by peers in running club (2/I)</p>
<p>Motivation for ultra-endurance / intrinsic</p>	<p>Allows for digging deep / pushing limits (4/I) (9/I) (3/I) Part of specialised ultra culture (4/I) Became bored with marathons / ultras – wanted greater challenge / testing mental and physical limits (18/I) (4/I) (12/I) Self discovery / test personal limits (4/I) (12/I) (9/I) (11/I) (17/I) (2/I) Positive feelings from success (5/I) Won't let environment beat him (2/I) Loves experiencing feeling of mental and physical separational balance (17/I) Always new experiences (12/I) Progressive boredom with smaller distances (9/I) Loves achieving zone of optimal functioning (17/I) Personal / physical challenge (11/I) (17/I) (2/I) Not really the competing (2/I) Personal achievement /development (5/I) (2/I) Self-praise/satisfaction (5/I) (4/I) Self improvement all-round (4/I) Improves coping capacities (4/I) Pleasure when crosses the line (6/I) Pleasure when others cross line (6/I) Physiological interests (9/I) Love of outdoors (9/I) Complete races for fun (9/I) Rediscovering intrinsic values (11/I) Trying to gain back intrinsic values (11/I) Has appreciation / need for increased intrinsic values (11/I) Ultra endurance for personal goals is good / more enjoyment (11/I) Experience in ultras (4/I) Pleasurable experience/ enjoyment (11/I) (9/I) (18/I) (2/I) Prioritises intrinsic versus extrinsic (11/I) Motivation changes with goal change (11/I) Intrinsic / lifestyle (18/I) Freedom (18/I) Always new experiences (12/I) Inherent love of endurance (3/I) Prnde (3/I) Happy to complete event, no major time goals (2/I) Desire for progressive distances (2/I)</p>
<p>Performance impactor / cognitive orientations / personal assets</p>	<p>Determination / clenched teeth (5/I) (4/I) (6/I) (12/I) (17/I) (2/I) Not elite at any individual discipline (5/I) Mentally strong (6/I) (4/I) Competitive nature (6/I) (9/I) (11/I) Works training around busy schedule (9/I)</p>

	<p>Organised (9/I) Self example (9/I) Prepared (9/I) Acceptance of mistakes (9/I) Variety of interests (9/I) Highly emotional – crying / screaming (4/I) Comparison to others doing nothing with lives (4/I) Consistent ultra performances (6/I) Positive outlook (9/I) In control (9/I) Thinker (17/I) Personal priorities (17/I) Found initial Ironman events easy (18/I) Simplicities of life if organised (9/I) Honesty (9/I) Good mental and physical powers given by God (17/I) Appreciation of Mexicans (18/I) Persistence (12/I) Self realisation – crazy (4/I) Returned to complete challenges (1,000 mile race) (3/I) Forgets negatives (3/I) Persistence (3/I) (2/I)</p>
Performance impactor / technical / nutrition tactics	<p>Energy foods (3/I) Importance of natural foods (3/I) Coke near end for caffeine and sugar (3/I) No specialist foods (4/I) High CHO foods (4/I) Virtually perfect for self now (2/I) Nutrition different for every person and race (2/I) Much coca cola – sugar / magic (4/I) High protein intake (2/FN) Fatty foods (2/FN)</p>
Performance impactor / technical / training strategy / mental	<p>Builds up mentally and physically (18/I) Has personalised / meditative bike training routine (17/I) Has special training room at home (17/I) Has taught self to sleep while biking when in training room / wakes feeling rested / adapts routine into deca event (17/I) Continuously improve mental practise – at work / everywhere (4/I) Pre race practising active meditation (4/I) Push further in training (11/I) Mentally trained for deca for 6 years (17/I) Negative thoughts/ talk / avoided re poor training schedule (4/I)</p>
Performance impactors / personal / mood states / prior to & during deca	<p><i>Pre swim / Tense yet relaxed feeling Excitement and nervous laughing (FN)</i> <i>Pre swim / UM11 looking chilled and relaxed</i> <i>5 hrs into swim UM11 looking relaxed slightly tired but in good form (FN)</i> <i>Pre race mood – UM2 relaxed / informative (FN)</i> <i>Bike day 4 UM19 got really angry with the lap counters due to mistakes in lap content (FN)</i> <i>UM17 seems relaxed – only one to do major stretching before getting into pool (FN)</i> <i>Stress / anxiety / tension (2/I)</i> <i>UM11 looking chilled and relaxed (FN)</i> <i>24 hrs pre deca UM2 gone to shops/ wants time alone to go over thoughts and get focused (FN)</i></p>

	<p>UM19 and UM4 look tense (FN) Bike day1: UM9 in great form – really seems happy and enjoying the event (FN) UM2 frustrated because had no spare wheel –took 3 hrs to get replacement (FN) UM18's temper and patience frayed (FN) 4hrs into swim: UM2 in great spirits / eats rice / fully alert / making jokes / feeling good and strong (has now done 10K and 4 laps) (FN) 8.5hrs into swim: UM2 still in great spirits, alert eyes, making jokes, feels good (FN) 9hrs: UM2 being slower than he hoped but still in good spirits and will be fine (FN)</p>
Performance impactors / personal / spouse, family & friends / prior & during deca /	<p>Trained with husband (18/I) Dependency on husband (18/I) Loss of husband / felt suicidal (18/I) Husband and wife team (5/I) (11/I) (18/I) When tired / under pressure phones wife/ family (12/I) Shared initial desire for deca (5/I) Discuss tactics together (5/I) (11/I) (9/I) Compartmentalise plan together (5/I) Maintained focus with help from support crew (2/I) (4/I) Attentional focus – Assisted by family and friends (12/I) (17/I) Wife records statistics (lap times etc.) (5/I) Wife relayed goals / assisted in overcoming fatigue (5/I) Wife part of support crew/encouraged him (9/I) Husband and wife work as team – packing / organising equipment (9/I) Works with wife to find solution re sponsorship deals (11/I)</p>
Performance impactors / psychological / reaching limits (or not reaching) / physical and mental limits /	<p>Reached mental limits and quit sport (18/I) Deca=furthest he has ever mentally gone – unsure if reached total limits (5/I) Not mentally but close with pain in feet (4/I) Hallucinations-long duration / black and white (6/I) Hallucinating during night / continued racing (6/I) (11/I) Never / progresses methodically through distance increases (9/I) Reached limits twice – continued racing (11/I) Nearly reached limits (3/I) (2/I) Ability to push further (3/I) Reached physical limits (5/V) Hallucinations during 2000K –extreme heat (3/I) Suicidal / husbands death (18/I) All difficult situations mentally forgotten (12/I) All difficult situations mentally forgotten (12/I) Reached limits in Himalayas (17/I)</p>
Performance impactors / personal / race thoughts/ during deca	<p>Dissociation – friends / God (3/I) (17/I) Family/ friends /future races / past positive experiences (3/I) (18/I) (12/I) (2/I) Home/normality (5/I) (4/I) Association / perfecting technique (17/I) Thoughts of email from son – became emotional (crying) (5/I) Thoughts of his children / wife motivated him for long duration (5/I) (17/I) Strong imagination – playing games looking to see concepts in surroundings e.g. mountains were breasts (5/I)</p>

	<p>Upcoming food (6/I) The finish (9/I) Calculating times/distances (12/I) (17/I) Comparing other athletes times / distances (12/I) Association - race details – speed etc (3/I) (9/I) Positive thinking (3/I) Focusing on road (6/I) Concentrated on self – signs of malfunction (9/I) Focuses on race (9/I) (17/I) Aesthetics (2/I) (17/I) How insane the deca was (2/I) Concentrating on keeping up moral and confidence for deca completion (2/I) Silly – so long (4/I) One of toughest of all races (4/I) Not harder than imagined (4/I)</p>
<p>Performance impactors / technical / training strategy ~ thoughts /</p>	<p>Mental and physical capacities must work together (3/I) Doubles/ triple/ultra / deca progressions (18/I) Nutrition (3/I) Training bike set up at home / allows for ease of training (17/I) Cycles 100K to work every day (9/I) Physically trained for deca for 6 years (17/I) Always has realistic training requirements (18/I) Mental training to learn to relax mind (17/I) Changing preparation tactics (11/I) Training through past races (6/I) Sleep deprivation training (3/I) Tough training mentally and physically (18/I) Writing time goals for competition (11/I) Training daily (3/I) Cycles daily (3/I) Cycles 2,000K per month (9/I) Runs 3-4 hours at weekends per day (150K) (9/I) Recording training logs – good for present and future races / goal averages and mini goals (5/I) Ten hours per week / coz has wife, 4 kids, job (5/I) Olympic triathlon distances for last couple of weeks prior to deca (2/FN) 14 hrs per week (4/I) Organising training is simple (9/I) Trains in work pool at lunchtimes (9/I) Swims with family (9/I) Versatile training (9/I) Trains outside (18/I) Trains inside (2/I) Dresses appropriately (18/I) 30 hrs/week (18/I) Very important (11/I) Poor training schedule (4/I) Easier if goal to aim for 1 e competition (3/I) Not enough/ not easy to do everything (5/I)</p>
<p>Performance impactors/ personal / self-realism</p>	<p>Never be world champion again (9/I) Not able to improve training (9/I) Enjoys too many disciplines / not focused on one (9/I)</p>

	<p>Felt it was unfair 'why me?' etc [had to abandon the deca] (17/I) Faced many guilt trips re people who had sacrificed to get him to the deca (17/I) Once definite decision is made re retiring from deca, life is easier (17/I) Will return to do deca again (17/I)</p>
Performance impactors/ technical / reasons for not finishing	<p>Not breaking record (11/I) Health (11/I) Unable to attain goals (11/I) (2000) mentally not ready (18/I) No support crew (18/I) Bike, day 3 UM11 retired today due to saddle sores etc (see interview) (FN) Bike, day 3 UM17 retired due to knee problems (FN)</p>
Phenomenological impactor / personal /catharsis /prior to & during deca	<p>Emotional after triple talking to kids (crying) (5/I) Catharsis/ Energy surge (crying) (9/I) (17/I) (2/I) (5/I) Stormy mind – cried and felt calm (17/I) Extra strength (9/I) Ran faster than ever before (9/I)</p>
Phenomenological impactors / personal / activity history & experiences / prior to deca	<p>Introduced by friend (5/I) Always involved in various sports (3/I) Always loved running progressive distances (3/I) Long running history (4/I) In Guinness book of records for most ironmen distances in one year (9/I) UM18 has completed over 70 marathons /'master of ultras' (4/I) Multi –sport interest (4/I) Fully incapacitated in teens for 3 years with illness (2/I) Fat and overweight in teens (2/I) Endurance preferences (4/I) Lifetime (9/I) Mostly competitive (9/I) Vast ultra-experience (9/I) Life time sport participation – always soccer (11/I) Extensive marathon history (18/I) (UM12) Extensive ultra-experience (12/I) Long sauna sessions for 6 weeks prior to Death Valley (2/I) UM17 said last year in double ironman on second last lap he got a puncture, his hands were trembling, body was shaking from fatigue and adrenaline and changing the wheel was one of the hardest things he ever had to do (FN) Needed to complete Hawaii ultraman for self, to overcome recent personal experience 'it doesn't matter if I die after the finish line, I had to get there'(17/I)</p>
Phenomenological impactors / personal /unique deca prerequisites	<p>Past ultra experience (4/I) Strong mental capacities (4/I) Athlete never really complain – might be in agony and feeling pain, but don't really complain (FN) Exceptionally long mental and physical preparation (17/I) Athlete must have ability to separate mental and physical capabilities (17/I) Other opinion / influences – non affective as realises the distances are silly (4/I) (6/I) UM12 wears magnets over his body to assist blood flow (FN) Wetsuits on or off for temperature regulation (FN)</p>

	<p>Customising equipment / chopping up wetsuits (FN)</p> <p>Equipment checks (bikes) (FN)</p>
Phenomenological impactors / personal views	<p>Important for women to compete in these events (3/I)</p> <p>Disillusioned about racing/ pleasure loss (11/I)</p> <p>Wants to regain enjoyment factor of ultra- endurance (11/I)</p> <p>Conscious of the fact that although the strategies work for him, they may not work for others (2/I)</p> <p>During ultra-endurance – short term memory confused/ Long term memory is fine (2/I)</p> <p>Trains best when he is most tired (17/I)</p> <p>Trains badly when relaxed and floppy after relaxing day coz mental capacity is also resting (17/I)</p> <p>UM2 never read a book in his life (FN)</p> <p>Tired of pressures (11/I)</p> <p>Not reaching targets = stress/anxiety = negative spirals = less economic performance levels (2/I)</p> <p>Never do an ultra after big disappointment (2/I)</p> <p>Negative emotions = negative spirals / depressions hard to get out of (2/I)</p> <p>Afraid of personal performance (11/I)</p> <p>Performance predicted by mental capabilities on the race day (11/I)</p> <p>Post race has reward – champagne / chill out relax / big meal (2/I)</p> <p>Self fear (11/I)</p> <p>Sleep requirements specific to personal needs (3/I)</p> <p>We are put on earth to do the best we can (17/I)</p> <p>One's mind can overrule their body, but ultimately you must be honest with yourself re how far to go with injuries (17/I)</p> <p>Importance of mental strength (11/I)</p> <p>Not everyone has strong mental capabilities (4/I)</p> <p>Winning 2000K- from third race day was in the zone (3/I)</p> <p>Felt suicidal when husband died (18/I)</p> <p>Quit sport (18/I)</p> <p>Privacy (doesn't let others see her cry) (3/I)</p> <p>People make excuses, but everything is possible (17/I)</p> <p>Re mental coping various philosophies around / some run steady paces, others don't (2/I)</p> <p>Need a grow up attitude and get through adversities is the key for ultra-endurance (2/I)</p>
Phenomenological impactor / personal / goal setting / future	<p>Double deca- longer would be too boring (9/I)</p> <p>Changing competition goals (11/I)</p> <p>Taking some pressure off self (11/I)</p>
Phenomenological impactors / cognitive / toughest part of deca	<p>Running section (5/I)</p> <p>Swimming – not a good swimmer (4/I) (6/I)</p> <p>High pain levels (4/I) (18/I)</p> <p>Sleep deprivation (9/I) (11/I)</p> <p>Lap counter mistakes (11/I) (17/I)</p> <p>Restarting after resting (12/I)</p> <p>Last 26 miles - body relaxes / pain really sets in / tough mental push to continue (2/I)</p> <p>Separating mental and physical capacities (17/I)</p> <p>Achieving a good mental zone (17/I)</p>
Phenomenological impactors / personal / worst experience	<p>Not immediately known (3/I)</p> <p>Ultra-run / extreme pain / could not finish / did not quit (3/I)</p> <p>External adversities = weather (rain) – wet roads / wet gear –</p>

	<p>extreme blisters (3/I) Self-efficacy – hindered by external adversities (3/I) Hawaii ultraman – in extreme pain (17/I) The deca – so much pain for so long (5/I) When peers / people plant negative thoughts (4/I) No real worst ultra experience (4/I) Deca –swimming – immense pain (6/I) Past racing experience (9/I) Mistakes made – food / clothing (9/I) Lost placing (9/I) Finished second last (9/I) Ignoring adversities to detriment of performance (9/I) Deca 2002 (11/I) Double deca experience (11/I) Retired from both races due to lack of mental training (11/I) Defeatist attitude- not winning so quit (11/I) Deca – biking 850K with saddle sore (18/I) Lap counters mistakes - understandable but mentally tough to handle (12/I) Understandable but mentally tough to handle (12/I) Deca was recorded as worst experience by many athletes is this due to the closest memory, i.e. race just over etc? (FN) Best or worst experiences generally determined by performance levels or position results (FN)</p>
Phenomenological impactors / personal / best experience	<p>(no thought delay) (3/I) Winning ultra-running race (3/I) Race success (3/I) Aesthetic experience during ultra – escorted by baby whale during swim (17/I) Winning competition (triple)in renowned race (6/I) Personal achievement (6/I) (2/I) Gained peer / ultraculture recognition (6/I) Performing well in world championships (9/I) No self expectancies (9/I) No external pressures / expectancies (9/I) Past winning experience / winning 2000 deca (11/I) Friendship of subculture (18/I) Support / encouragement from others (18/I) Beating high calibre competitors, including men (3/I) Past event –performed (5/I) Ultra –during bike (4/I) Ultra - during swim (4/I) Self praise / self pride (3/I) Best or worst experiences generally determined by performance levels or position results (FN)</p>
Phenomenological impactors / personal / experiential learning	<p>Learnt new racing realism’s throughout deca (5/I) Mental preparation though previous ultra-races (6/I) Learn to cope and handle various pressures through previous ultra-races (17/I) Knowledge of adversities (9/I) Experience from past races helps attain attentional focus (9/I) More medication for future races (9/I) Increase motivations and personal encouragement through previous ultras (17/I) First time going through pain barrier in Death Valley ultra (2/I) Working 12 hr nightshifts after day in college built up endurance</p>

	<p>(2/I) Learn to see negative vibes coming over time and learn how to handle them (2/I) Has learnt to handle blister pains over time (2/I) Learn mental prevention tactics through experience (2/I) Increase alternatives / options (9/I) Not so much equipment preparation for future races i.e. testing equipment etc (9/I)</p>
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Notes 'I' = Data gathered from interviews, 'FN' = Data gathered from fieldnotes, 'V' = Data gathered from video footage

Appendix 3.7 Narratives for general dimension and higher order thematic categories

This multi-faceted section seeks to comprehensively explain derivatives of all the established coding categories, while sharing excerpts from appropriate transcribed interview scripts with the reader. Finally, the narratives provide insight into the comprehensive progressions through which specific thematic categories emerged.

Raw data collected from interviews and other fugitive documents, pertaining to explain cognitive strategies and motivations utilised by deca ironman triathletes, were comprehensively broken down through various coding techniques, (details of which can be seen in the methodology section of this paper). Five dynamic primary coding categories or "general dimensions" emerged. The general dimensions comprise of adversities, coping, motivations, performance impactors and phenomenological impactors.

As can be seen from the excerpts in this section, the general dimensions are generated from numerous higher order themes. These higher order themes formed the platform from which the general dimension categories evolved. They incorporate concepts of specific importance influencing an athlete's potential deca completion such as pain, boredom, fatigue, training tactics etc.

The higher order thematic categories are further broken down by their second level themes, the titles of which relate to their origins. These second level themes include areas such as meditation, training schedules etc.

In the following narrative section information concerning the general dimensions are initially discussed, followed by explanations for the higher order and second level themes, for each of the five primary categories.

General dimension No 1 Adversities

Adversities, for the sake of this research paper, are classified as various obstacles which deca athletes can potentially encounter throughout the deca ironman, which have the potential to hinder or even terminate an athlete's attempt at race completion.

Due to the fact that the deca ironman has the potential longevity of nine to fourteen days duration, this provides numerous potential opportunities for various adversities to become prevalent causing counter productive obstacles for an athlete striving for success. Although athletes participating in events such as the deca-ironman have vast previous experience in the world of ultra-endurance, adversities have the potential to disrupt participant's race focus and tactics. These adversities can only be overcome by a two fold solution, firstly the athletes have to demonstrate adequate coping capacities and secondly, conditions must permit the athlete the chance to overcome the specific problem area.

Potential adversities which emerged from higher order theme analysis were established from two constructs, namely internal or external. The raw data gathered demonstrated that examples of internal adversities proved of far higher prominence compared to external sources.

Internal categories describe adversarial concepts generated from within the athlete as a whole. They can be mental or physical and have the potential of being overcome if the athlete has the necessary fundamental mental and practical attributes and knowledge to choreograph themselves around the specific problem area. Internal adversities which could potentially hinder a deca athlete's performance during the event include boredom, pain, fatigue and lack of attention and focus.

External categories on the other hand, describe adversities derived from sources peripheral to the athlete. Higher order themes concerning potential external obstacles involving adversities prior to and during the deca competition included areas of difficulty such as lack of finance, debilitating weather conditions or mistakes by others.

The general dimension adversities was dimensionalised into six higher order themes.

Adversities / external / during deca

Throughout the deca-ironman competition some of the athletes experienced adversities derived from a source outside of their control. These negative influences, generated through human error, weather or fate, could potentially incur stress and tension on the athletes, which at times resulted in debilitating performance levels. Interestingly, external adversities relayed by the athletes were minimal.

Weather / rain / wind / heat / cold (9/1)

"one fault [that I made] was that I was in the leading group in cycling and even though it was very cold and was raining, I didn't want to put clothes on. It was cold so my digestion did not work."

Lap counter mistakes (11/1)

"another tough part is mistakes with the lap counters. This is really a shit. There have been so many times when they count me wrong."

Appendix 3.7 Narratives for general dimension and higher order thematic categories (contd)*Adversities / external / pre-deca*

This particular higher order thematic category concerns potential stressors placed on the athletes which occurred prior to the deca-ironman taking place, which played a debilitating role in the athlete's preparation for the actual event. The problematic concepts emerged through various sources, such as not achieving desired training targets or experiencing difficulties in attaining required finances to compete in the event.

Not enough training (4/1)

I was supposed to train between 15 and 40 hours a week, but it was less than that. Work took over and things. I didn't train enough for the deca.

Finding sponsorship (11/1) (2/FN) (5/1) (4/FN)

Maybe what is the solution [is to] find new sponsors, a new partner and I think I can do big things in triathlon. (UM11)

I like to be able to come here and each event. I do get sponsored, business sponsors and financial activity like happy hours or bowling nights. It's difficult to get the money. (UM5)

Adversities / internal / boredom/ prior to & during deca

When athletes take part in events of immense longevity and in such confined and restricted locations as the deca-ironman, it comes as no surprise that many of the athletes experience boredom during the competition. This higher order theme incorporates references made by the athletes regarding boredom experienced at various stages during the deca-ironman. It also examines how boredom has affected athlete's perspectives and progressions in ultra-endurance participation generally through ultra-experiences prior to the deca-ironman.

Bored in deca (9/1)

While walking for days on the same lap I said it's very boring, so [from now on the] double iron will be the longest distance I will do.

Progressive race boredom (18/1)

'I've been in marathon running for a few years, then it was kind of boring, I knew I can run a marathon so I tried an ironman, and I wanted to the one in Hawaii, I have been twice in Hawaii, and after a while it became boring again and I said to myself well if I can do an ironman I can do a double iron. (18/1)

Adversities / internal / pain / health concerns / prior to & during deca

Paralleling adversities such as fatigue and boredom, pain poses higher risks of surfacing in events of long intensity such as the deca-ironman, as opposed to competitions of shorter duration. All the athletes involved in this research, without exception recorded experiences of pain during the event. Areas under the auspices of this particular higher order theme concerned physiological health concerns which had occurred to the athletes primarily during the deca-ironman. Excerpts concerning painful experiences of the sample group prior to the deca, containing information of potential relevance to this study are also incorporated into this category, deemed applicable where athletes explained how they overcame specific painful circumstances which took place during other ultra-endurance experiences. Concepts in this category spanned the broad spectrum of breathing difficulties or muscle strain, to blisters or saddle sores.

Adversities / internal / fatigue/sleep deprivation / during deca

As all the athletes expend such high energy levels, while having, in most cases, minimal sleeping requirements, fatigue poses a major threat for the participants. The full complement of sample athletes revealed experiences of fatigue and sleep deprivation during the deca-ironman, therefore meriting the establishment of this higher order theme which specifically concerns athlete's references to sleep duration and experiences of fatigue during the event. Evidence of athlete's hallucinations during the race are also included in this section. Although the hallucinatory experiences are intertwined, in this instance, with extreme fatigue, they are also discussed in the coding category concerning reaching limits/ during deca/

9.5 hours sleep in 9 days (11/1)

during the last deca [2000] I was very tired. You know in the whole race which I won, I sleep nine and a half hours (11/1)

1-2- hrs per 24 hrs (3/1)

I used to sleep a little in the deca too. One hour maybe, but no more than 2 hours per day. (3/1)

Adversities/ unpredicted / during deca

Even though the athletes in this investigation have insurmountable vast experiences in the area of ultra triathlon, this

Appendix 3.7 Narratives for general dimension and higher order thematic categories (contd)

coding concept reiterated the fact that ultra-endurance as a sporting discipline is a continual learning experience and athletes cannot always be prepared for all eventualities. This higher order theme incorporates athlete's references to potential stressors or problematic areas which occurred during the deca, which were unpredicted by the participants prior to the event taking place

Unhygienic pool (FN)

People and ducks on track (18/I)

"they [people walking in the race area] disturbed me a lot because out of my eye I see them move from left to right, it was really too much movement and this really disturbed me because I couldn't concentrate and always had to be ready to brake" (18/I)

General dimension No 2 Coping

Coping, for the sake of this project is defined as the cognitive and practical processes which individual deca athletes incorporated into their endurance programmes. It also concerns athlete's abilities to adjust and transfer appropriate behavioural actions to overcome potentially adversarial moments, while also ensuring continued unhindered progress being made in their quest for deca completion. Coping strategies emerged as an integral part of this research investigation with deca-athletes divulging how they endeavour to overcome adversities and remain focused on completing the deca circuit

The higher order themes represented from the general dimension of coping categories are sub categorised into cognitive strategies, cognitive preparation, deliberate training, deliberate planning and finally practical concerns

Cognitive strategies involves specific mental tactics employed by the athletes to assist them in overcoming any potential problems posed throughout the deca, to ensure continued progressive deca activity

Cognitive preparation involves any mental preparation procedures undertaken by the athletes prior to the deca event

Deliberate training incorporates any training specific tactics employed by athletes prior to the deca-event, which may assist in overcoming deca specific potential problematic areas. Deliberate training may concern mental or physical, strategic training routines

Deliberate planning includes all concepts which the athlete has employed, prior to the deca event which the athlete feels when introduced into their deca programme, may encourage overall event completion, through decreasing potential negative factors

"Practical" aspects are definitively practical strategies athletes incorporate to overcome various deca specific situations such as temperature regulation etc

Coping / cognitive strategies / attentional focus / during deca

High capacities for attentional focus is required to compete in ultra endurance distances during training and competition. This higher order theme comprises of data which corresponds to any mental strategies which deca triathletes incorporate into their training and competition strategies

Pre race practising active meditation (4/I)

'you have to practice your mind I think, not only in training, but maybe you can be in front of your computer and you can practise your mental training sometimes you are doing like active meditation and you practise it anywhere' (4/I)

Necessary to attain outcome goals i.e. winning (11/I)

to do well in competition I know I have to train really hard you must train the physical and the head, you know, push the mental further all the time, that helps you in competition' (11/I)

Coping / cognitive strategies / overcoming pain / during deca

For athletes involved in an event of such extreme physical intensity and longevity as the deca-ironman, experiencing pain of various intensities is inevitable. Collected data demonstrates that this proved to be the case for all the athletes involved in this investigation, while it also demonstrates various cognitive methods which the athletes incorporate into their coping strategies to overcome pain or injury caused throughout the competition. This higher order thematic concept contains excerpts of cognitive pain coping strategies athletes have incorporated into their coping mechanism structures throughout the deca-ironman

Realisation that pain was not life threatening (3/I) (18/I)

"Well I knew that this pain will happen, I am never surprised, I knew the pain would come I knew it and then I think "OK" I am not going to die this will finish this day will end a very important thing is, just think for example, what happens in a few days more, this will be finished I say this pain is not going to beat me I am in control" (3/I)

Appendix 3.7 Narratives for general dimension and higher order thematic categories (contd)

"Pain is temporary, pride is forever (laughs) no, eh if it would be a pain which puts my life in danger, you know something really dangerous, I would say no, that's it I have to quit', but as long as its just pain, and I know that in one week, two weeks it will be gone, it is just an awful pain but it will not kill you, so why should I quit?" (18/I)

Coping / cognitive strategies / compartmentalisation / mathematical or mini goals / during deca

All athletes taking part in this research portrayed that they incorporated compartmentalisation into their deca strategies to enhance their opportunity for deca completion. This higher order theme, involving the concept of compartmentalisation concerned athletes mentally breaking down the deca distances into smaller, perhaps more manageable sections. These smaller components came in various formats, such as kilometer distances, laps, marathon distances, or portions of time.

Breaks down race / various disciplines into laps (4/I) (17/I) (2/I)

'I break the swim or perhaps the bike or run into distances the swim I break into laps, maybe every 30 laps then in the bike or run I use kilometres the amount of kilometres depends on the stage of the race maybe I might use 30K or 10K or sometimes just 5K (17/I)

"

Constant calculations (12/I) (2/I)

"I always have to make [calculations], calculate my times and those of others" (12/I)

Lots, all the time [use of watch] I really calculate all the time maths the best way to keep going is by always, I'm always calculating I'm looking at miles to go how much time is left on the clock, what pace am I going at its just simple little calculations (2/I)

Coping / cognitive strategies / dissociation / music choice / during deca

The concept of dissociation being a beneficial coping strategy has long been recognised in the area of sport psychology. This coded category primarily classifies athlete's referrals to personal music choices for dissociative purposes. It should be noted that not all the athletes used music as a dissociative method. Other examples of specific dissociative techniques employed throughout the deca-ironman are included in this category.

Irish traditional (Lord of the dance) / new age (4/I)

I listened a lot to music the Celtic music, that's the kind of music that can make me go into meditation (4/I)

*Celtic / Springsteen / rock easy listening (18/FN)**Coping / cognitive strategies / imagery / during deca*

As demonstrated in the review of literature chapter, imagery has proved its worth in world sport for enhancing athlete's performance levels. Data collected in this research paper demonstrated some of the deca-athletes incorporated imagery constructs throughout their deca experiences to aid performance and assist in mentally coping with problematic areas of the deca ironman. This higher order theme reflects athlete's references to imagery and visualisation usage as a coping mechanism during the event.

Transportive imagery – other places / comfort zones (home watching TV etc) (4/I)

I was swimming [in much pain] and I thought I was in my room and I watched some TV and its like a natural high (4/I)

' with the music you can imagine your world and you are not here, you're like maybe in your room watching TV " (4/I)

Visualised race completion (5/I) (4/I) (17/I)

I see myself crossing the finishing line so from the beginning I see myself finishing the race (17/I)

Coping / cognitive strategies / meditation

Research data demonstrated that some of the athletes incorporated meditative practices as a coping strategy into their training and event regimes. In this higher order theme, references made by some of the athletes describe meditation benefiting performance levels by promoting energy conservation through mental relaxation, consequently decreasing the heartbeat. Personal perspectives and approaches to meditation and meditative coping strategies used by numerous deca athletes throughout the event and training routines are described in this thematic category.

Meditate to conserve energy (2/I) (17/I)

Appendix 3.7 Narratives for general dimension and higher order thematic categories (contd)

I imagine a void of nothing and just concentrate on the music – I believe this helps from tiring the mind and therefore the body too (17/I)

None –tried once but fell asleep (11/I)

“I tried – when you put on a walkman and CD and someone speaks to you to tell you to relax and so – but all the time I just fall asleep (laughs) – after 7 or 10 minutes I fall asleep (laughs) – its no good for me (11/I)

Coping / cognitive strategies / overcoming boredom /during deca

As previously mentioned, an event such as the deca-ironman has the potential for numerous phases of boredom. Mental strategies which the triathletes incorporate into their deca experience to assist in overcoming the potentially detrimental problematic area of boredom are explored throughout this higher order theme

Planning future goals (18/I)

“ as soon as it gets a feeling or boring I start thinking – I guess I have found a way to get over the boredom – to say, I start imagining, what I will do next week, what I will do in one year (18/I)

Refocus (17/I)

if I have time to say – oh I’m bored – , its because I have lost focus and I have lost spirit – when I realise that I am doing that I just concentrate again and out again strong focus and I forget about my boredom (17/I)

Coping / cognitive strategies / overcoming fatigue / during deca

Concurrent with boredom, the data collected demonstrated that the deca athletes used various mental strategies to help them overcome the inevitable concept of fatigue produced from sleep deprivation and the physical strain of the event. This coding category contains conscious mental concepts which the athletes recognised as purposefully aiding their plight to cope with fatigue during the deca-ironman

Desire to win / motivation for maintaining placings (9/I) (11/I)

‘ I want to win so I know I have to keep going – this is enough for me to get over the tired feeling – sometimes I sleep for maybe one hours, or maybe eat something – but mostly it was the motivation to win – I knew UM20 was not too far behind and I knew if I sleep maybe he catches me (11/I)

Influenced through literary research about Tibetan monks (17/I)

I have read some books written by Tibetan monks and they tell about the power of the mental over the physical – they teach me a lot – what I have taught myself over the last years is to go totally into the mental zone – we must train our minds to relax by blanking out thoughts and then this will allow us to achieve more energy and help us to keep energy levels high” (17/I)

Coping / cognitive strategies / self deception

Self-deception involves strategies which some athletes employed as a coping mechanism. The belief that the strength of an individual’s mental capability can exceed a person’s physical abilities was widely portrayed by the athletes. The data collected demonstrated that many of the athletes deceived their minds, almost brain washing themselves to believe positive cognitive information “programmed – into their minds, blocking out feelings of boredom, pain or fatigue and resulting in enhanced performance. This higher order theme involves examples of self-deception which the athletes incorporated into their coping strategies during the deca-ironman

Pretend another athlete is catching up (11/I)

“Sometimes I tell myself there is someone catching me when there isn’t – ‘ (11/I)

Deceiving mind that this is last lap ever swimming, biking etc (17/I)

I use my mind to convince myself that everything is good, that this is the last time I will ever be swimming in a pool in my life, or this is my last time I will ever be on a bike and I convince myself that it is really a great experience – by doing this, by persuading myself that this is my last time doing these things – I really start to enjoy it (17/I)

Coping / cognitive strategies / spiritual and existential orientations

The concept of spiritual orientations effectively enhancing an athletes cognitive coping strategy, for the sake of this research paper, refers specifically to athletes gathering mental and physical strength from God, while existential orientations concerns any references by the athletes regarding philosophical questioning with God. Two of the ten sample athletes found that conversing, or seeking assistance from God enhanced their coping abilities for overcoming the various adversities posed throughout the deca-ironman

Appendix 3 7 Narratives for general dimension and higher order thematic categories (contd)

Praying / conversing with God during deca (3/I) (17/I)

I talk to God and he helps me I think of so many things we have so much time to think (laughs) I think about God” (3/I)

I have been given a privilege by God he gave me good mental powers and physical powers and the reason he gave me these things was to use them and not to waste them by just ignoring them ” (17/I)

Seeks assistance from God (3/I)

“Sometimes it’s ‘ Oh God, please help me!’” (3/I)

“I know that God is always there and that he helps me when I ask him I talk to him all the time during these distances ’ (3/I)

Coping / cognitive strategies /attentional focus /during deca

Data collected from the deca participants demonstrates that attentional focus plays a large role in productive performance levels of deca-athletes Codes involved in this category portray examples of the athletes focus and refocusing of external and internal thoughts throughout the deca-ironman, which assist them in their attempts of achieving their ultimate goals, which, regardless of timing or placings is to complete the deca ironman within the allocated time

Focus on positive thoughts (3/I)

‘ You must always think positive things in the deca everything is mental mental mental you must think positive things to stay focused for a race like the deca I think of my family, previous races, previous good experiences, good hopes for future times “(3/I)

Kinesthetic awareness (17/I)

I feel the sensations of the water on my body ’ (17/I)

Coping / personal / overcoming reaching limits / post deca

During ultra endurance events, and more specifically in the deca-ironman, athletes reach or push their physical or mental limits, which can prove to have an adverse effect on their overall personal well-being Throughout ultra-endurance events such as the deca-ironman, many of the competitors drive themselves to extreme limits, which may result in mental and/or physical exhaustion This particular thematic category involves references made by the athletes, which describes their methods for overcoming such experiences after completion of the ultra event

Must debrief self (2/I) / Regain self trust (2/I)

“ [after reaching limits] its more a case of debriefing yourself almost em its like when you push yourself to then limits, your emotions are very kind of wild for a long time, unpredictable almost and nits like you have to calm yourself down em you have to go through that em you imagine I suppose a cat to something who has gone through a traumatic experience you have to regain its trust or whatever, and you go through a very similar kind of thing (2/I)

Coping / deliberate planning / customising equipment / during deca

In ultra endurance races of such longevity as the deca ironman, sometimes athletes have to alter their personal equipment during any of the three disciplines, such as cutting up their running shoes or repadding bicycle saddles to ease discomfort and promote progression Possible problematic areas could include swollen and blistered feet, or saddle sores from sitting on their bicycles for such long durations This higher order theme caters for such references

Adapt gear for personal specifics (2/I)

I never find things are quite right so I take things and cannibalise them the thing is you are trying to make things as light as possible, as good as possible and as reliable as possible ’ (2/I)

Cutting up runners (3/I)

if there is something like a blister, I just cut the shoes (3/I)

Coping / deliberate planning / deca specific tactics

Prior to the deca-ironman, many of the athlete’s devised pre-planned coping strategies, which played the role of decreasing chances of the athlete’s percentages of failure, or non completion of the deca circuit The athletes integrated these tailored tactics into their ‘ game plan when specific adversities arose during the competition Excerpts concerning specific referrals made by the athletes to the pre-meditated strategies which they implemented specifically into the deca-ironman regime or tactics learnt through other ultra-endurance races are included under this higher order theme

Appendix 3.7 Narratives for general dimension and higher order thematic categories (contd)

Have alternative options to overcome potential problems (2/1)

the main thing I have discovered is to cover as many options as you can, when you go into an event, its to keep your options open its not a case of in this race I'm going to do this this and this, it's a case of going in there and saying, well these are the things which could happen, these are the solutions if they do, bang (2/1)

Patience (3/1) (18/1)

Patience is the number one [most important factor for deca success] you must have the patience like I said before patience is important because of the deca is very long when you start in the pool and you swim and swim, you must pace the body and in the bike and the run it is more difficult because some days you feel great and push too hard and maybe you burn out the body this is a long event you must not think that it will finish fast because it goes on for many days it is not a usual race" (3/1)

"first of all you have to be patient, because the distance is so very very long you really have to be patient, you have to do lap by lap and just don't look at your watch, I never wear a watch, I don't use a speedometer on my bike you just wait and sooner or later the last lap will be done patient " (18/1)

Pre swim / Most athletes put plasters / tape on nipples to prevent cracking / friction burns from wetsuits and water (FN)

Coping / deliberate planning / overcoming pain / practical

Throughout past ultra endurance events, the athletes involved in this research continuously referred to learning mental and physical strategies which ultimately has helped them overcome potentially problematic areas such as pain in present races This particular coding category describes the practical strategies employed by the deca athletes to assist in coping with painful experiences during the deca, derived through medical intervention or physical tactical alterations

Change circumstance – shower etc/ feel human again (3/1)

" sometimes I need to do other things to forget the pain, for example I go and get a shower [and] feel human again (3/1)

Slower pace (11/1) (9/1)

" in the swim I can't breathe so I have to swim slower ' (11/1)

Coping / deliberate planning / support crew

Athletes who take part in ultra endurance events such as the deca ironman have the option of 'employing' a support crew consisting of one or more people whose role is to assist the athletes throughout the competition The support crews responsibilities include ensuring the athletes nutritional needs are met, while also tending to necessary bandaging wounds, cutting up equipment to provide a comfortable fit, or waking the athlete from deep sleep etc Although support crews are not employed by some of the athletes for various personal reasons, a high percentage of the athletes choose to have a support crew on hand for assistance Eight out of ten of the athletes included in this sample opted to bring support crews with them to the event This higher order thematic category incorporates referrals made by the athletes concerning their support crews All references made by the athletes regarding their support crews were positive, claiming they aided and enhanced the athletes overall coping strategies throughout the deca-ironman

Act as athletes brains - while they are zoned out in deca (4/1)

it is definitely important the support crew because sometimes in the race you are not here, you are tired, you are like a zombie you don't know think about nothing and it's the support crew who think of you they are your head because you lost your head for all the race and you know that you have lost your head , but you know you have to put your confidence on your support crew to think about the food, to think about everything (4/1)

Importance of assistance from support crew (2/1)

' and of course the help of my support crew' [kept UM2 focused during the deca] (2/1)

Coping / deliberate training / mental / pre deca

As previously mentioned the mental capacities of an athlete play a primary role in the potential for deca completion This coding category refers to the athletes examples of deliberate mental training they incorporated prior to the deca-event, which had the potential to specifically strengthen their mental skills, and enhance their coping capacities throughout the event in question

Repeating mantra during training- I will be in pain/I will suffer (6/1)

Appendix 3.7 Narratives for general dimension and higher order thematic categories (contd)

‘ a month or two before the competition he always told himself ‘you re going to suffer you’re going to be in pain you’re going to suffer you’re going to be in pain” so whenever he started to do this race he was in pain but he had prepared himself so he knew he would feel [pain] (6/I)

High mental strength training required prior to deca (18/I) (4/I) (11/I)

this is all in the your head and of course you have to be trained, you can’t do the deca with 5 hours of training for three months you have to be tough” (18/I)

Mentally prepare for extreme pain (18/I) (3/I) (6/I)

I knew that the pain will happen, I am never surprised” (3/I) “

for me I say in such a race [as the deca], anything can happen, so you have to be able to handle as much pain as possible and whatever else comes ” (18/I)

General Dimension No 3 Motivation

Many of the athletes involved in such demanding sports as ultra endurance, must have incredibly high motivational abilities They not only endure the hardships and strains of the tough training regimes and physical and mental pressures of competition, but also maintain motivation to continue in events such as the deca when injured or while experiencing immense pain, fatigue or boredom Motivation is also required for getting through unpredicted stopping times during phases of equipment failure when the athletes cannot progress until the problem is fixed, which may take a few hours The data collected from the deca experience demonstrates that the necessity for high motivation levels is one of the main themes potentially leading towards deca success Throughout the research, deca-triathletes portrayed high motivational traits, but how the athletes developed these motivational skills to maintain high behavioural intensity and persistence while remaining focused throughout *training* and the deca-ironman itself is explored in this general dimensional category The sub-categories for motivational aspects can be reviewed in the following codings

Motivation / self efficacy / intrinsic

The raw data gathered demonstrates that deca-ironmen involved in this investigation demonstrate high levels of self efficacy, to varying degrees of intensity This higher order theme caters for any references or examples from the athletes pertaining towards exhibiting their personal traits of self efficacy

Self belief of continuing until cut-off time (4/I)

“ I know I will finish it, I know I have time until Sunday [the cut off time for the competition] I don’t care but I know I will go until the bell rings I didn’t train enough for the deca but I said “I will come here and I will finish it with my mental and that is what I will do I know this (4/I)

Full belief in ability (9/I) (4/I)

“This will not be a problem (laughs) if I finish this deca in time I will take part in the Ironman so that I can break my record again” (9/I)

Motivation for deca completion / extrinsic / during deca

Motivations for participating in the deca-ironman are obviously personable to each athlete This thematic category involves athlete s referrals to their specific motivations for completing the deca circuit, from an extrinsic perspective These extrinsic values can be derived through many sources, such as monetary or material reward, or perhaps externally derived personal desires, such as dedicating the event to a lost loved one

Recognition (5/I) (6/I)

His motivation is to leave his trace behind as a champion basically what motivated him was that he was the world champion of the double ironman and world champion of the triple ironman and now he is the world champion the deca ” (6/I)

in the company [his place of work], they are proud of me because of what I did they are proud of me when they meet me they say “hi UM5” and you know, its very encouraging for me (5/I)

External tribute – dedication to dead husband (18/I)

I started training again [for deca post husbands death] and I do it and I decide I will finish it, so here I am [Karen and so are you dedicating this deca to your husband?] yea more or less” (18/I)

External pressure = charity or significant others (2/I) (18/I) (5/I) (9/I) (17/I)

the best one that’s ever worked is you’re doing it for someone else doing it for charity is by far one of the best motivators, it gives you the energy to keep going that’s taking away the emphasis on yourself you’re not doing it for yourself anymore, so you’re going to let someone else down if you don’t do it its almost like you’re putting yourself under pressure its almost like saying their lives depend in it, if I don’t do this, then I’m letting them down and I’m not going to let them down I’ll be there this is by far the strongest motivator in an event to keep going (2/I)

Appendix 3.7 Narratives for general dimension and higher order thematic categories (contd)*Motivation for deca completion / intrinsic*

Concurrent with the previous higher order theme, individuals' motivations for completing an event like the deca-ironman are specific to the individual. This particular higher order theme involves motivational references made by the athletes pertaining towards intrinsic motivational values, and their inherent needs to satisfy individualistic personal desires of deca-circuit completion.

Loves pushing self / physical aspects (3/I) (18/I)

'I love pushing my body. I also love the physical. You decide. OK this is a big goal but I want to do it. It's the first and last time.' (3/I)

'I just want to enjoy it and experience it all. I just want to be part of it and feel my body, my head and just go to the limits. Of course you do go to the limits.' (18/I)

Finishing deca (9/I)

"Well my first aim is to finish and my second aim is to improve my personal best time." (9/I)

Motivation for training / intrinsic

It can be appreciated that to push oneself on a daily basis to arduous periods of training cannot be an easy task. Codes in this category portray the athlete's intrinsic motivations for taking part in continuously tough and enduring training routines.

Intrinsic love / enjoys training (3/I) (12/I) (11/I) (17/I) (2/I)

for me training is something that I love to do. I train mostly every day and I have been training like this for many years now. I am an addict (laughs). (3/I)

[I stay focused during training because of the] pleasure of involving me" (12/I)

Mental escape (11/I)

"I love to train, I really enjoy it. [also, ex wife causes UM11 to suffer from high stress] but when I go training I try and forget these things and I always feel better afterwards." (11/I)

Motivation for training / extrinsic

Athletes in this research sample demonstrate having one or more extrinsic values for motivating themselves to continuous arduous training schedules. These codes explain the extrinsic values deca athletes place on their continual training regimes, which in time provides sufficient fitness levels capable for attempting ultra-events such as the deca-ironman. Excerpts also demonstrate how the athletes maintain motivation through injury, pain and boredom during training.

Easier if goal to aim for i.e. competition (3/I)

for me to train is good also if I have a special event that I train for, so if there is a competition that I know I will race in, it makes it better to train harder. (3/I)

Thoughts re upcoming race (12/I) (17/I)

"I think of the next event I want to enter. For the deca I had planned physically and mentally for six years." (17/I)

"thinking of the competition" (12/I)

Motivation for ultra-endurance / extrinsic

The question as to how individuals put themselves through continuous tough physical and mental challenges created through both training and competition is one of the areas investigated by this research paper. This coding category deals specifically with what motivates deca-triathletes to take part in ultra-endurance activities from an extrinsic perspective.

Specialised events- not done by masses (4/I)

'there is only 38 people in the world history who has completed the deca triathlon, with four of them here now and that's not very much. I don't know why but we see a lot of people and then a couple of years after we don't see them anymore. This is because it is really hard. You know you can have a lot of pain and stuff.' (4/I)

Motivation for ultra-endurance / intrinsic

It seems to be imperative that the deca-triathletes have some inherent motivational traits to keep them continuously persistent and determined to complete rigorous training and event regimes. References made by the athletes in this research paper concerning their underlying intrinsic traits are dealt with in this coding category.

Allows for digging deep / pushing limits (4/I) (9/I) (3/I)

Appendix 3 7 Narratives for general dimension and higher order thematic categories (contd)

"I love pushing my body I also love the physical " (3/I)

" you also always think of the race and dig inside you always dig inside and you see something new at every step and after you have seen this you know yourself better " (4/I)

Became bored with marathons / ultras – wanted greater challenge / testing mental and physical limits (18/I) (4/I) (12/I)
To know my capacities" (12/I)

General Dimension No 4 Performance impactors

For the sake of this research the general dimension of performance impactors are classified as performance concepts which potentially encourage positive influences on an athletes overall achievement level in ultra endurance and deca specific activities

Higher order themes under the construct of performance impactors are categorized into cognitive, personal and technical groupings

Cognitive codings concern conscious mental procedures athletes incorporate into their deca strategies which ultimately have the potential to influence their deca performance

Personal codings concern individuals specific tactics, which they feel, influence their deca success potential

Technical categories are inclusive of practical and easily recognisable areas, which may influence the athlete's performances throughout the deca This concept also incorporates factors regarding areas such as the athlete's nutritional requirements or specifics of their training schedules

Performance impactors / cognitive orientations/ personal assets

It is inevitable that athletes who undertake tough challenges such as the deca ironman have positive personal qualities which help in maintaining their focus and persistence throughout the training and competition ordeals Higher order themes contained in this section discuss the athletes personal assets, which play a role on the athletes overall deca performance throughout the deca ironman, which were either mentioned specifically by the individuals or were observed by the researcher, following video or DVD analysis,

Determination / clench teeth (5/I) (4/I) (6/I) (12/I) (17/I) (2/I)

"I managed the pain and my courage was so hard and I really wanted to get to the finish line because a personal thing had happened me recently so I really wanted to get to the finish line (17/I)

"I tighten the teeth and I continue" (12/I)

" determination I know that I have this for me the determination is the key for each time I do an ultratriathlon ' (5/I)

Mentally strong (6/I)

" the pain was located in his arms [during the swim] and he said the pain was so intense that if it wasn't for his mental he wouldn't have been able to finish he says his mental was really really strong '(6/I)

Performance impactors / personal / self-realism

Personal factors which can directly affect performance both in present and the future circumstances can also have the potential for hindering an athletes positive progressions throughout an event such as the deca-ironman There are times when athletes must face the reality of specific situations with which they are faced This higher order thematic category deals with the athlete's realisation of some factual circumstance which could directly affect their ultra-endurance performances and motivational positions

Never be world champion again (9/I)

" now I know I will never ever become world champion because for a world champion I should train more ' (9/I)

Once definite decision is made re retiring from deca, life is easier (17/I)

there is so many things around you and your decision, its going to affect everyone so it is really hard, but the moment you decide to be honest with yourself its easy, it's really easy ', (17/I)

Performance impactors / personal / spouse / prior & during deca /

Throughout the data gathering process, the important role played by numerous athletes" spouses or partners was regularly highlighted The athletes ' significant other ' proved to play an integral part in organising, feeding, monitoring progress and encouraging their deca-participant, while also mentally assisting them with coping and motivation This higher order thematic category concerns spouse's responsibilities and the athlete's referrals to the influential importance of the spouses role while assisting the athlete towards success in the deca-ironman

Trained with husband (18/I)

Appendix 3.7 Narratives for general dimension and higher order thematic categories (contd)

My husband, eh and myself were a team, he helped me he came with me three years ago we went, we came to Mexico we wanted to do this race he wanted to help me, he wanted to do it for me ” (18/I)

Discuss tactics together (5/I)

I was in a big problem and SC7 [wife] was there and said you have to do something if you want to finish and she was saying something to cheer me on (5/I)

Performance impactors /cognitive / goal setting / during deca

It has been widely researched that goal setting plays an integral part in improving athletes sporting performances. Deca-triathletes used various concepts of goal setting to assist them in achieving their targets during the deca-ironman. This higher order theme specifically caters for purposeful goal setting strategies the deca-triathletes employed during the deca competition.

During race = completion / improve time (5/I)

the deca [target] was to finish and with SC7 we said that we can do it [gives distances/times etc] so we tried to focus on this and we didn't do it ” (5/I)

Set process goals, not outcome (4/I)

you think about the present, you don't think about the future, you think about the present and you think about that this is the laps I will have to do and when you do the other laps, this is the laps I have to do now and you live in the present moment, you don't try and go into the future (4/I)

Performance impactors / psychological / reaching limits (or not reaching) / physical and mental

When one is faced with experiences of such extremes of pain and fatigue crammed into a two-week period, or perhaps when athletes trudge through constant strenuous training routines, it is inevitable that mental and physical limits will be tested. This higher order theme encompasses deca ironmen references of reaching (or not reaching) their physical or mental limits. Two of the sample athletes in this investigation reached extreme mental limits which resulted in them encountering hallucinations during their deca-experiences.

Reached mental limits and quit sport (18/I)

“I was ready to quit my sport, I was ready to quit my sport and almost quit my life ’ (18/I)

Hallucinating during night / continued racing (6/I) (11/I)

It [hallucinations] happened mostly at nights, he would see it was a tree and then thought it was a person there was one part of the race and he was riding with UM19 and eh he goes “hey look at the crocodile’ and as he got further he found out it was a bench” (6/I)

Performance impactors / cognitive /goal setting / general

Deca triathletes beliefs and concepts concerning goal setting for the wide ranging world of ultra endurance and life in general are incorporated into this higher order category. These codings play an influential role in the athletes ultimate ultra endurance performances.

Always sets goals for training and racing (11/I) (12/I) (17/I)

“Yes, I do all the time [set goals] I think everyone must have goals ’ (17/I)

Always [sets goals], with the drive as at the time of competitions ’(12/I)

Always sets goals (2/I)

[sets goals] ‘ all the way through’ (2/I)

Performance impactors / technical / training strategies & thoughts / physical

The collected data demonstrates that many of the athletes have specific technical routines and tactics they employ while carrying out their physical training routines. It is these deliberate and strategical physical training routines and how they influence the athlete's ultimate deca performances which are notarized throughout this higher order theme.

Recording training logs – good for present and future races / goal averages and mini goals (5/I)

[support crew] took down the time of laps the kilometres each day and so we know how many laps and kilometres per hours and a lot of statistics which is good for future races (5/I)

Cycles 2 000K per month (9/I)

Appendix 3.7 Narratives for general dimension and higher order thematic categories (contd)

'I take my time from home to work as training, I make this by bicycle in the morning and in the evening it makes a total of 100 kilometres per day so this make about 500K a week, 2,000 a month (9/1)

Performance impactors / technical / nutrition tactics

Nutrition plays an enormous part towards the success of a deca-triathlete. From the data collected it can be seen that the athletes appreciate what a mammoth task it is to get the correct nutrition specifics for each individual athlete. This higher order theme portrays athletes' views concerning nutritive tactics for ultra-events such as the deca-ironman.

Much coca cola – sugar / magic (4/1)

"oh yea [I do drink coca cola] because there is a lot of sugar in coke and its magic (4/1)

High protein intake (2/FN)

Performance impactors / technical / reasons for not finishing

In an ultra-endurance event as tough as the deca-ironman there is a high percentage of risk that all the starters will not complete the circuit. Athletes may encounter thoughts of abandonment perhaps due to physical or mental breakdown. From various data collected, this higher order theme emerged which describes the athletes' accounts of why they could not succeed in finishing the event, and what forces played detrimental roles in the affected athletes' strivings for deca-ironman completion. Some of the detrimental factors described may assist future deca-contenders in deca-preparation through eliminating and generating potential problems and solutions respectively.

(2000 deca) mentally not ready (18/1)

"I had to quit during the swim my head was not ready, it was impossible and besides this, my team [support crew], didn't show up so I was alone (18/1)

Not breaking record (11/1)

this year I come to win the deca and break the world record for the deca but this has not been possible I then see I cannot break the record and I have many sores on my backside so I decide to quit the race (11/1)

Performance impactors / technical / training strategy / mental

Concurrent with physical training, an athlete's mental training strategy plays an integral role in their bid for success in an event such as the deca-ironman. Specific mental training strategies which influence an athlete's performance level are described throughout this higher order thematic coding category.

Has personalised / meditative bike training routine (17/1)

'I go into a room at home where I have my training bike, I light maybe one or two candles and I turn off the light and put on my headphones and I will listen to new age or classical music or some meditating type music and then I pedal in the darkness. I then put my arms on the bullbars and I close my eyes and keep pedalling when I close my eyes I start by seeing a total blank, I imagine a void of nothing and just concentrate on the music (17/1)

Relieving some pressures from himself (11/1)

The next race I will arrive with no board [recording goal predictions], nothing OK I come and do it I want to take pleasure, I don't want to go and say its pressure, pressure, pressure I think they [other competitors] are afraid of my performance, but I am afraid too by my performance, can you understand that? because I know that I can do good, great things and I know that if my head is not OK that I will be a bad guy and that I will not race well (11/1)

Performance impactors / cognitive / race thoughts / during deca

As all athletes taking part in an endurance event such as the deca-ironman have so much time on their hands during the deca-ironman, it is interesting to record what cognitions occur. This coding category portrays race thoughts divulged by the athletes, positive and negative throughout their ordeal.

How insane the deca was (2/1)

[thoughts during deca] how insane the whole thing was" (2/1C)

Family/ friends /future races / past positive experiences (3/1) (18/1)

'I think of many things we have so much time to think (laughs) I think of my family I think of my friends I think about God I think how far I have to go, about my speed I think of so many things" (3/1)

I build up stories and I start talking in my mind to somebody I call my mum, I call somebody, a friend " (18/1)

Performance impactors /cognitive / goal changes & deca strategy alterations/ during deca

Appendix 3.7 Narratives for general dimension and higher order thematic categories (contd)

As this event can span over the extended duration of two weeks, inadvertently allowing time for varying race situations to occur, goals set by athletes prior to the race cannot be definitively concrete and hence are subject to change. The codes found in this higher order thematic category describe alterations which some of the athletes incorporated into their premeditated deca plans. The decisional changes are made personally by the athletes, but may be influenced to some degree by external influences such as fellow competitors positions or internal problems such as injury.

Goal changes

Review goals when got bronchitis / saw couldn't win (9/1)

" I saw that I had this infection of the upper respiratory tract and then I saw it was not possible to continue and have a chance of 3winning so I said now I had to reduce and finish within the time limit " (9/1)

Changed during deca – time goal to completion goal (4/1)

goals, yes I have them I work with goals with a feeling it was time first but now at this stage of the race I have just the goal to finish it like first I wanted to finish it between 240 and 270 but now I know I will be over this time (4/1)

Deca alterations

Biking, day 2 acute change regarding sporadic progression and self-evolving problematic concerns when UM2 saw lap positions / result = increases focus and speed (FN)

UM2 claimed will have beer or tequila shot before he sleeps during deca as it cleans out system and gives body a feeling of a boost or kick (didn't happen during deca) (FN)

Performance impactors / personal / mood states / prior & during deca

An athlete's mood state plays an important role towards their attitude and ultimately their performance levels in an endurance race such as the deca-ironman. Athletes interchangeable mood states and their positive and negative impacts on their race performance are dealt with in this higher order category.

UM2 frustrated because had no spare wheel –took 3 hrs to get replacement (FN)

UM18's temper and patience frayed (FN)

General dimension No 5 Phenomenological impactors

The final general dimension entitled phenomenological impactors, incorporates personal, real, opinions and experiences which play an important part in the athletes ability to overcome adversities and complete the deca-ironman.

This general dimensional theme involves sub-categorised codings inclusive of personal and cognitive impactors.

Phenomenological impactors / personal / experiential learning

As the caliber of the deca-athletes in this research sample portrays, all are highly experienced in the area of ultra-endurance. This higher order thematic category encompasses references from the raw data, which provides insight into the skills and strategic concepts which have been progressively learnt by the deca-athletes through past ultra endurance event experiences.

Mental preparation through previous ultra-races (6/1)

how he prepared himself mentally was mostly in other races (6/1)

Knowledge of adversities (9/1)

' when I ever will do a third deca I would try and learn of the mistakes of the first two and improve in the third " (9/1)

Phenomenological impactors / personal / activity history & experiences / prior to deca

The affects which nurturing, schooling and sporting experiences played on deca-triathletes ultimate ultra-endurance performances and attitudes to life may contain insurmountable potential influences. This category envelops athletes previous experiences in a wide range of sports, while also demonstrating the sample athletes durations and experiences concerning involvement in the sporting fraternity and the influential role it has played towards their present attitudes and performance levels in the deca-ironman event and ultra-endurance in general.

Fully incapacitated in teens for 3 years with illness—took up sport late (2/1)

I had arthritis juvenile arthritis, so I really did no sport at all from the age of 13 till 16, I just couldn't physically I was on medication and that's that really I didn't do anything not even swimming or I couldn't even write someone had to write for me in some of my exams" (2/1)

Appendix 3.7 Narratives for general dimension and higher order thematic categories (contd)

In Guinness book of records for most ironmen distances in one year (9/I)

I am in the Guinness book of records for doing 28 ironmen in one season (9/I)

Phenomenological impactors / personal / best experience

Athletes, like anyone in the general public will always find it easy to recall a memorable and happy experience in their recent past. This higher order thematic category caters for the athlete's memories of their best experiences in ultra-endurance activity. All except one of the sample athletes' best memories involve past ultra races where the athletes, in their opinions, performed very well, with the remaining athlete recalling a memory embracing aesthetic beauty during an event. This category assisted the researcher to delve further into the motivations behind the athlete's reasons for performing in ultra-endurance events.

Past winning experience / winning 2000 deca (11/I)

"The deca, yea I think it was my win here or yes I think it was here it's a great race" (11/I)

Aesthetic experience during ultra – escorted by baby whale during swim (17/I)

'I was swimming in the ocean in the waves [during an ironman event] I was being escorted by a kayaker for the swimming part and then a baby whale came up to the kayak and swam with us the whale was so amazing she was so beautiful and it was a great experience' (17/I)

Phenomenological impactors / personal / personal views

This higher order thematic category provides scope for exploring personal views of the deca triathletes which potentially play an integral role in the ultimate performances of the athletes in the deca ironman. It provides true, real, and at times deep personal thoughts which the sample athletes shared with the researcher throughout the data gathering process.

Important for women to compete in these events (3/I)

'I think too it is good for women to be able to participate in a sport on equal level to men it is up to some women to take the chance to compete with men equally I think it is important that women get involved in these races' (3/I)

Not reaching targets = stress/anxiety = negative spirals = less economic performance levels (2/I)

when you're setting yourself goals you're putting yourself under immense pressure and that pressure is anxiety, and when you breed anxiety, your inefficient stress, your tense once you get anxiety, once you start dropping behind the schedule you set yourself, you're then trying to play catch up, its interlinked, you get into a negative spiral, emotions" (2/I)

Phenomenological impactors / personal / worst experience

Athletes recalling what they regard as their worst experience in ultra-endurance can influence their reaction to potential negative spirals or attitudes to future races. This coding category deals with the athletes' accounts of their worst experiences, all of which concern disappointing or painful performances throughout past ultra-competitions or, in some instances the deca-ironman specifically.

The deca – so much pain for so long (5/I)

the deca [was the worst experience] because the sore was so long" (5/I)

Ultra run / extreme pain / could not finish / did not quit (3/I)

I was trying to run a 1000 miles for the first time in 1993 in New York I was running until the sixth day but no more this was my first time [attempting this distance] I was running very well for the first half of the race, but then the road was very bad, it was raining and raining my shoes were always wet, and I start to have blisters and the blisters got infected and I was in pain all the time, all the time for many days until the race finished and I didn't complete the 1000 miles, there was 80 miles still to the finish but I didn't quit, I just didn't finish I had so much pain in that race (3/I)

Phenomenological impactors /cognitive / toughest part of deca

To have the ability to cope with tough and enduring sections of the deca ironman enhances an athlete's chance of deca-completion. This higher order theme deals specifically with the athletes' definitive thoughts concerning what they feel was the most challenging part of the deca ironman. These challenging times, personable to the athletes, provide us with further insight into specific personal difficulties faced by the athletes throughout their deca ordeals.

Sleep deprivation (9/I) (11/I)

"Sleep deprivation definitely sleep deprivation having no sleep when the body is tired is very difficult" (11/I)

Appendix 3.7 Narratives for general dimension and higher order thematic categories (contd)

Last 26 miles - body relaxes / pain really sets in / tough mental push to continue (2/IC)

"The last 26 miles being on the last 10th of the foot section, body relaxes and the aches and pains really have their effect it is then you want to stop but have to push because mentally you have finished but you still have 25 miles to go' (2/IC)

Phenomenological impactor / personal / goal setting / future

This higher order thematic concept incorporates specific goals which deca athletes set for the future. The planned targets mainly concern their goals involving future ultra endurance events, for example taking part in further competitions, which in many cases, involved returning to compete in shorter distances than the deca ironman

Double deca- longer would be too boring (9/I)

well now while walking for days on the same lap I said its very boring, so eh double iron will be the longest distance I will do " (9/I)

Changing competition goals (11/I)

"I used to always need to win from now on {UM11 and wife decide} this is to change and I am to enjoy the event again so the next year I will run two or three ironman series just for the concentration just to be tenth or eleventh, I think ok that s good yea (11/I)

Phenomenological impactor / personal / catharsis / prior & during deca

As mentioned in the review of literature, past research has demonstrated that cathartic reactions can have a positive effect on an athlete's mood state and energy levels. This higher order category divulges personal examples of some of the deca-athletes emotional cathartic experiences, emulating from crying or anger, which at times resurged the athlete's energy levels and create a platform from which some of them displayed their best ever performances

Post child death –best performances (UM9)

" my first son died in an accident and eh well in that world championship in '99 my wife and me during the race most thought of our son and maybe this gave me wings to go over my limits [started choking up] because I broke Swiss records, I made second place in the world championship and I started running faster than I ever could imagine " (9/I)

Catharsis/ Energy surge (crying) (9/I) (17/I) (2/I)

[I was] not able to walk and I began to cry because it was so hard for me and I was saying why me and this is not fair, you know, but after I cry, everything when I was crying everything in my mind was a storm I guess everything was there, all my emotions in my head and after I cried the calm came, you know like I realized that I could still see other things (17/I)

Catharsis / emotional release (crying) (3/I) (5/I) (4/I)

' Well sometimes I need to do other things to forget the pain for example I go and get a shower and sometimes I am in so much pain that I cry when I am getting the shower and afterwards I feel better boo hoo hoo and the "OK" [or] maybe I go to my bed and cry cry cry, yes I did this sometimes (3/I)

Phenomenological impactor / personal / deca prerequisites

The data demonstrates that the deca-athletes believe that there are numerous unique prerequisites that an athlete requires before entering the deca-ironman. This coding category explores the references made by the athletes to this specific concern and shares their personal views regarding recommendations for future hopeful deca triathletes regarding what they should obtain before attempting to enter an event of such severity as this ultra triathlon

Past ultra experience (4/I)

this kind of race, you have to be, you have to have a lot of experience but you also have to have a good mental because if you didn t experience something special before you cannot come here and try and do the deca triathlon, its like UM18, she has run over 70 marathons and I don't know how many double and triple ironmen that s why we are here, because we have a lot of experience in this kind of race and we want to go further and we want to experiment with something else and see what we can do (4/I)

Exceptionally long mental and physical preparation (17/I)

for the deca I had planned physically and mentally for six years for preparing for a race like the deca it takes a long time for mental preparation' (17/I)

Appendix 3.7 Narratives for general dimension and higher order thematic categories (contd)

Phenomenological impactors / personal / importance of mental skills

Throughout the interviews, all the athletes demonstrated the need for a strong mental ability to enhance the probabilities of deca success. This higher order thematic category portrays athlete's beliefs regarding the imperative role which mental skill usage plays throughout endurance events such as the deca-ironman.

Mental approach prioritises everything (11/I)

" the most important thing is being good in the head. definitely the head, you must have a your mind and mental must be really strong. if you have not got this you will not finish I think. (11/I)

51% mental (18/I)

your head, 51% is in your head. if your legs fail you can say 'oh I feel lousy' you can quit, but you can also say my legs hurt, its an experience. lets see how far I can go with these legs. and this is all in your head. (18/I)

Deviant case / advice to others

This higher order theme concerns ultra endurance specific advice which the deca-triathletes would give to budding upcoming endurance athletes of the future. These nuggets of advice aim to ease the burden and enhance the potential ultra-endurance athlete's entrance into the world of endurance disciplines.

'Their goals. its only the goals. its only the picture at the end, its only the picture at the end and you can say afterwards ' I have in my pocket, I have done the deca triathlon and its mine. I did it for me' (4/I)

Nothing is impossible (17/I)

" there is no impossible things, there are so many examples of people who everybody thinks they are not capable to do things and they become experts. (17/I)

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