Annals of Medicine

ISSN: 0785-3890 (Print) 1365-2060 (Online) Journal homepage: www.tandfonline.com/journals/iann20

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To cite this article: John Corrigan, Sinéad O'Keeffe, Enda Whyte & Siobhán O'Connor (2025) Exploring the perspectives of adolescent Ladies Gaelic Football players towards injury prevention: a qualitative study, Annals of Medicine, 57:1, 2526708, DOI: 10.1080/07853890.2025.2526708

To link to this article: https://doi.org/10.1080/07853890.2025.2526708

Elevate Series

ANNALS OF MEDICINE
2025, VOL. 57, NO. 1, 2526708
https://doi.org/10.1080/07853890.2025.2526708

RESEARCH ARTICLE

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Exploring the perspectives of adolescent Ladies Gaelic Football players towards injury prevention: a qualitative study

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ABSTRACT

Objectives: In Ladies Gaelic football (LGF) there are 5.90 injury claims per 1000 adolescents per year. Injuries to adolescent players can negatively affect well-being, cause drop-out, and lead to the development of chronic conditions later in life. Evidence suggests injury prevention (IP) programmes designed for Gaelic games can reduce injury incidence, however, these programmes are not yet widely adopted. The aims of this study were to (1) determine the barriers and facilitators to IP strategy success in adolescent LGF and (2) identify adolescent LGF players' preferences for IP strategies and educational interventions.

Materials and methods: Semi-structured interviews were conducted with 12 current adolescent LGF players (aged 14–17). The interviews were transcribed and reflexive thematic analysis was completed. This analysis involved gradually developing sub-themes, themes, and categories around the main concepts discussed in the interviews. Four players compete at both club and county level, and eight players compete at club level only.

Results: The main barriers to strategy success were negative stakeholder attitudes and issues with accessibility, knowledge, and unsuitable IP strategy characteristics. Players believed an appropriate IP strategy paired with promotional activities, support, strong leadership, improved education, and open communication would facilitate adoption. Players preferred an accessible, sport-specific IP programme containing flexibility, strength, and conditioning exercises. They felt this should be accompanied by guidance in several areas, particularly, load management, plus support from the governing body, clubs, and coaches. Players wanted IP education for players, coaches, and parents that focuses on injury prevention techniques, injury, and general health advice. They believed education would best be delivered in-person by educated coaches, players, or health and fitness professionals and supported by online resources.

Conclusions: Reducing injury incidence and burden in the community sport of LGF is important. If the success of future IP strategies is to be maximized, the barriers and facilitators highlighted by adolescent players need to be addressed. Additionally, IP programmes and educational interventions designed to fit the preferences of stakeholders must be released and backed by governing bodies to support long-term adoption.

KEY MESSAGES

Participating in organized sports such as Ladies Gaelic football is the leading cause of injury in adolescents, and the adoption rate of existing injury prevention programmes is low. To enhance injury prevention programme adoption, and ultimately reduce injury incidence in adolescent players, a new injury prevention strategy is required. This strategy should address negative attitudes, limited accessibility, and lack of education and establish programmes and educational interventions, which are reinforced by support, promotional activities, and strong leadership.

ARTICLE HISTORY
Received 27 June 2023
Revised 1 November 2023
Accepted 28 May 2025

KEYWORDS
Qualitative interviews; programme adoption; implementation; injury risk reduction; community sport; intervention strategy; juvenile sports

Introduction

Ladies Gaelic football (LGF) is an invasion-based team sport governed by the Ladies Gaelic Football Association (LGFA), and the most played and most watched women's team sport in Ireland [1]. Participating in organized sports, such as LGF, during adolescence can provide significant physical and mental benefits [2]. However, sports participation is also the leading

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Supplemental data for this article can be accessed online at https://doi.org/10.1080/07853890.2025.2526708.

cause of injury in adolescents [3]. These injuries can negatively affect function, well-being, and quality of life [4], and are frequently linked to conditions such as osteoarthritis that may develop later in life [3]. In Gaelic games, such as LGF, injury is the reported reason for drop out in nearly a quarter of cases and adolescent females appear to be more prone to drop out than their male counterparts [5]. Research in LGF has revealed an adolescent injury claim rate of 5.90 per 1000 adolescents per year, with annual claim rates remaining relatively constant over nine years [6]. Total adolescent injury claim costs during this period amounted to €1,462,622, with the majority of claims being for lower extremity injuries (knee, ankle, and hamstring). For comparison, a study of injury claims across 35 sports in Sweden reported an overall claim rate of 8.4 per 1000 female athletes, with 59% of these claims coming from those aged 10–19 [7]. Reducing injury incidence in adolescent LGF players is vital if long-term sports participation and its associated benefits are to be attained.

Injury prevention (IP) programmes have been developed for those competing in the Gaelic games governed by the Gaelic Athletic Association (GAA), the LGFA, and the Camogie Association, these programmes are the GAA15 [8] and Activate GAA warm-up [9]. Although studies have shown their effectiveness in reducing injury incidence [10], only 27.8% of LGF players reported using IP programmes [11]. Therefore, a new strategy, which encourages the widespread adoption of IP programmes within adolescent LGF, is required. If an IP strategy is to have the best chances at success, the specific implementation context [12], and the barriers and facilitators that impact end-users must be understood [13]. Recent research has presented the barriers and facilitators to IP strategies in adult LGF [14] and the preferences of adult players and coaches towards IP strategies and education [15], but the perspectives of adolescent Gaelic games players are yet to be explored. In adult LGF, negative stakeholder attitudes, undesirable programme characteristics and a lack of resources, education, and communication were identified as barriers to adoption. On the other hand, IP promotion, leadership, communication and fitting programme characteristics were believed to be facilitators [14]. Many IP programmes are developed for adult players, and although much of these programmes are suitable for adolescents they are not specific or engaging enough to maintain adherence from younger players [16]. Developing IP strategies that are age-appropriate and consistent with the preferences of adolescent players will be crucial for achieving long-term adoption.

Although much of the past IP research has been quantitative, utilising a qualitative approach when investigating stakeholders' views towards IP can offer more detailed insights and explanations into athlete's experiences and beliefs, resulting in improved understanding and ultimately greater practical outcomes when implementing IP programmes [17]. Therefore, this study aims to qualitatively investigate the perspectives of adolescent players to (1) determine the barriers and facilitators to IP strategy success in adolescent LGF and (2) identify adolescent LGF players' preferences for IP strategies and educational interventions.

Methods

Design

Constructivist grounded theory (CGT) methodology was used in this study. CGT accepts that researchers and participants have multiple different perspectives, backgrounds, and relationships that influence research outcomes [18]. This approach assumes participants construct the realities in which they participate and that new theories and explanations can be developed in partnership with researchers [19]. This suited the current study as no theory addressing IP in adolescent LGF players has been previously developed.

Participants

Semi-structured interviews were conducted in March 2023 with current adolescent LGF players ($N = 12$). Informed assent/consent was provided by participants and a parent/guardian prior to data collection. Participants were recruited via email and social media. Recruitment followed a theoretical sampling approach and concluded once data saturation was achieved (the point when no new themes were identified) [20]. As part of this sampling approach, efforts were made to recruit adolescent players playing at different levels of LGF both in terms of age group and in terms of level of competition.

Procedures

Ethical approval was granted for this study by the Dublin City University Research Ethics Committee (2022/175). This study used an age-adapted version of a semi-structured interview guide developed for similar research in adult LGF players (Supplementary Material 1) [14,15]. Interviews were conducted through Zoom (Zoom Video Communications, Inc., San Jose, CA, USA), which produced an audio-recording and

transcript. The primary author conducted each interview and reviewed the recordings and transcripts to ensure responses were transcribed verbatim.

Data analysis and trustworthiness

Reflexive thematic analysis was carried out using NVivo12 software (QSR International, Melbourne, Australia). This process consists of six steps (a) familiarization, (b) developing codes, (c) classifying sub-themes/themes (d) reviewing sub-themes/themes, (e) finalising core categories, and (f) reporting results [21]. After transcription, the primary author read each transcript multiple times to ensure familiarity with the participants' language. They then focused on labelling data under different broad codes. These codes were then reviewed, sub-themes were developed, and similar sub-themes were combined into themes. Themes were generated from the narrowing or widening of existing codes or from creating a new grouping, which incorporated many existing codes. Finally, an overall review of the subthemes, themes, and their relationships was conducted, and from this, the themes and central categories were defined. By following a CGT approach throughout data interpretation the primary author was able to derive meaning from the participant's stories while still strictly following the original statements obtained [22]. A 'critical friend approach' was also used to enhance this study's methodological rigor and overall quality. This involved meetings between the primary author (JC) and an independent evaluator (SOK). These meetings consisted of debates around the different possible interpretations of the data which encouraged reflexivity [23], transparency and overall trustworthiness [24]. Credibility was ensured through investigator triangulation and using raw quotes to convey findings [25]. Detailed descriptions of participants and the research process are provided, which allows readers to decide whether results are applicable to their context [26]. This study used the Standards for Reporting Qualitative Research Checklist (Supplementary Material 2) [27].

Table 1. Characteristics of the study population.

Player No.	Age (no. in years)	Playing experience (no. in years)	Current playing level
1	14	10	Under-15 club
2	15	10	Under-16 club
3	15	8	Under-16 club and under-16 county
4	15	10	Under-15 club
5	16	8	Under-18 club
6	14	10	Under-16 club
7	14	9	Under-15 club
8	16	12	Under-18 club, under-18 county, senior club.
9	15	10	Under-16 club and under-16 county
10	14	7	Under-15 club
11	14	1	Under-15 club
12	17	10	Under-18 club, under-18 county, senior club.

Results

Twelve active LGF players with a mean age of 14.9 ± 1.0 (14–17) years and 8.8 ± 2.6 (1–12) years of LGF experience were interviewed. The average interview was 33.2 ± 6.0 min. Demographic data for these twelve players can be seen in Table 1.

Barriers and facilitators

The barriers and facilitators to the success of an IP strategy for adolescent LGF players are shown in Table 2. Player and coach attitudes towards IP were identified as major barriers to IP success by nearly all participants. Issues with accessibility, particularly, limited time and resources were deemed significant hurdles. Players and coaches lacking IP knowledge and unsuitable strategy characteristics were also frequently mentioned as obstacles to IP success. Players believed an IP strategy that is accessible, well-structured and promotes engagement would facilitate adoption. IP promotion by the LGFA and clubs was discussed frequently, and players felt strong leadership and improvements to IP education were necessary for IP strategy success. Open communication within teams and the ability to give feedback to the LGFA were also considered significant facilitators. Each category, theme, and sub-theme has two numerical values, indicating the number of players which discussed that concept and the total number of times it was mentioned (Table 2). Player quotes relating to the main barriers and facilitators are presented in Table 3.

IP strategy preferences

Players detailed their preferences around IP programme characteristics, roles of stakeholders, strategy logistics, and guidance and support (Table 4). Table 5 features quotes from players on their main IP strategy preferences. Players felt that the programme must contain a warmup and consist of flexibility, strength, and conditioning exercises. They desired a sport-specific programme with different options that has fun, variety and progression built into it. Most participants felt IP should involve some equipment and preferred predominantly team-based IP. Players wanted the LGFA to release a strategy and support it with different promotional and

Table 2. Barriers and facilitators affecting injury prevention success in youth LGF (no. of players, no. of references).

Core categories	Themes	Sub-themes
Barriers (12, 357 times)		
Attitudes (12, 140 times)	Players (12, 92 times)	Negative attitude towards IP (12, 75 times)
		Opinions of other players (6, 11 times)
		Lack of confidence (2, 6 times)
	Coaches (10, 48 times)	Negative attitude towards IP (10, 44 times)
		Lack of confidence (4, 4 times)
Accessibility (12, 80 times)	Lack of time (12, 41 times)	
	Lack of resources (10, 35 times)	Lack of facilities or equipment (10, 26 times)
		Financial constraints (5, 6 times)
		Lack of H&F professionals (1, 3 times)
	Lack of communication (3, 4 times)	Between coach and player (3, 4 times)
Strategy characteristics (12, 78 times)	Boring, complicated, or too much effort (12, 68 times)	
	Not routine or lacks consistency (6, 10 times)	
Education (10, 59 times)	Injury or IP knowledge lacking (10, 59 times)	Players (8, 31 times)
		Coaches (7, 25 times)
		Parents (1, 3 times)
Facilitators (12, 1104 times)		
Strategy characteristics (12, 484 times)	Structure (12, 197 times)	IP integrated into regular sessions (11, 42 times)
		Consistency (11, 39 times)
		Includes goals, tracking, or progression (9, 35 times)
		IP in preseason or offseason (10, 28 times)
		Dedicated IP sessions (7, 21 times)
		IP outside of sessions or at home (7, 20 times)
		Includes breaks or rests (5, 12 times)
	Promoting engagement (12, 163 times)	Can vary or change (11, 50 times)
		Includes fun and competition (12, 39 times)
		Players working together (11, 33 times)
		Including exercises with equipment (7, 14 times)
		Allows for socializing (7, 14 times)
		Sports-specific (8, 13 times)
	Accessibility (12, 124 times)	Programme user-friendly, basic, or convenient (11, 53 times)
		Educational resources accessible (9, 29 times)
		Equipment or personnel provided (9, 25 times)
		Only requires basic facilities and equipment (7, 17 times)
IP promotion & support (12, 276 times)	LGFA (12, 104 times)	Spreading awareness of IP and its benefits (11, 66 times)
		Checking IP practices or giving reminders (6, 14 times)
		Releasing an official IP strategy or programme (10, 12 times)
		Encouraging proper conduct or player safety (5, 8 times)
		Officers advocating for IP (3, 4 times)
	Clubs (11, 70 times)	Supporting IP practices (11, 52 times)
		Ensuring IP is completed at sessions (7, 12 times)
		Designated individual within clubs for IP (2, 6 times)
	Coaches (12, 31 times)	
	Player role models (9, 22 times)	
	Starting IP at an early age (7, 13 times)	
	Parents (6, 13 times)	
	H&F professionals (5, 9 times)	
	County boards or teams (5, 7 times)	
	Use of technology (3, 4 times)	
	Implementing IP in schools (2, 3 times)	
Leadership (12, 165 times)	Coaches (12, 105 times)	Leading or supervising IP (12, 60 times)
		Giving feedback to players (10, 19 times)
		Motivating players (8, 15 times)
		Monitoring loading (3, 11 times)
	Players (12, 57 times)	Encouraging others or having a positive attitude (9, 33 times)
		Leading IP strategies (10, 24 times)
	H&F professionals (2, 3 times)	Leading IP strategies (2, 3 times)
Education (12, 139 times)	Having or getting IP knowledge (12, 139 times)	Players (12, 81 times)
		Coaches (12, 58 times)
Open communication (8, 40 times)	Feedback to the LGFA (6, 19 times)	
	Within teams (7, 17 times)	
	Between sports (3, 4 times)	

Note: Categories, themes, and sub-themes are ordered by most frequently referenced. IP: injury prevention; H&F: health and fitness; LGFA: Ladies Gaelic Football Association.

educational activities and felt that coaches and clubs could encourage strategy adoption. The consensus from participants was for IP to be performed 1–3 times per week for less than 20 min on each occasion. Integrating this IP into sessions and starting at an early age was preferred by the majority of players. Players believed the strategy also needed to offer guidance and support in several areas, primarily load management and recovery, but advice around nutrition and IP outside of group sessions were also requested.

Table 3. Quotes surrounding the barriers and facilitators affecting injury prevention strategy success for adolescent LGF players.

Core categories	Themes	Quotes
Barriers		
Attitudes	Players Coaches	'A lack of interest would be a major barrier from both players and coaches. Some players just want to play football' (P5) 'Players might have other priorities that they are putting first' (P12) 'The attitude of other players is a barrier. If other players think injury prevention isn't cool or fun or are giving out about it and don't want to do it then that could affect how the rest of the girls feel about it, and if your friends don't want to do this injury prevention then that might change how you think about it too' (P1) 'Coaches are more focused on running, tactics, and winning as opposed to injury prevention. They forget about injury prevention because there are other things that are more important to them' (P10)
Accessibility	Lack of time Lack of resources	'Time is definitely a big issue, with school and other sports going on you might not have time to do the injury prevention, even in training we would only have an hour and people want to get as much football in as they can in that time' (P12) 'Access to resources could be a barrier. If you have to get equipment, then this isn't going to be accessible for everyone' (P4) 'Lack of resources could be a barrier because even getting pitches can be a problem for ladies football teams' (P7)
Strategy characteristics	Boring, complicated, too much effort	'No one wants a programme that's boring, strict, and just a big list of one exercise after the other. And if you overcomplicate it, no one will do it' (P3) 'I go to football because I like football and so if we were there for 30 min, not moving much and just doing exercises, not even running around, I think it would get boring quickly and it wouldn't be fun at all. I'd probably stop going if it was like that' (P1)
Education	Injury or IP knowledge lacking	'They don't have the knowledge, some coaches aren't educated enough on injury prevention and wouldn't know the different exercises, they are just volunteers' (P2) 'Education is really missing, girls don't know what to do, they don't know the technique or have the knowledge and that will stop them from doing this programme' (P12)
Facilitators		
Strategy characteristics	Structure Promoting engagement Accessibility	'As often as you're training, you should be doing injury prevention, you need to be consistent with it and you need to integrate it in a way that makes it easier, it needs to feel like a natural part of football training, it shouldn't be separate, so bring the ball into things, have games, make it feel like football because that's what we want' (P12) 'Make the programme fun, add group activities or exercises in pairs' (P6) 'The programme must be fun, and it has to have variety. It is important that the exercises change a bit over time, so that it doesn't get boring' (P2) 'The programme needs to have a very basic format that is easy to understand and convenient to do' (P3) 'The main facilitator would be just making it easy to get the information and the resources for the programme' (P6)
IP promotion & support	LGFA Clubs Coaches Player role models	'Promoting and spreading awareness is really necessary from the LGFA. The LGFA need to show off the importance of injury prevention and release and back their own programmes to help with injury' (P4) 'For the club, it's all about promotion and explaining the strategy to everyone' (P9) 'Clubs should encourage or help ensure that the programme takes place, they should take on that responsibility' (P12) 'The coaches need to support this; the team is very influenced by the coaches. And so, the coaches need to definitely keep promoting injury prevention to the team and telling the team it's really important to engage with' (P11) 'More girls would do the programme if they saw county players doing it, but you also need people you look up to in the club getting involved, having that kind of role model there is huge' (P8)
Leadership	Coaches Players	'Supervision is definitely huge. Coaches leading would be important early on because you need instruction, and then coaches would supervise the exercises and just give feedback and advice to the players' (P10) 'Players need to be motivating each other as we go through the programme, there needs to be an atmosphere of teamwork, and you are encouraging each other, that really helps' (P1)
Education	Having or getting IP knowledge	'Coach and player education are very important for injury prevention' (P4) 'People need to know what injury prevention actually is, how it can help them, and what they need to do for it' (P11)
Open communication	Feedback to the LGFA Within teams	'Players should give feedback on this… you need the perspective of the players on how they feel with the programme' (P4) 'There needs to be improved communication, teamwork and bonding between the players and management around things like injury and injury prevention' (P9)

Note: IP: injury prevention; LGFA: Ladies Gaelic Football Association.

IP education preferences

Players' preferences around IP education are detailed in Table 6 and related quotes are presented in Table 7. Participants discussed preferred topics, audience, format, rollout, and educator for IP education. Players believed IP education should target players, coaches and parents, and its focus should be different IP techniques, injury information and general health advice. The majority felt in-person education was most beneficial, but that online

Table 4. Injury prevention strategy preferences (no. of players, no. of references).

Core categories	Themes	Sub-themes	
IP programme (12, 522 times)	Characteristics (12, 413 times)	Specific exercises (12, 118 times)	Flexibility/mobility (10, 41 times)
			Strengthening (11, 40 times)
			Running, fitness and conditioning (9, 25 times)
			Movement patterns or technique (4, 5 times)
			Bodyweight (2, 5 times)
			Plyometrics or agility (2, 2 times)
		Different options, variety, or adaptability (12, 70 times)	
		Warm-up (12, 46 times)	
		Fun or engaging (12, 38 times)	
		Goal setting, tracking, or progression (10, 32 times)	
		Pair work/teamwork (11, 29 times)	
		Preseason/offseason intervention (10, 26 times)	
		Sport-specific, games-based, or with a football (9, 24 times)	
		Individualized or level-specific (7, 20 times)	
		Cooldown (5, 10 times)	
	Equipment use (12, 45 times)	Pro-Equipment (11, 31 times)	
		Anti-Equipment (8, 14 times)	
	Type (12, 33 times)	Team-focused IP (8, 19 times)	
		Team-based with individual elements (9, 14 times)	
	Training vs game IP (12, 31 times)	Different (10, 27 times)	
		Consistent (3, 4 times)	
Role of stakeholders (12, 127 times)	LGFA (12, 42 times)	Release and support an IP strategy (12, 42 times)	
	Coaches (11, 36 times)	Lead and push IP practices (11, 36 times)	
	Clubs (11, 26 times)	Support IP practices (11, 26 times)	
	Players (9, 14 times)	Take responsibility and encourage others (9, 14 times)	
	H&F professionals (5, 9 times)	Greater involvement and facilitate IP (5, 9 times)	
Logistics (12, 117 times)	Timing (12, 66 times)	IP frequency (12, 34 times)	1-3 times a week (12, 28 times)
			Daily (4, 4 times)
		IP per session (12, 32 times)	<20 mins (10, 18 times)
			>20 mins (8, 14 times)
	IP session integration (11, 38 times)		
	IP begins at an early age (7, 13 times)		
Guidance & support (8, 57 times)	Load management, recovery, rest (8, 35 times)		
	IP outside of group sessions (3, 12 times)		
	Nutrition or hydration (5, 10 times)		

Note: Categories, themes, and sub-themes ordered by most frequently referenced. IP: injury prevention; LGFA: Ladies Gaelic Football Association; H&F: health and fitness.

approaches were convenient and would reach a wider audience. Participants felt IP education would target several members from each club, who would then pass on the IP education to their respective teams. Players want education to be specific, practical, and led by either educated coaches, players, or health and fitness (H&F) professionals (athletic therapists or physiotherapists).

Discussion

This study aimed to qualitatively examine the perceived barriers and facilitators to IP strategy success of adolescent LGF players and determine their preferences for IP strategy and educational interventions.

Attitudes

Adolescent LGF players believed that negative attitudes from players and coaches were a major barrier to IP success. Participants believed some stakeholders lack interest in IP, see it as unimportant, and prioritize other aspects of the game, such as socialising, fun, and performance. A similar unwillingness to engage with IP from players and coaches has been shown to be a barrier in rugby [28] and handball [29]. The opinion of other players was noted as a barrier to IP programme adoption by adult LGF players [14], however this appeared to be a more significant factor for adolescent players in the current study. It is understood that social norms and the actions of role models can play a substantial role in determining whether individuals will implement IP programmes [30,31]. Community sport players will be most impacted by non-elite role models while coaching staff will benefit most from a mix of elite and non-elite role models [31]. Role modelling is used extensively in the LGFA, and utilising role models in the promotion of IP could play a vital role in altering stakeholder attitudes and behaviours.

Table 5. Quotes surrounding adolescent LGF players' injury prevention strategy preferences.

Core categories	Themes	Quotes
IP programme	Characteristics	'The big things for this injury prevention programme are warmups, stretching, strength exercises, and improving your conditioning' (P12)
		'It would be more enjoyable if it has a level of challenge to it or it progresses with you' (P2)
		'There should be a set structure to the injury prevention, you need a set plan that you follow and it has goals, because people will be more likely to keep going if it has clear goals for them to achieve and they understand that doing this is important' (P8)
		'The warmup should be similar across the age groups, but there should be a difference, because for senior players it will need to be more intense' (P5)
	Equipment use	'I really like the idea of having different equipment and weights in the programme. I just think that makes it more interesting' (P1)
	Type	'Injury prevention needs to be done as a team and individually because there's a lot of things that most people experience, but there's injuries that aren't the same for everyone and so some people might need to work on certain things more and I think that should be encouraged' (P10)
	Training vs. game IP	'Injury prevention before games would be different to training, you're not going to have as much time or as much equipment with you. The warmup part of your injury prevention will be a set routine but other than that, you would only do certain exercises, you wouldn't do strength before a match' (P2)
Role of stakeholders	LGFA Coaches Clubs	'The LGFA could release and back official set programmes or set warmups that we have to do before training or matches… Then the LGFA should explain all the benefits of doing injury prevention, make sure we have all the right equipment and provide funding to make sure we have everything that we need to be able to do the programmes' (P7)
		'Injury prevention should be led by an educated coach' (P1)
		'Their role is really a lot of encouragement and motivation of the players doing the programme. Coaches then need to keep up with the encouragement long-term, continue to do the programme in trainings and get onto players to do it' (P10)
		'Clubs need to help organize things and make injury prevention a priority in the club' (P4)
Logistics	Timing	'Injury prevention has a small place in every session' (P2)
		'Keep it relatively short so it's easier to pick up and finish quickly' (P3)
		'It would be good to work on injury prevention 2 or 3 times a week' (P9)
	IP begins at an early age	'Starting injury prevention at a young age is so important because then you build up that habit of it' (P4)
		'As soon as they start playing they should start learning about injury prevention' (P5)
Guidance & support	Load management, recovery & rest	'We need advice around rest, overtraining, and the different types of injuries that we can suffer' (P12)

Note: IP: injury prevention; LGFA: Ladies Gaelic Football Association.

Education

A lack of confidence and knowledge in relation to IP was believed to be an issue for both players and coaches, however providing education for stakeholders was believed to be a key facilitator. Research in Camogie [32], and women's Australian football (AFLW) [26], also reported IP knowledge as both a barrier and facilitator to programme adoption. The association between poor IP knowledge and low confidence in implementing IP programmes has been observed before [33], with parental coaches often being the most in need of support [4]. Due to the nature of LGF, many non-elite teams are coached by parent volunteers with basic coaching qualifications and no formal IP training. Therefore, it is essential that stakeholders are provided with IP education to improve IP knowledge, confidence, and modify existing negative attitudes [32]. The LGFA currently provides education for coaches and players, some of which is mandatory. Numerous studies have recommended including IP education in general coach education [16,34,35]. By including IP education in mandatory coaching courses, it ensures an awareness of IP is spread to all.

Accessibility

Accessibility has a major bearing on an IP strategy's chances of success [36], with sufficient access to educational resources, time, equipment, and facilities considered critical [26,29,37]. Dissimilar to findings in adult LGF [15], and other community sports [4,29], adolescent LGF players generally requested greater equipment and resource use, as they felt providing players with equipment and facilities would encourage participation. Although many players valued equipment and desired the individualization of programmes, as previous research has also noted [15,38], the lack of resources within community sports like LGF, means that this is unlikely to be feasible. Participants understood the lack of resources available in LGF but believed that IP success could still be facilitated if the LGFA prioritized making educational resources accessible, provided clubs with basic equipment, and designed programmes that require few resources. Players believed that implementing a changeable but uncomplicated IP strategy would enhance adoption. Exercise complexity can act as a barrier to adoption whereas, programmes that are easily adaptable, fit

Table 6. Injury prevention education preferences (no. of players, no. of references).

Core categories	Themes	Sub-themes
Topic (12, 152 times)	IP techniques (12, 95 times)	IP programmes or warmups (12, 59 times)
		The benefits and importance of IP (10, 31 times)
		Load management or recovery (3, 5 times)
	Injury (10, 40 times)	Common injuries (8, 21 times)
		Signs of injury or management (6, 9 times)
		Impact of injury (4, 6 times)
		How or why injuries happen (4, 4 times)
	General health (8, 17 times)	The body or gender differences (4, 11 times)
		Nutrition (4, 6 times)
Audience (12, 96 times)	Coaches (12, 43 times)	
	Players (11, 42 times)	
	Parents (5, 11 times)	
Format (12, 95 times)	Online (10, 34 times)	Videos, social media, or website (8, 18 times)
		Webinars (6, 14 times)
	In-person (9, 28 times)	
	Specific (6, 11 times)	
	Practical or interactive (5, 9 times)	
	Dual delivery (4, 7 times)	
	Time (5, 6 times)	Preseason or offseason (3, 3 times)
		Short (2, 3 times)
Rollout (11, 30 times)	Delivered to club members, passed onto teams (11, 21 times)	
	Delivered directly to teams (6, 9 times)	
Educator (12, 29 times)	Current/past players or coaches (7, 13 times)	
	H&F professional (6, 9 times)	
	LGFA officer (5, 7 times)	

Note: Categories, themes, and sub-themes ordered by most frequently referenced. IP: injury prevention; LGFA: Ladies Gaelic Football Association; H&F: health and fitness.

within existing schedules, and are relatively simple to complete are more likely to be implemented [39]. A recent survey in amateur soccer found 89.5% of coaches implementing the FIFA 11+ had modified the programme [40]. Past research has questioned the efficacy of modified IP programmes [4,41], but recent research indicates IP programmes modified to be more sport-specific can be as effective or more effective than their non-modified versions [42]. Modifiable programmes are also associated with increased stakeholder buy-in and adherence [40]. Although some caution is warranted, educating stakeholders on how they can effectively adapt IP programmes and maximising the accessibility of IP strategies may be crucial in overcoming obstacles that exist in community sports.

Lack of time has been discussed as a barrier to IP success in the literature [4,15,26,29], and by players in the current study. To counter potential time constraints, it is crucial that programmes are designed in accordance with the time stakeholders are prepared to commit. The consensus among players in the current study was for less than 20 min of IP, 1–3 times per week, integrated into existing sessions. Similar time preferences were provided by players in adult LGF [15], adolescent handball [29], and ice hockey [38]. A recent review of IP in youth athletes indicated the greatest reduction in injury risk is achieved by implementing 2–3 weekly sessions lasting 10–20 min [40]. Research suggests that session integration results in superior IP programme adoption [15,28,29]. However, session frequency and contact time between players and coaches in community sports such as LGF can vary considerably depending on the team/level. Elite players in some cases conduct 5+ sessions per week [43], but sub-elite players typically train less often [44]. Therefore, although integrating IP into sessions may be optimal it can reduce the available time for other elements of training [37], and some coaches believe this may negatively impact performance and thus avoid implementing IP [15]. Future education must explain to coaches the importance of IP, the benefits to performance from completing IP programmes, and how to integrate IP into sessions in a time-efficient manner so as to ensure that IP can be consistently conducted even in sub-elite settings with inferior contact time.

IP promotion and support

Similar to previous research [14,41], adolescent players believed IP promotion and support needs to involve all levels of the sport. Women's youth soccer coaches [4] also believed that support from both governing bodies and clubs was necessary for IP programmes to be seen as a priority by stakeholders. Players felt that if the LGFA released their own IP strategy and backed it with promotional and educational activities that substantial uptake could be achieved. Research in AFLW indicated that strong backing from governing bodies paired with ongoing support and communication facilitates the sustained adoption of IP strategies [36]. Work from governing bodies to spread awareness of IP programmes is particularly vital for adoption, as recent research in soccer showed 76% of those made aware of the FIFA 11+ used the IP programme [42].

Participants envisaged clubs providing resources and supporting IP through promotional efforts, policies to ensure IP is completed, and having a designated individual for IP. Though it may not be feasible to provide greater financial resources, introducing distinct club policies such as replacing existing strategies with the new IP programme, 'no warmup, no play'

Table 7. Quotes surrounding adolescent LGF players' injury prevention education preferences.

Core categories	Themes	Quotes
Topic	IP techniques	'The education really needs to get across how to do the exercises mostly. Explain all the different stages of the programme and how to teach it for the coaches too' (P1)
	Injury	
	General health & lifestyle information	'Outline why it's so important, and what benefits you can get from injury prevention programmes' (P3)
		'There should be information on injuries, so how injuries happen, what injuries are common and how you can look after things if a player does get injured' (P1)
		'Explain body-wise the major differences between GAA and LGFA players, teach the coaches the difference in how we need to be managed, they need to understand the differences between the women's and men's sport itself, and the differences between the players themselves' (P3)
Audience	Coaches & players	'Education has a big role in this strategy. The LGFA need to be educating everyone, they need to make sure that education is reaching the players and coaches' (P9)
	Parents	Leaving it up to coaches isn't enough, parents need to be aware and understand the benefits of injury prevention and encourage their kids to buy into it' (P10)
Format	Online	'To get the information across, you need it all, so in-person, online, pictures, posters, and social media, it should be widespread, use all the different methods' (P5)
	Dual delivery	
		'While online would be convenient, everyone would prefer to do education in-person. Online would be the easiest way to get the most people though, so if you could do both or upload in-person sessions, you can catch everyone then' (P6)
Rollout	Delivered to club members, passed onto teams	'There needs to be education sessions about the strategy and then the people that went should go back to their clubs and pass on that education to their club' (P6)
Educator	Current or past players or coaches	'It would be great to have people who used to play football and are educated in injury prevention teaching it (P7)
	H&F professional	'You need professionals like physios or athletic therapists teaching the injury prevention education, people who will know how to do the exercises properly and know about injury' (P2)

Note: IP: injury prevention; H&F: health and fitness; GAA: Gaelic Athletic Association; LGFA: Ladies Gaelic Football Association.

rules, and making efforts to highlight the importance of IP practices such as warmups and cooldowns to coaches and parents are crucial to facilitate adherence [28]. In the current study, and in adult LGF [14], participants believed that the support from clubs and the LGFA needs to go beyond initial strategy release, as 'follow-up' is vital for maintaining compliance. Governing bodies and sports clubs must make concerted efforts to educate stakeholders on the importance of IP, provide them with the resources necessary to conduct IP programmes, and offer them the ongoing support required to achieve lasting adoption.

Leadership and communication

Leadership [45], communication [46], supervision, motivation and feedback [26,28] have all been previously identified as facilitators in the successful implementation of IP programmes. Players in this study also felt these would support them in completing IP programmes. Coach feedback and motivation has been shown to encourage adherence to IP programmes [14,29]. Regular high-quality communication between players and coaches is required for IP strategy success [46] and has been linked to lower injury prevalence and burden in soccer teams [47,48]. Players felt they could facilitate the success of IP strategies by taking responsibility for programmes, acting as role models, and encouraging others to participate in IP. Increasing athlete responsibility and ownership in relation to IP programmes has been widely discussed in the literature [4,14,15,26,38], and is believed to increase motivation and ultimately lead to improved adherence. Coach oversight is vitally important, but future strategy success requires all stakeholders to take responsibility, advocate for IP, and accept IP programme use as the norm if it is to be successful.

IP programme characteristics

Players wanted sport-specific IP programmes containing fun, variety, progression, and teamwork. These preferences were shared by youth handball players [29,49], who believed that completing exercises in pairs, including the ball, and having competitive elements were particularly motivating [29]. Players in the current study, as well as in adult LGF [15] and AFLW [36], felt IP programmes should feature flexibility, strength, and conditioning exercises along with a comprehensive warmup and cooldown that can be completed at training and games. Youth handball players wanted IP in the form of a warmup and cooldown included as a formal part of every session; they believed this would result in more consistent implementation and overall greater adoption [49]. Collaborating with stakeholders and integrating their preferences into IP programmes promotes a sense of shared ownership and responsibility around the programme and gives end-users greater confidence in the programme's effectiveness [50]. Players also discussed

the value of preseason interventions. Implementing IP programmes in preseason and continuing them throughout the playing season is believed to maximize the potential reductions in lower limb injuries [3] and should be considered when implementing IP programmes in LGF. Although the majority of IP programme preferences previously reported by adult LGF players [15] are congruent with the preferences of adolescent LGF players in the current study, some minor differences exist. Adult players had a greater focus on individualization, openness to individual work, desire for the programme to target specific injuries, as well as a generally negative stance on equipment use and divided opinion on the consistency of IP across training and games [15]. Adolescents preferred a team-focused approach, were pro-equipment use, and strongly believed IP at games should differ to IP at training. Research in youth community sport populations indicates they tend to favour team-based IP [28,29], while stakeholders in adult and elite environments desire a mix of team and individual work [51]. Disparities in preferences such as these might be explained by differences in commitment level, access to resources, knowledge, and personnel that exist across the various levels of sport [52], thus if future IP programme implementation is to be optimized then the characteristics of future programmes must align with the preferences and context of their end-users [41]. Although an one-size-fits-all strategy could theoretically be convenient, significant differences in the preferences of adolescents and adults in LGF indicate that this type of approach is not viable and that future IP strategies should instead incorporate the cohort-specific preferences if they wish to be successful.

Logistics and support preferences

Previous research in gymnastics [53] and LGF [15] agrees with the opinions of players in this study that IP needs to be a bigger part of sport from an early age, and that programmes and education should be introduced from the start of participation. The early implementation of IP in youth sports is thought to be important to establish IP as a part of players' routines and the sport's culture [54], and can ultimately lead to changes in attitude and behaviour [55]. Participants called for greater guidance and support in the areas of load management, IP outside of sessions, and nutrition. Coaches in field hockey also noted that younger players in particular need greater guidance around recovery and load management [56]. Support in these areas is especially important in the community sport of LGF as adolescent players often participate in multiple sports and compete across multiple age levels and settings (school, club, county). Providing youth sport stakeholders with various supporting resources is believed to further encourage their adoption of IP strategies [34]. Future IP strategies should be designed in accordance with the preferences of end-users to maximize the chances of uptake. However, within the community sport setting, many barriers exist meaning it is not always possible to deliver exactly what stakeholders desire. Until existing issues with access, knowledge and attitudes can be rectified, realistic approaches to many issues may revolve around the provision of educational resources and supporting materials to end-users. Governing bodies need to support and promote the education and programmes they design and use their limited resources as efficiently as possible to maximize adoption.

Topic of IP education

This study's participants and stakeholders in several sports [4,15,26,49,56] have requested education on conducting IP programmes and warmups, and on the benefits and importance of IP. Female adolescent athletes are most willing to complete IP programmes when shown data which demonstrates an injury reduction whereas male stakeholders are typically more interested in performance benefits [57]. Similar to conclusions drawn in AFLW [26], marketing and education approaches need to be stakeholder-specific to enhance adoption from different groups (i.e. coaches vs. players), as different factors will influence each groups' decisions. Players also desired education around the common injuries in LGF, how they happen, the signs of injury, their impacts, and how they can be managed. Similar injury education requests have come from coaches and players in rugby [35], adult LGF [15], and Camogie [58]. Giving stakeholders an understanding of injury and explaining both how IP programmes are conducted and why they are valuable is vitally important to promote adoption and compliance.

Audience and educator

Players felt that coaches, players, and parents all need exposure to IP education. Although many studies have focused exclusively on coach education [4,16,49,54], and adolescent players primarily discussed coach and player education, a more comprehensive approach to education which includes all stakeholders may lead to greater IP awareness within the community and an

overall more effective strategy [59]. Participants believed current/past LGF players and coaches educated in IP or H&F professionals would be the most suitable teachers of IP education. Similarly, rugby players were equally open to IP education from coaches or H&F professionals [52], and youth handball players wanted prominent coaches and players to teach them IP programmes [29]. Identifying the most fitting educator for each stakeholder group is crucial for the success of IP education, however access to H&F professionals varies dramatically across LGF [15] and other community sports [28], which may affect their appropriateness as widespread educators of IP. Thus, from a feasibility perspective, it is likely that current/past LGF players and coaches are better suited to be the educators in future IP education.

Format and rollout of IP education

The consensus among adolescent LGF players was for primarily in-person IP education supported by online educational resources, videos, and social media efforts. Stakeholders in adult LGF [15] and Camogie [58] also preferred in-person education but believed that providing educational content in multiple different formats would be the most effective. Participants' recommended rollout strategy for IP education involved educating some members of clubs and having them spread the information. These club members could be considered popular opinion leaders (POLs) in their communities [60]. These POLs could educate other LGF stakeholders about IP and encourage participation in programmes. This strategy has been recommended for IP in youth sports as it can initiate major changes in behaviour and cultural norms [60]. Due to the transient nature of youth sports participation, it is crucial that POLs hold relatively fixed positions within the community (e.g. club administrator, team coaches) so that they can facilitate the sustained transfer of IP knowledge [60]. The ultimate success of IP strategies will be highly dependent upon the design and dissemination of effective IP education workshops and supporting online resources as these will ensure that coaches and players have the knowledge and confidence required to conduct IP programmes.

Limitations

Firstly, interviews with adolescent players were conducted with a parent/guardian present and we cannot guarantee that their presence did not impact the information provided. Secondly, there are a number of factors that could impact a player's views on IP that were not recorded in this study such as their history of injury, their awareness of/use of IP programmes, their socioeconomic status and the IP resources and education they have access to. Future research should look to collect this data, if possible. Thirdly, although the views of adolescent players towards injury prevention presented in this study provide an unique and valuable perspective it is important to recognize that these opinions are likely informed by personal experience, media etc. as opposed to evidence-based practice and thus developing interventions based on these views should take this into account.

Conclusions

Future IP strategies should address issues with stakeholder attitudes, accessibility, education, and avoid unsuitable strategy characteristics as identified by participants if they are to be successful. Adolescent players believed IP strategy adoption could be facilitated by the LGFA releasing a well-structured, adaptable, and accessible programme that is backed by promotional, supporting, and educational efforts. Strong leadership and open communication at both an organizational and club level are also required to enhance the likelihood of IP strategy success. Players preferred sport-specific IP programmes that featured flexibility, strength, and conditioning exercises as well as a comprehensive warmup and cooldown. This study suggests IP programmes need to incorporate fun, variety, progression, and teamwork while also recognising the limited time and resources available in LGF. IP education preferences centred around in-person education on IP programmes for coaches, players, and parents, which could then be disseminated to teams and supported by online materials. Implementing IP programmes and education early in youth sports would enhance players' awareness of IP and embed the habit of completing IP programmes from an early age, which is vital for lasting adherence. The barriers and facilitators raised by adolescent players need to be addressed and future IP programmes and education need to be designed to meet the expectations of end-users if long-term adoption is to be maximized.

Author contributions

SOC, JC, EW and SOK were all involved in the initial conception and design of this study. Data analysis and interpretation was conducted by JC and SOK. The initial draft of the paper was prepared by JC, and then SOC, EW and SOK were involved in its critical revision. Final approval of the version

to be published was agreed upon by all authors and all authors agree to be accountable for all aspects of the work.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by the Irish Research Council and the Ladies Gaelic Football Association under [grant number EPSPG/2022/395].

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Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

References

[1] Clerkin M. The story behind the amazing growth of women's Gaelic football. The Irish Times [Internet]; 2021; Available from: https://www.irishtimes.com/sport/gaelic-games/the-story-behind-the-amazing-growth-of-women-s-gaelic-football-1.4501155.
[2] Wilson OWA, Whatman C, Walters S, et al. The value of sport: wellbeing benefits of sport participation during adolescence. IJERPH. 2022;19(14):8579. doi: 10.3390/ijerph19148579.
[3] Abernethy L, Bleakley C. Strategies to prevent injury in adolescent sport: a systematic review. Br J Sports Med. 2007;41(10):627–638. doi: 10.1136/bjsm.2007.035691.
[4] Lindblom H, Carlfjord S, Hägglund M. Adoption and use of an injury prevention exercise program in female football: a qualitative study among coaches. Scand J Med Sci Sports. 2018;28(3):1295–1303. doi: 10.1111/sms.13012.
[5] Lunn P, Kelly E, Fitzpatrick N. Keeping them in the game: taking up and dropping out of sport and exercise in Ireland. Econ Soc Res Instit ResSeries. 2013;33:89–99.
[6] O'Connor S, Whyte E, Fortington L, et al. The cost of injury in Ladies Gaelic football: a nine-year analysis (2012–2020) of the LGFA's injury fund. J Sci Med Sport. 2023;26(1):31–36. doi: 10.1016/j.jsams.2022.10.007.
[7] Åman M, Forssblad M, Henriksson-Larsén K. Incidence and severity of reported acute sports injuries in 35 sports using insurance registry data. Scand J Med Sci Sports. 2016;26(4):451–462. doi: 10.1111/sms.12462.
[8] GAA. GAA 15: injury prevention programme/warm up [Internet]; 2022. Available from: https://learning.gaa.ie/gaa15.
[9] Ulster GAA, SINI. Activate GAA warm-up [Internet]; 2022. Available from: https://ulster.gaa.ie/activate/.
[10] Schlingermann BE, Lodge CA, Gissane C, et al. Effects of the Gaelic Athletic Association 15 on lower extremity injury incidence and neuromuscular functional outcomes in collegiate Gaelic games. J Strength Cond Res. 2018;32(7):1993–2001. doi: 10.1519/JSC.0000000000002108.
[11] Teahan C, Whyte EF, O'Connor S. Gaelic games players' awareness and use of, and attitudes towards injury prevention exercise programmes. Phys Ther Sport. 2023;64:17–26. doi: 10.1016/j.ptsp.2023.08.003.
[12] Donaldson A, Finch CF. Applying implementation science to sports injury prevention. Br J Sports Med. 2013;47(8):473–475. doi: 10.1136/bjsports-2013-092323.
[13] Martins de Oliveira G, Araujo Kretli Mota G, Sain Vallio C, et al. What are the facilitators and barriers to develop a running-related injury prevention program? A qualitative study. Physiother Theory Pract. 2022;38;(13):2798–2805. doi: 10.1080/09593985.2021.1967538.
[14] Corrigan J, O'Keeffe S, O'Connor S. Barriers and facilitators to injury prevention in Ladies Gaelic football: a qualitative study. Phys Ther Sport. 2023;59:151–161. doi: 10.1016/j.ptsp.2022.12.008.
[15] Corrigan J, O'Keeffe S, Whyte E, et al. A qualitative examination of injury prevention strategy and education in Ladies Gaelic football: understanding the preferences of players and coaches. PLOS One. 2023;18(2):e0281825. doi: 10.1371/journal.pone.0281825.
[16] O'Connor S, O'Brien W, Lacey P. The implementation of a national strategy to encourage injury prevention program uptake in a community female sport in Ireland: a Camogie Case Study. Int Sport Coach J. 2022;9(2):203–210. doi: 10.1123/iscj.2021-0020.
[17] Bekker S, Bolling C, H Ahmed O, et al. Athlete health protection: why qualitative research matters. J Sci Med Sport. 2020;23(10):898–901. doi: 10.1016/j.jsams.2020.06.020.
[18] Charmaz K. The power of constructivist grounded theory for critical inquiry. Qualitat Inq. 2017;23(1):34–45. doi: 10.1177/1077800416657105.
[19] Charmaz K, Bryant A. Grounded theory and credibility. In: Silverman D, editor. Qualitative research. London: Sage Publications; 2011. p. 291–309.
[20] Faulkner SL, Trotter SP. Data saturation. In: Matthes J, Davis CS, Potter RF, editors. The international encyclopedia of communication research methods. 1st ed. New Jersey: Wiley; 2017. p. 1–2.
[21] Braun V, Clarke V. Thematic analysis. In: Cooper H, Camic PM, Long DL, Panter AT, Rindskopf D, Sher KJ, editors. APA handbook of research methods in psychology, vol 2: research designs: quantitative, qualitative, neuropsychological, and biological. Washington: American Psychological Association; 2012. p. 57–71.
[22] Mills J, Bonner A, Francis K. Adopting a constructivist approach to grounded theory: implications for research design. Int J Nurs Pract. 2006;12(1):8–13. doi: 10.1111/j.1440-172X.2006.00543.x.
[23] Patton MQ. Qualitative research & evaluation methods. 3rd ed. London: Sage Publications; 2002.
[24] Balthasar A. Critical friend approach: policy evaluation between methodological soundness, practical relevance, and transparency of the evaluation process. GPS. 2011;7(3):187–231.
[25] Korstjens I, Moser A. Series: practical guidance to qualitative research. Part 4: trustworthiness and publishing.

Eur J Gen Pract. 2018;24(1):120–124. doi: 10.1080/13814788.2017.1375092.
[26] Bruder AM, Crossley KM, Donaldson A, et al. Through the athlete lens: a novel study exploring the perspectives and experiences of injury prevention practices in women playing elite Australian Football. Braz J Phys Ther. 2021;25(6):756–766. doi: 10.1016/j.bjpt.2021.05.003.
[27] O'Brien BC, Harris IB, Beckman TJ, et al. Standards for reporting qualitative research: a synthesis of recommendations. Acad Med. 2014;89(9):1245–1251. doi: 10.1097/ACM.0000000000000388.
[28] Sly N, Soomro M, Withall AL, et al. Players', parents' and staffs' perceptions of injury prevention exercise programmes in youth rugby union. BMJ Open Sport Exerc Med. 2022;8(2):e001271. doi: 10.1136/bmjsem-2021-001271.
[29] Moesch K, Bunke S, Linnéll J, et al. "Yeah, I mean, you're going to handball, so you want to use balls as much as possible at training": end-users' perspectives of injury prevention training for youth handball players. IJERPH. 2022;19(6):3402. doi: 10.3390/ijerph19063402.
[30] White PE, Otago L, Saunders N, et al. Ensuring implementation success: how should coach injury prevention education be improved if we want coaches to deliver safety programmes during training sessions? Br J Sports Med. 2014;48(5):402–403. doi: 10.1136/bjsports-2012-091987.
[31] White P, Donaldson A, Finch CF. But can someone like me do it? The importance of appropriate role modelling for safety behaviours in sports injury prevention. Br J Sports Med. 2016;50(10):569–570. doi: 10.1136/bjsports-2015-095105.
[32] O'Connor S, Lacey P. Can we improve coaches' injury prevention views and implementation practices in the community female Gaelic sport of camogie? BMJ Open Sport Exerc Med. 2020;6(1):e000732. doi: 10.1136/bmjsem-2019-000732.
[33] Frank BS, Register-Mihalik J, Padua DA. High levels of coach intent to integrate a ACL injury prevention program into training does not translate to effective implementation. J Sci Med Sport. 2015;18(4):400–406. doi: 10.1016/j.jsams.2014.06.008.
[34] Saunders N, Otago L, Romiti M, et al. Coaches' perspectives on implementing an evidence-informed injury prevention programme in junior community netball. Br J Sports Med. 2010;44(15):1128–1132. doi: 10.1136/bjsm.2009.069039.
[35] Carter AF, Muller R. A survey of injury knowledge and technical needs of junior Rugby Union coaches in Townsville (North Queensland). J Sci Med Sport. 2008;11(2):167–173. doi: 10.1016/j.jsams.2007.01.004.
[36] Bruder AM, Donaldson A, Mosler AB, et al. Creating prep to play PRO for women playing elite Australian football: a how-to guide for developing injury-prevention programs. J Sport Health Sci. 2023;12(1):130–138.
[37] Rees H, Matthews J, Persson UM, et al. The knowledge and attitudes of field hockey athletes to injury, injury reporting and injury prevention: a qualitative study. J Sci Med Sport. 2022;25(10):820–827. doi: 10.1016/j.jsams.2022.07.001.
[38] Brunner R, Bizzini M, Maffiuletti NA, et al. Perceived barriers to and facilitators of an injury prevention program among professional male ice hockey players and staff members. J Sport Rehabil. 2021;30(7):1080–1087. doi: 10.1123/jsr.2020-0410.
[39] Minnig MC, Hawkinson L, Root HJ, et al. Barriers and facilitators to the adoption and implementation of evidence-based injury prevention training programmes: a narrative review. BMJ Open Sport Exerc Med. 2022;8(3):e001374. doi: 10.1136/bmjsem-2022-001374.
[40] Steib S, Rahlf AL, Pfeifer K, et al. Dose-response relationship of neuromuscular training for injury prevention in youth athletes: a meta-analysis. Front Physiol. 2017;8:920. doi: 10.3389/fphys.2017.00920.
[41] Finch CF, Donaldson A. A sports setting matrix for understanding the implementation context for community sport. Br J Sports Med. 2010;44(13):973–978. doi: 10.1136/bjsm.2008.056069.
[42] Ross AG, McKay MJ, Pappas E, et al. The FIFA 11 +: why is adherence so challenging? Insights from a cross-sectional study of stakeholders in Australian amateur football (soccer). Int J Sports Sci Coach. 2024;19(2):735–744. doi: 10.1177/17479541231174506.
[43] Duggan JD, Keane K, Moody J, et al. Strength and conditioning recommendations for female athletes: the Gaelic Footballer. Strength Condit J . 2023;45(5):525–544. doi: 10.1519/SSC.0000000000000761.
[44] Wilson F, Caffrey S, King E, et al. A 6-month prospective study of injury in Gaelic football. Br J Sports Med. 2007;41(5):317–321. doi: 10.1136/bjsm.2006.033167.
[45] Donaldson A, Callaghan A, Bizzini M, et al. A concept mapping approach to identifying the barriers to implementing an evidence-based sports injury prevention programme. Inj Prev. 2019;25(4):244–251. doi: 10.1136/injuryprev-2017-042639.
[46] Bolling C, Delfino Barboza S, van Mechelen W, et al. Letting the cat out of the bag: athletes, coaches and physiotherapists share their perspectives on injury prevention in elite sports. Br J Sports Med. 2020;54(14):871–877. doi: 10.1136/bjsports-2019-100773.
[47] Ekstrand J, Lundqvist D, Davison M, et al. Communication quality between the medical team and the head coach/manager is associated with injury burden and player availability in elite football clubs. Br J Sports Med. 2019;53(5):304–308. doi: 10.1136/bjsports-2018-099411.
[48] Ekstrand J, Lundqvist D, Lagerbäck L, et al. Is there a correlation between coaches' leadership styles and injuries in elite football teams? A study of 36 elite teams in 17 countries. Br J Sports Med. 2018;52(8):527–531. doi: 10.1136/bjsports-2017-098001.
[49] Møller M, Zebis MK, Myklebust G, et al. "Is it fun and does it enhance my performance?" – Key implementation considerations for injury prevention programs in youth handball. J Sci Med Sport. 2021;24(11):1136–1142. doi: 10.1016/j.jsams.2021.04.017.
[50] Bruder AM, Crossley KM, Mosler AB, et al. Co-creation of a sport-specific anterior cruciate ligament injury risk reduction program for women: a concept mapping approach. J Sci Med Sport. 2020;23(4):353–360. doi: 10.1016/j.jsams.2019.10.019.
[51] O'Brien J, Finch CF. Injury prevention exercise programmes in professional youth soccer: understanding the perceptions of programme deliverers. BMJ Open Sport Exerc Med. 2016;2(1):e000075. doi: 10.1136/bmjsem-2015-000075.
[52] Brown JC, Gardner-Lubbe S, Lambert MI, et al. Coach-directed education is associated with injury-prevention behaviour in players: an ecological

cross-sectional study. Br J Sports Med. 2018;52(15):989–993. doi: 10.1136/bjsports-2016-096757.

[53] Gram MCD, Clarsen B, Bø K. Injuries and illnesses among competitive Norwegian rhythmic gymnasts during preseason: a prospective cohort study of prevalence, incidence and risk factors. Br J Sports Med. 2021;55(4):231–236. doi: 10.1136/bjsports-2020-102315.

[54] Andersson SH, Bahr R, Olsen MJ, et al. Attitudes, beliefs, and behavior toward shoulder injury prevention in elite handball: fertile ground for implementation. Scand J Med Sci Sports. 2019;29(12):1996–2009. doi: 10.1111/sms.13522.

[55] Soligard T, Nilstad A, Steffen K, et al. Compliance with a comprehensive warm-up programme to prevent injuries in youth football. Br J Sports Med. 2010;44(11):787–793. doi: 10.1136/bjsm.2009.070672.

[56] Rees H, Matthews J, McCarthy Persson U, et al. Coaches' attitudes to injury and injury prevention: a qualitative study of Irish field hockey coaches. BMJ Open Sport Exerc Med. 2021;7(3):e001074. doi: 10.1136/bmjsem-2021-001074.

[57] Martinez JC, Mazerolle SM, Denegar CR, et al. Female adolescent athletes' attitudes and perspectives on injury prevention programs. J Sci Med Sport. 2017;20(2):146–151. doi: 10.1016/j.jsams.2016.06.009.

[58] O'Connor S, Whyte E, O'Hanlon S, et al. Coach and player views toward injury prevention exercise programs in camogie: a cross-sectional survey. Athl Train Sports Health Care. 2021;13(4):e202-11.

[59] Emery CA, Hagel B, Morrongiello BA. Injury prevention in child and adolescent sport: whose responsibility is it? Clin J Sport Med. 2006;16(6):514–521. doi: 10.1097/01.jsm.0000251179.90840.58.

[60] Kerr ZY, Register-Mihalik JK, Haarbauer-Krupa J, et al. Using opinion leaders to address intervention gaps in concussion prevention in youth sports: key concepts and foundational theory. Inj Epidemiol. 2018;5(1):28. doi: 10.1186/s40621-018-0158-7.