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A PROSPECTIVE INVESTIGATION OF THE ASSOCIATION BETWEEN ISOMETRIC MUSCLE STRENGTH AND RUNNING RELATED INJURY AMONG NOVICE AND RECREATIONAL RUNNERS.

Dillon, S. [1, 2], **Whyte, E.** [1], **Burke, A.** [1, 2], **O'Connor, S.** [1], **Gore, S.** [1,2], **Moran, K.** [1, 2].

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7.9 million people participate in running events
3rd most popular form of exercise
(Irish Sports Council, 2017)
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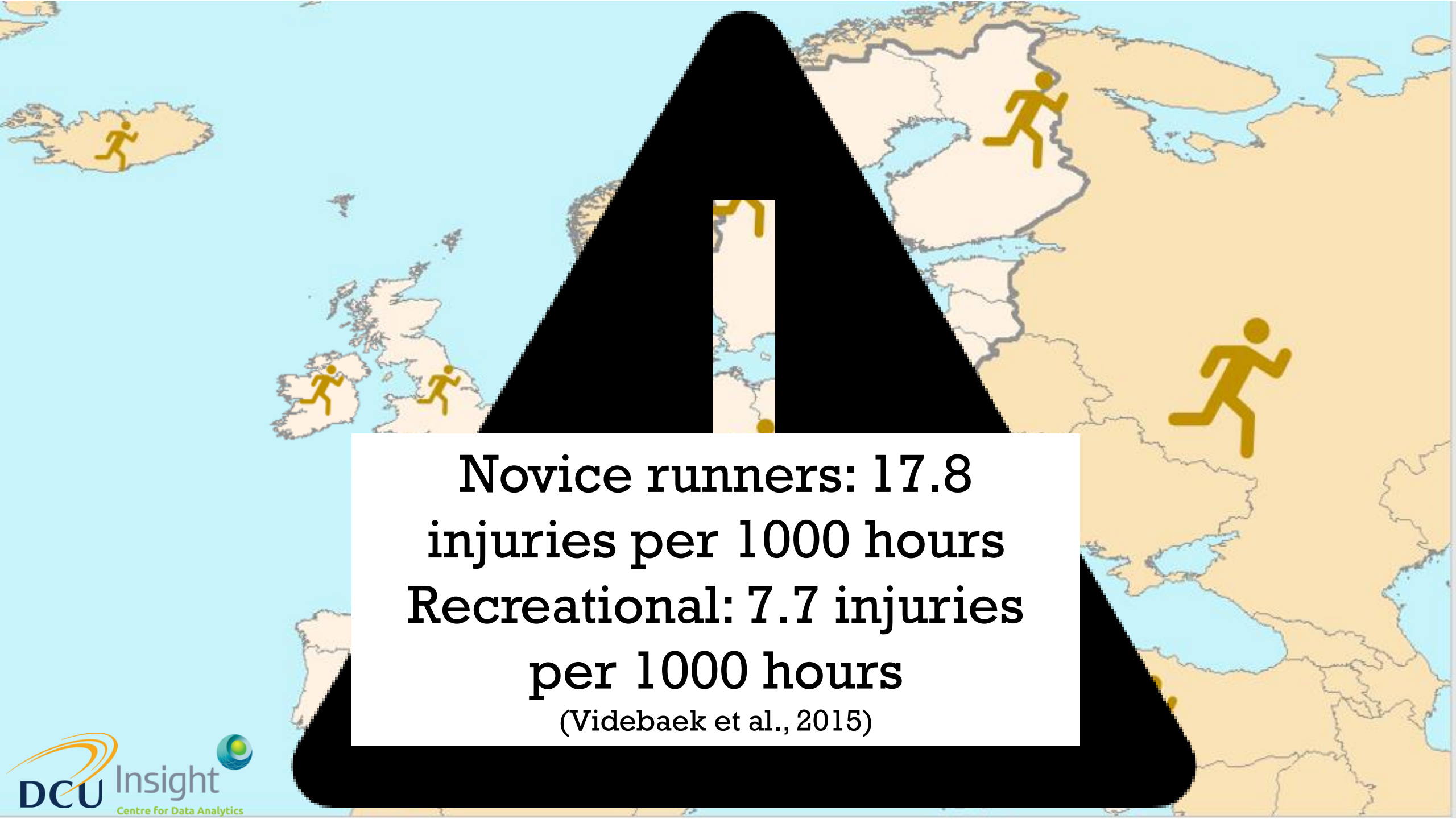

Novice runners: 17.8 injuries per 1000 hours
Recreational: 7.7 injuries per 1000 hours
(Videbaek et al., 2015)

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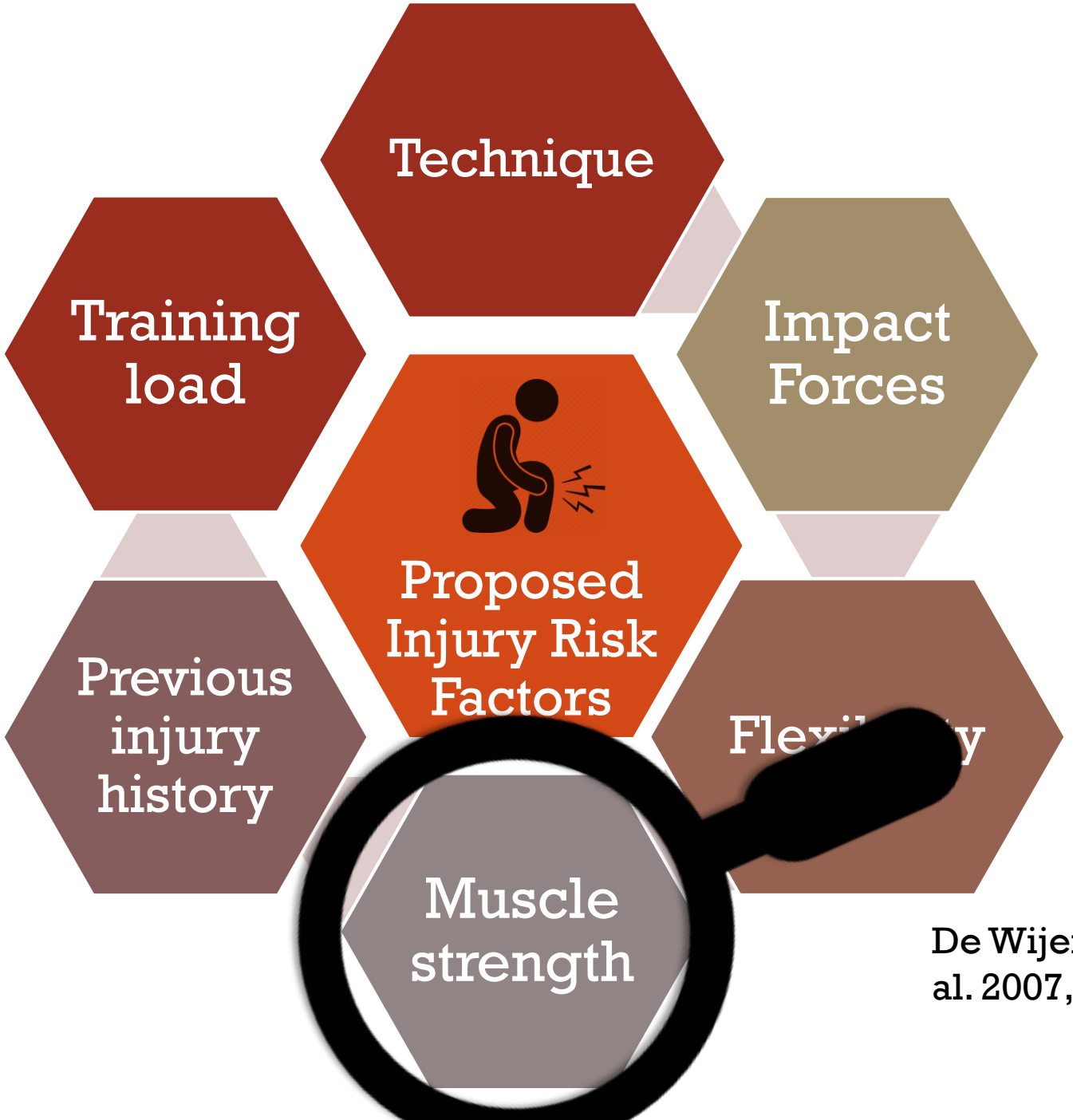

De Wijer et al. 2015, Van Gent et al. 2007, Ceyssens et al., 2019.

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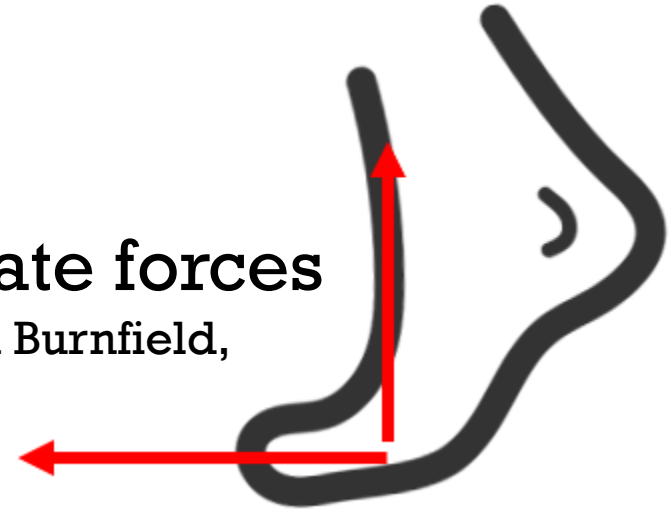
WHY STUDY MUSCLE STRENGTH?

Role of Muscles

Attenuate forces
(Perry and Burnfield, 1992)



Mediate movement
(Coventry *et al.*, 2006)

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WHY STUDY MUSCLE STRENGTH?

Association between muscle strength and injury

Decreased muscle strength in injured cohorts

(Noehren et al., 2014; Frericson et al., 2000; Niemuth et al, 2005)

Relationship between biomechanics and muscle strength

(Dierks *et al.*, 2008; Loudon and Reiman, 2012; Ferber et al. 2011)

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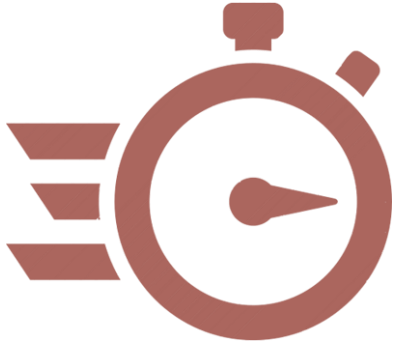
WHY STUDY MUSCLE STRENGTH?

Clinical Relevance



Quick and easy

Screening tool

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Can muscle strength predict running related injury?

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Methods

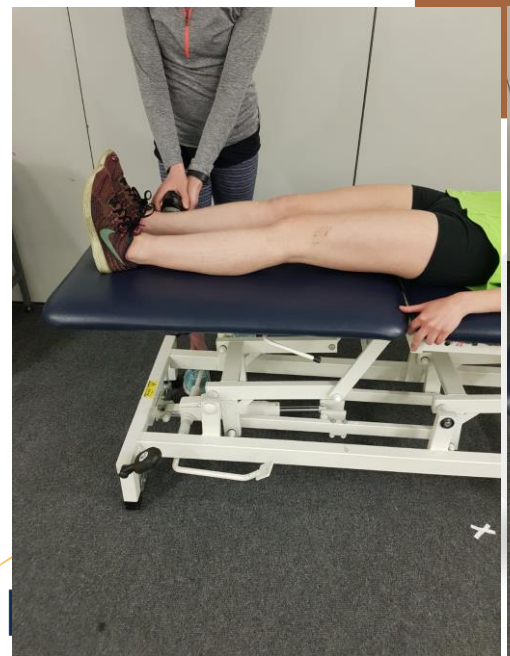
Recruitment

n=176

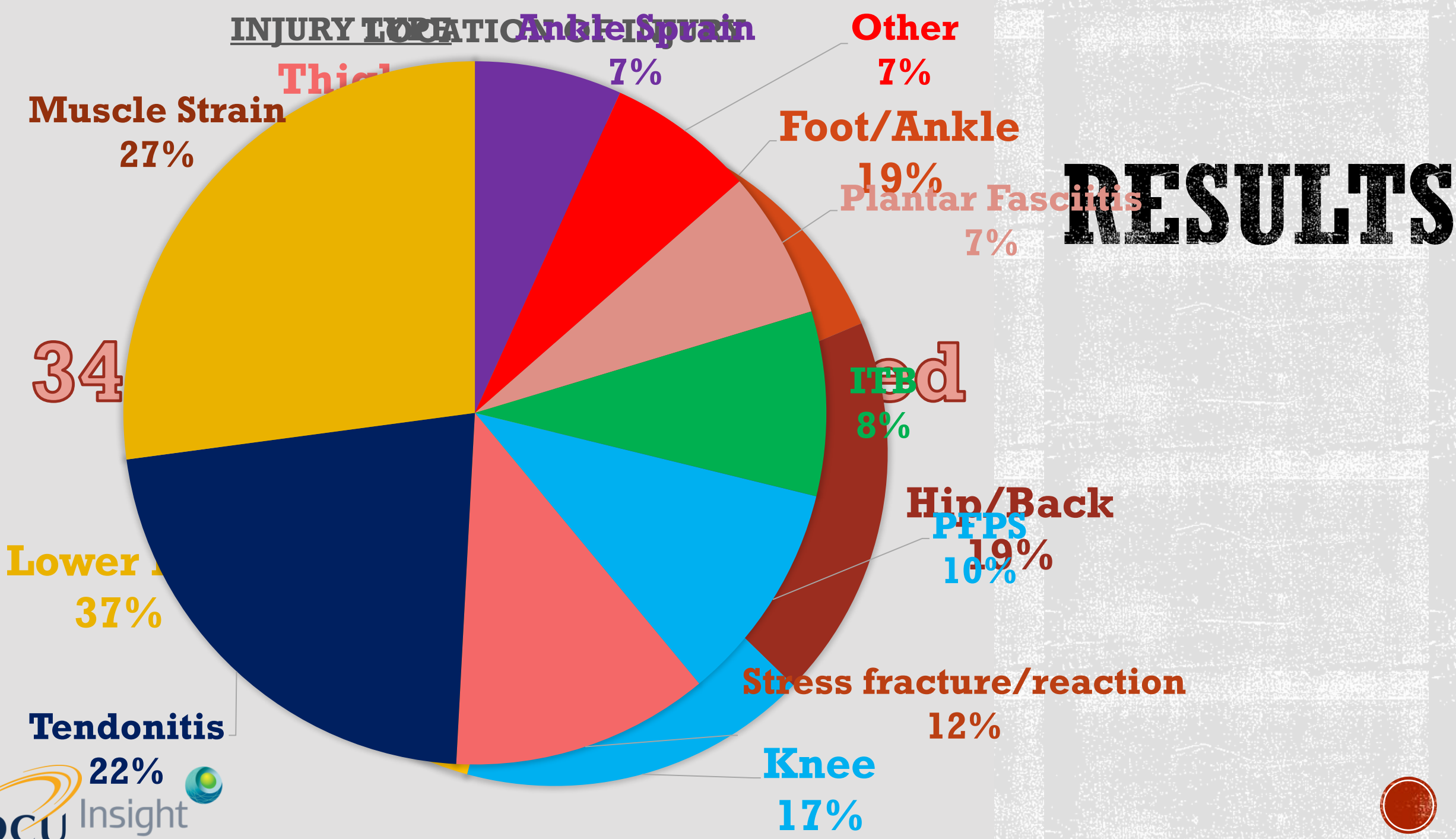
110 males, 66 females

42±5 years

Isometric Muscle Testing



RESULTS



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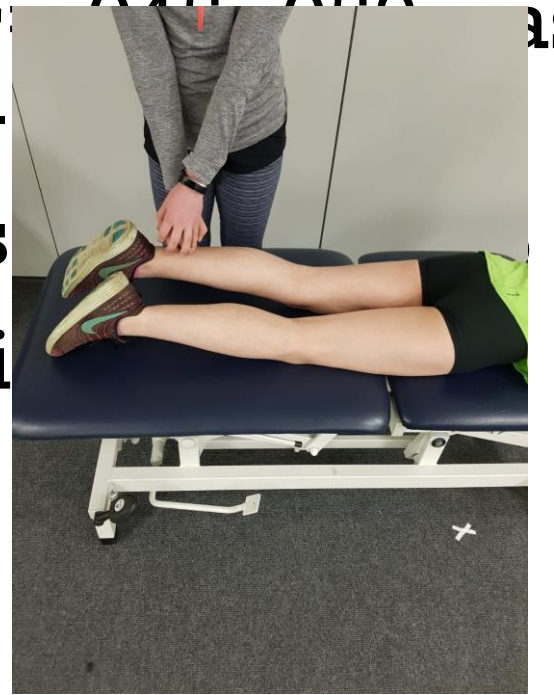
RESULTS

- Stepwise backwards regression.
- Statistically significant model generated to predict injury including hip extension strength and age
- p=.023, r^2 [illegible] ases classified correctly-
- High sens
- Low speci



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RESULTS

- Null model predicted 66.1% of cases correctly.

Manual muscle strength was not able to accurately predict injury

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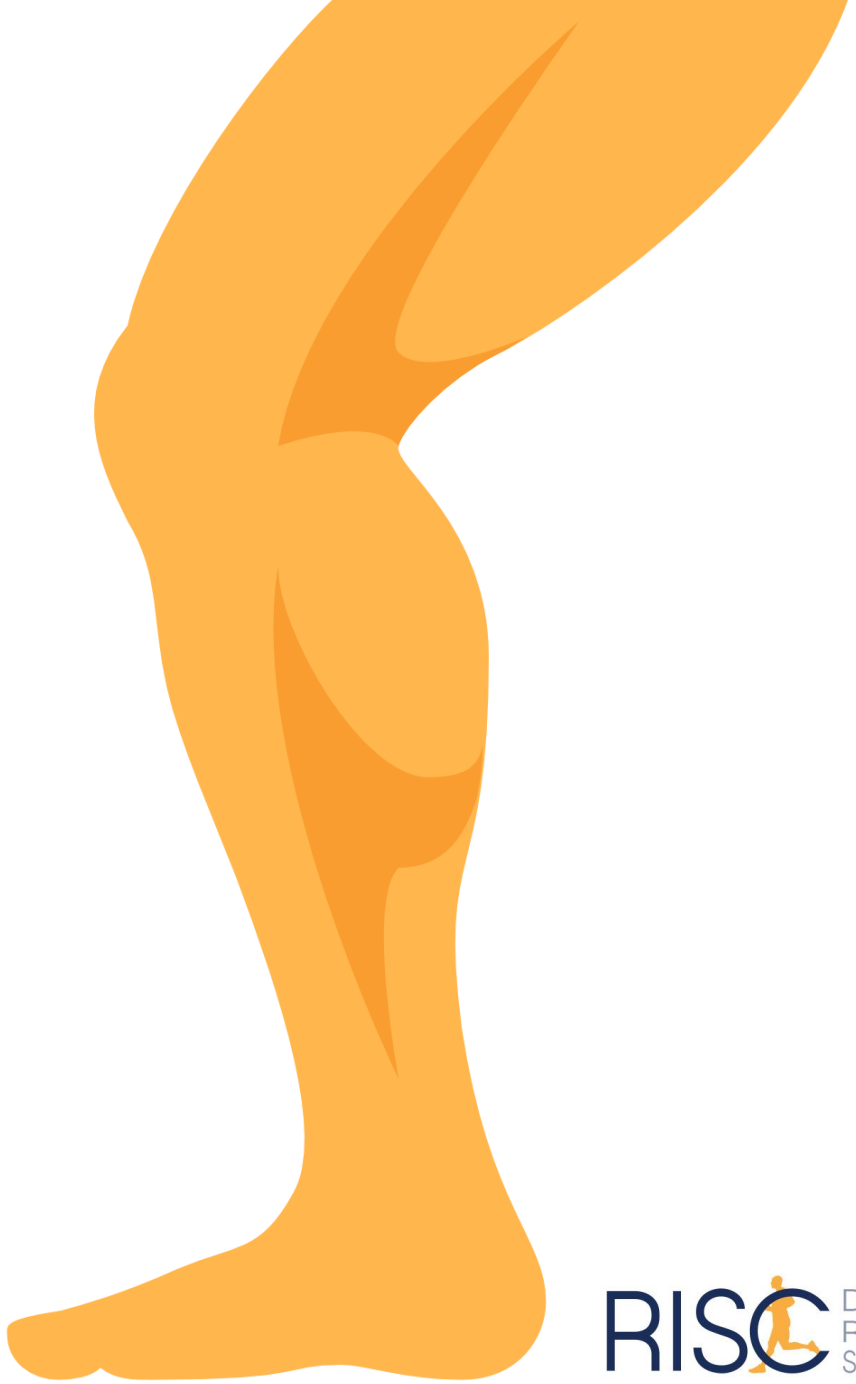
DISCUSSION

- In agreement with similar research.

(Thijs *et al.*, 2011; Yagi, Muneta and Sekiya, 2013; Torp *et al.*, 2018).

<u>Strength measures:</u>

- May not reflect the ability to effectively implement an injury-resistant running technique .
- May not reflect tissue strength.



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TAKE HOME MESSAGES

High prevalence of lower limb injury among runners.

Manual muscle strength may not predict future running injury.

Future directions: consideration of muscle strength in conjunction with measures of loading.

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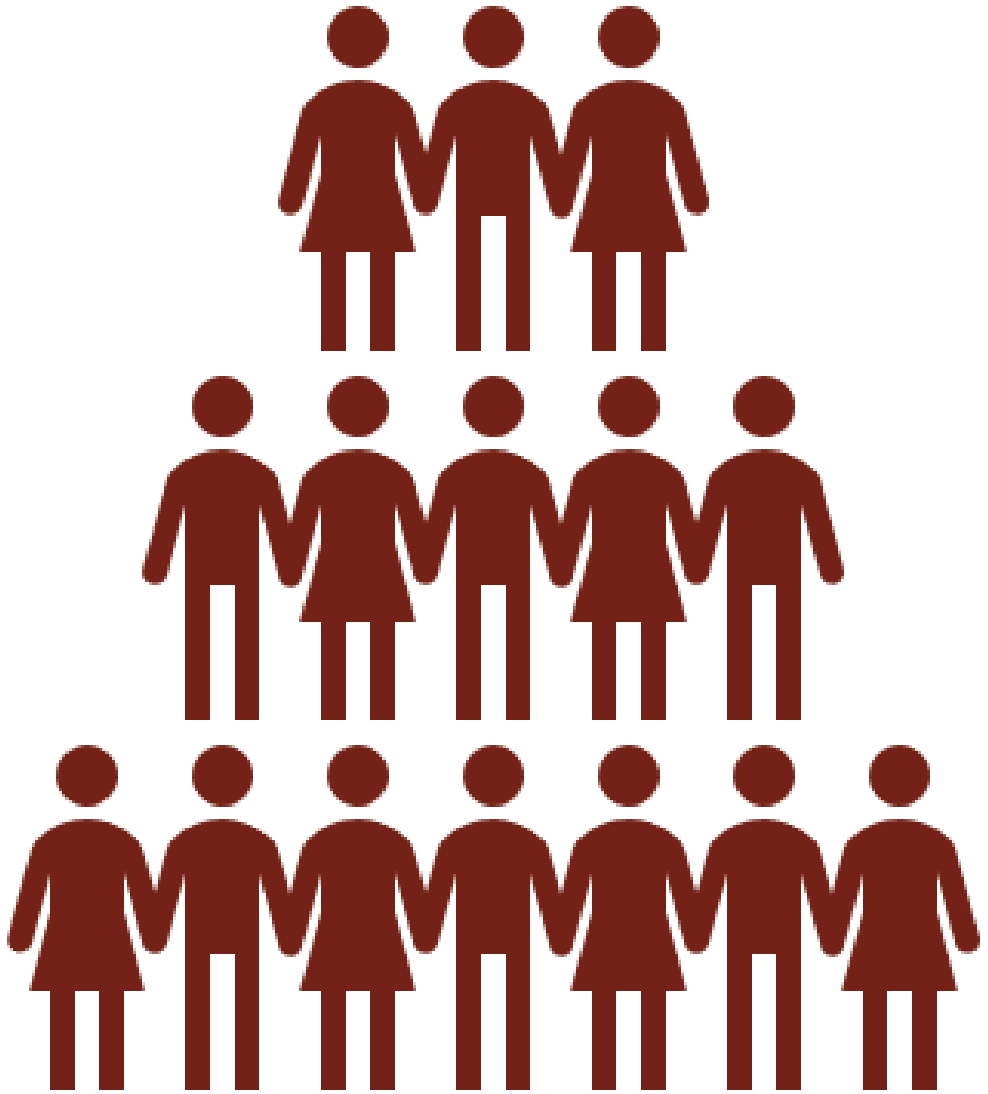

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