- Future research should consider actively engaging parents and highlighting elements of culture and religion to promote PA participation among Middle Eastern adolescent girls.

Conflict of interest statement: My co-authors and I acknowledge that we have no conflict of interest of relevance to the submission of this abstract

http://dx.doi.org/10.1016/j.jsams.2022.09.155

(P100137)

Is pre-season physical screening a waste of time? Just ask the coaches

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Introduction: Coaches are usually central to team performance and player selection, however, their observations and judgements may be also be useful to the medical team where functional screening for injury prevention and recovery typically occur. This study aimed to assess whether soccer coaches' assessment of their players' physical skills is associated with the players' physical performance on formal performance testing during pre-season.

Methods: Soccer players were rated subjectively by two coaches independently. The coach's subjective rating applied their expert opinion to score different movements and skills of the soccer players (technical, tactical, physical and psychological). Each player was rated out of 100, as compared to the coach's perceptions of the world's leading players in those positions. The ratings were the mean of two coaches' observations to produce one rating for each participant. The Intra-class Correlation Coefficient (ICC) was utilised to assess the reliability of the inter-coach ratings. Player scores on four common functional tests were evaluated by team medical staff independently of the coaches' ratings. The four functional tests assessed were the Y-balance test (normalised anterior, posteromedial, and posterolateral), triple medial hop, triple forward hop, and hexagon agility test. Decision tree analysis was deployed to determine: 1) How closely coaches' ratings of physical aptitude are associated with functional testing scores. 2) What cut-off values best discriminate between higher and lower coach ratings.

Results: Sixty-three male professional soccer players (23.08 ± 1.34 years) from the Saudi Professional League volunteered to participate. The ICC values ranged from 0.73 to 0.79. for the coach ratings of physical skill, indicating good to excellent agreement between the coaches. The tree model demonstrated that functional performance scores and coach rating of physical skill agreed in 86% (54/63) of ratings, 88% precision and 91% recall. The confusion matrix shows that the algorithm using functional testing scores correctly rated 88.4% of players classified as high physical performers by their coaches, and 80% of lower-rated players. The decision trees provided cut-off scores where high physical performance ratings from the coaches were given to 42 out of 63 players. The cut-off scores that best discriminated between higher and lower coach ratings were; average bilateral anterior normalised Y-balance test greater than 63.7 cm, and average bilateral triple medial hop between 408.3 cm and 481.7cm; and average bilateral posterolateral normalised Y-balance test greater than 88.2 cm.

Conclusion: Qualitative judgement of physical skill by coaches closely matched independently measured functional performance tests in this study. Findings from this study could be used to assist in player selection and preparation criteria.

Impact and application to the field:

- Both general and sport-specific player capabilities can be evaluated through physical testing.
- Sporting teams should take advantage of the coach rating scales of soccer players to enhance player return to play post-injury.

Conflict of interest statement: My co-authors and I have no conflict of interest of relevance to submitting this abstract.

http://dx.doi.org/10.1016/j.jsams.2022.09.156

(P100155)

The impact of high intensity resistance training on low back pain disability: a systematic review and meta-analysis

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Introduction: Low back pain (LBP) is a leading cause of disability and lost work time worldwide. Exercise is recommended by clinical practice guidelines for reducing symptoms of LBP. Resistance training is commonly used due to the hypothesis that it improves function. High Intensity Resistance Training (HIRT) is used in some clinical settings with the aim of increasing strength to build resilience for functional movement, but no previous studies have established the evidence for this approach. We aimed to assess whether HIRT was as, or more, effective than other forms of rehabilitation or no intervention on reducing disability and pain in adult populations with LBP.

Methods: This systematic review and meta-analysis examined randomised controlled trials of adults with non-specific LBP of any duration. Trials were included if the primary intervention was HIRT (any comparator was acceptable) and if they included disability and pain outcome measures. Two team members independently completed all screening and data extraction. Four meta-analyses examined the effect of HIRT on disability, comparing HIRT to other exercise and to physiotherapy at discharge and 6-12 month post-treatment using standardised mean difference. Two meta-analyses investigated with effect of HIRT on pain, comparing HIRT with other exercise at discharge and 6-12 months post-treatment using mean difference. Standardised mean difference [SMD] (or mean difference [MD] when outcomes were consistent) were used for comparisons, and GRADE was used to assess the quality of evidence.

Results: Nine randomised controlled trials met inclusion criteria (n=821 participants). The risk of bias of the studies was low to moderate (PEDro scores 3-7/10, median 6), with weaknesses in the reporting of interventions, comparators and adverse events. HIRT interventions consisted of whole-body exercises, multimodal training or progressive resistance training. Moderate to high quality evidence from four meta-analyses found that high intensity resistance training is as effective as other exercise or other therapy for reducing disability in patients with chronic LBP (SMDs ranged from -0.16 to 0.06). High quality evidence from two meta-analyses found that high intensity resistance training was more effective at reducing pain when compared to other exercise (MDs 0.50 and 0.51) in chronic LBP, however the differences in pain reduction between interventions may not be

clinically meaningful (≤1.5/10). No studies investigated acute or sub-acute LBP.

Discussion: This review found that high intensity resistance training is as effective as other treatment or other exercise to improve disability outcomes for people with chronic low back pain, and potentially more effective at reducing pain symptoms than other exercise. Limitations of this review were that there was a small evidence base (9 studies) and only three included studies with interventions that comprised 100% HIRT, as many were multimodal or graded intensity programs.

Impact and application to the field: HIRT should be considered by clinicians in the treatment of LBP. This review highlights a need for further studies to determine optimum HIRT dosage, as well as investigate acute and sub-acute LBP populations.

Conflict of Interest: We acknowledge we have no conflict of interest of relevance to the submission of this abstract

http://dx.doi.org/10.1016/j.jsams.2022.09.157

(P100157)

Trends and determinants of organised sports participation in immigrant and Australian children: A nine-year follow-up

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Introduction: Organised sports participation brings health benefits to children and adolescents, including physical, psychological, and social health. **However, there is a scarcity of research on specific population groups such as immigrant children. This study aimed to** examine trends and determinants of organised sports participation among children of immigrant parents from low-and-middle-income countries (LMIC), high-income countries (HIC), and Australian children.

Methods: Data were from the birth-cohort the Longitudinal Study of Australian Children aged 6-15 years with follow-up between 2010 and 2018. Organised sports participation was measured using two items about regular participation in team and individual sports. Multilevel binominal logit modelling was used to assess the determinants of organised sports participation across groups.

Results: Both team and individual sports participation increased between 6 and 11 years and declined between 11 and 15 years across all groups. Children of immigrant parents from LMIC (OR 0.65; 95% CI 0.57-0.74) and HIC (OR 0.82; 95% CI 0.76-0.89) had lower odds of team sports participation than Australian children. Children of immigrant parents from LMIC had lower odds of team sports participation (OR 0.79; 95% CI 0.69-0.90) than children of immigrant parents from HIC. Female children, high screen time, high psychological difficulties, increased number of siblings and low socio-economic position were identified as determinants of a lower team and individual sports participation.

Conclusion: The present study identified disparities in organised sports participation among children of immigrant parents and Australian children. Our findings can potentially inform strategies to promote equity in organised sports participation of children of immigrant parents from LMIC. Special considerations such as government support (e.g., grants), language support for immigrants with limited English language proficiency and community awareness programs may benefit.

Impact/Application:

- Strategies such as community grant assistance for immigrant families may be of benefit, focusing on children of immigrant parents from LMIC
- Special considerations such as gender-specific strategies to target female children and cultural differences should also be considered in sports participation

Keywords: Team sports, Individual sports, Immigrant, Children, LMIC, HIC

Declaration of interest statement
No conflict of interest.

http://dx.doi.org/10.1016/j.jsams.2022.09.158

(P100163)

Quantifying trunk stability and establishing evaluation criteria during core training using inertial sensors: a research protocol

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Introduction: Emerging evidence suggests core stability is an important factor in high performance in sports. Although many clinical assessments of core stability exist, there is a lack of consensus on the most effective core exercises and their impact on specific sports strength and conditioning. The objectives of this study are to 1) determine a simple method to objectively quantify the trunk stability during core training, and 2) to evaluate the credibility of the core assessment criteria) using both qualitative and quantitative aspects.

Methods: The first part of the study established a method for quantitatively evaluating trunk stability using several inertial sensors (SABEL Sense), a 3D motion capture (OptiTrack), and a data analysis system (Motive). SABEL Sense is a wearable inertial sensor consisting of a tri-axial accelerometer, gyroscope and magnetometer developed within the SABEL laboratory at Griffith University. The motion capture (Mocap) data was recorded by 3 cameras (Flex3; OptiTrack) placed on the ground, and 12 cameras attached to a 3m height frame. The second part of the study evaluated core assessment criteria (pelvic tilt and rotation angles, etc.) during core training. Sixteen male healthy sub-elite soccer players (middle of the season) between 20 and 39 years old participated in this study (Institutional ethics approval no is 2022/135).

The participants performed three basic core training: plank, side plank, and one-legged bridge, and trunk stability was analyzed during these three training. These assessments consisted of both static and dynamic components. The static training required the participant to hold a neutral spine position for 20-seconds. The dynamic training required extending/ abducting their leg five times with constant-tempo (70 bpm). Different ankle weights were used during the dynamic assessment (zero, 2kg, and 4kg) in each leg while trunk stability was recorded.

Results: Strong correlation between the Mocap data and inertial sensor data demonstrated that accurate measurements using inertial unit alone were possible. The average pelvic tilt angle calculated from the Mocap data during static plank showed a mean value of 17.0 degrees (10.8-21.1). The relative angle change during plank with right leg extension using zero, 2kg, and 4kg ankle weight showed a mean value of 16.5 degrees (16.3-16.8), 19.7 degrees (15.6-22.0), 17.7 degrees (17.5-17.9) respectively. These values correlated with those obtained using inertial sensors.

Conclusion: Wearable inertial sensor is a useful tool same as the Mocap assessment and it is practical to evaluate core stability as a field