

clinically meaningful ($\leq 1.5/10$). 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

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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.

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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