

Appraisal

Critically appraised paper: The '11+ Kids' warm-up program performed at least once a week reduces severe and lower extremity injuries in children playing football

Synopsis

Summary of: Rössler R, Junge A, Bizzini M, Verhagen E, Chomiak J, aus der Fünten K, Meyer T, Dvorak J, Lichtenstein R, Beaudouin F, Faude O. A multinational cluster randomised controlled trial to assess the efficacy of '11+ Kids': A warm-up programme to prevent injuries in children's football. *Sports Med* 2018;48:1493-1504.

Question: Does the '11+ Kids' warm-up program reduce injuries in children who play football (soccer)? **Design:** Two-arm, cluster-randomised controlled trial with blinded outcome assessment. **Setting:** 176 registered clubs (273 teams) in four European countries (Czech Republic, Germany, Netherlands, Switzerland). **Participants:** Inclusion criteria were: the football club was registered with the regional association and held training at least twice per week, and the children were aged between 7 and 12 years. Teams were not eligible for inclusion if the coach had already used an injury prevention program or a structured warm-up focusing on neuromuscular control. Randomisation of 176 clubs allocated 139 teams (2235 participants) to an intervention group and 134 teams (2125 participants) to a control group. All teams in the same club were randomised into the same group. **Interventions:** The intervention group participated in the '11+ Kids' injury prevention program comprising seven exercises. Three exercises focused on unilateral, dynamic stability of the lower extremities, three exercises on whole body and trunk strength/stability and one exercise on falling technique. The difficulty of each exercise was progressively increased in five levels to account for age-related and maturity-related performance and motor

skills. Teams completed the program at least twice per week for 15 to 20 minutes, at the beginning of a training session. Coaches attended an instruction session and received a manual and two-page summary of the program. The control group continued with their regular warm-up and received the program after the end of the study. **Outcome measures:** The primary outcome was overall risk of football-related injuries over one football season. Secondary outcome measures were risks of severe and lower extremity injuries and player-specific football exposure (in minutes). **Results:** A total of 292 749 hours of football exposure were recorded for 3895 participants (171 girls). During the study period, 374 injuries occurred during training and matches (intervention group: 139; control group: 235). The overall injury rate in the intervention group was reduced by 48% compared with the control group (HR 0.52; 95% CI 0.32 to 0.86); severe injuries (HR 0.26; 95% CI 0.10 to 0.64) and lower extremity injuries (HR 0.45; 95% CI 0.24 to 0.84). Injury incidence decreased with increasing compliance. **Conclusion:** '11+ Kids' reduces injuries in children's football if completed at least once per week; two sessions per week further increases the protective effect.

Provenance: Invited. Not peer reviewed.

Nora Shields

School of Allied Health, La Trobe University, Australia

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Commentary

Children's participation in sport has physical, psychological and behavioural benefits. However, exercise, particularly in team and collision sports, has an inherent risk of injury that may lead to chronic conditions.¹ Football (soccer) is a popular sport and almost 60% of all footballers are younger than 18 years. Of these, three quarters are under 14 years.² Activities that may reduce the incidence of injury and can be implemented simply in the football community are important to the long-term health of participants.

The Fédération Internationale de Football Association (FIFA) '11+' injury prevention program comprises seven exercises performed in the warm-up program, lasting 15 to 20 minutes. Three exercises focus on unilateral and dynamic stability of the lower limbs, three exercises on whole body strength, and one on falling technique. These exercises were designed to increase the physical attributes of players and lead to a reduction in injury. Several systematic reviews on the implementation of this program in football have reported a reduction in the incidence and severity of lower limb injury in adult soccer players.^{3,4} This study was the first to investigate the effects of the program for football in children younger than 13 years.

The study by Rössler et al was a well-designed, two-armed, cluster-randomised controlled trial involving 176 clubs and almost 4000

players across four countries. It found that a modified 11+ program directed to specific injury profile and maturational status of children aged 7 to 13 years was efficacious in reducing football injuries by almost 50%, particularly severe and lower limb injuries. Injury incidence decreased with increasing compliance. This study is highly relevant to clinicians working in sport and demonstrates the relevance of applying evidence-based injury prevention exercise programs to subgroups of the sporting population. In this case, young children can reduce injury rate and severity by completing the FIFA 11+ exercise warm-up.

Provenance: Invited. Not peer reviewed.

David Spurrier

Mitcham Rehab Clinic, Adelaide, Australia

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