There are more football injury prevention reviews than randomized controlled trials. Time for more RCT action!

Bricca A 1, Juhl CB 1,2, Bizzini M3, Andersen TE4, and Thorborg K5

Affiliation(s)

1Research Unit for musculoskeletal function and physiotherapy, University of Southern Denmark, Odense, Denmark; 2Department of Occupational and Physical Therapy, Herlev and Gentofte Hospital, University Hospital of Copenhagen, Denmark; 3Human Performance Lab, Schulthess Clinic, Zürich, Switzerland; 4Oslo Sports Trauma Research Center, Department of Sports Medicine, Norwegian School of Sport Sciences, Oslo, Norway; 5Sports Orthopedic Research Center – Copenhagen (SORC-C), Department of Orthopedic Surgery, Copenhagen University Hospital, Amager-Hvidovre

Corresponding author:

Alessio Bricca
Research Unit for Musculoskeletal Function and Physiotherapy, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Campusvej 55, DK-5230 Odense M Denmark.

E-mail: abricca@health.sdu.dk

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**INTRODUCTION**

Football is the most popular sport worldwide and participation in football at any level is associated with numerous health benefits. However, participation in football at any level incurs a risk of sustaining musculoskeletal injuries. Effective injury prevention strategies are needed.

The first formal injury prevention randomised controlled trial (RCT) in football was published in 1983. We performed a scoping systematic review to provide an overview of the published articles on injury prevention in football.

**METHODS**

A study protocol is available online at http://findresearcher.sdu.dk/portal/files/134191319/Protocol_scoping_revire_PURE.pdf. Although, we primarily focused on RCTs, we also included systematic reviews, and other studies investigating injury prevention strategies/interventions in football regardless of participant age, sex and level of participation.

**RESULTS**

Our literature search identified 3131 studies, with 98 studies being included after removal of those studies that did not satisfy the inclusion criteria (Supplementary figure A). Reviews were the type of study most often published (43%), followed by RCTs (35%), cohort studies (20%), and surveys (2%) (Supplementary figure B). Of the reviews 55% were narrative and 43% were systematic, of which 47% pooled data in the form of a meta-analysis.

**FIGURE 1.**

When we assessed the RCTs, exercise-based injury prevention interventions were used in 29 out of 34 studies, of which 18 included warm-up exercises, 9 strength training exercises, and 5 balance training exercises. The populations included in exercise-based injury prevention studies were; children (age 8 to 12 years) in one study, adolescents (age 13 to 17 years) in 11 studies and adults (≥18 years old) in 12 studies. Five studies included both adolescent and adult players. Non-elite players were included in 21 studies (10 on male players only, 7 on female players only, 3 on male and female players, and finally 1
did not report the sex of players). Elite players were included in 7 studies (6 on male players only, and 1 on male and female players). One study included both elite and non-elite male players. For an expanded overview see Figure 1 and Supplementary table 1.

DISCUSSION

Regarding the types of studies published on injury prevention in football, there were more reviews than RCTs. Furthermore, the RCTs included hetrogonous cohorts, interventions and settings all of which could affect implementation in otherwise homogenous groups of footballers. To our surprise, elite adolescent female players have only been included in one RCT so far. This is alarming as elite adolescent female players have greater risk of overall injuries than elite adult female players ([RR] 1.7; 95% CI (1.3 to 2.3)). To reduce the musculoskeletal injury burden in football, RCTs are needed to test injury prevention strategies in different populations and settings. As an example, the prevalence of ACL injuries amongst non-elite adolescent female football players is very low (<0.5% of all players), whereas the prevalence of these injuries amongst elite adolescent female football players is exceeds 10% of players. This highlights an important issue; the majority of studies investigating the efficacy of injury prevention interventions in female football players have not been undertaken on those players with the highest risk of serious injury. We therefore urge the football research community and funders to increase their focus on RCTs, and demand that the target is set on high risk cohorts.

Figure legends

Figure 1. Injury prevention randomized controlled trials in football: an overview. Children=football players from 8 to 12 years old; adolescents=football players from 13 to 17 years old; adults=football players with ≥18 years old.

Supplementary Figure A. Flow chart of the included studies.

Supplementary Figure B. Historical graph reporting the number of publications investigating injury preventive strategies from 1983 to March 2018, stratified by publication type. SR=systematic review; MA=meta-analysis; RCT=randomized controlled trial.
**Supplementary table legends**

**Supplementary Table 1. Randomized controlled trials characteristics.** M=Male, F=Female.

**REFERENCES**


