

INPLASY PROTOCOL

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No conflicts of interest.

Effects of small-sided soccer games on sprinting, vertical jump and change-of-direction: A systematic review and meta-analysis

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Review question / Objective: The purpose of this systematic review and meta-analysis was to assess the effects of SSG-based programs on soccer players' sprinting, vertical jumping, and change-of-direction performance.

Condition being studied: Small-sided games-based programs.
Information sources: A comprehensive computerized search of the following electronic databases was performed: (i) Web of Science; (ii) Scopus; (iii) SPORTdiscus; and (iv) PubMed. The searching process for relevant publications had no restriction regarding year of publication and included articles retrieved until 27 September 2020. The following search strings were employed: ("soccer" OR "football") AND ("small-sided games" OR "drill-based games" OR "sided-games" OR "SSG" OR "conditioned games" OR "small-sided and conditioned games" OR "reduced games" OR "play formats") AND ("sprint*" OR "velocity*" OR "vertical jump*" OR "jump*" OR "countermovement jump" OR "CMJ" OR "squat jump" OR "SJ" OR "drop jump" OR "DJ" OR "change of direction" OR "COD" OR "agility").

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 27 August 2020 and was last updated on 27 August 2020 (registration number INPLASY202080114).

INTRODUCTION

Review question / Objective: The purpose of this systematic review and meta-analysis was to assess the effects of SSG-based programs on soccer players' sprinting,

vertical jumping, and change-of-direction performance.

Rationale: As far as we may know, there is not dedicated SRMA to the effects of SSG-based programs in soccer on ST, CODt, and VHJ. Systematization of information

and evidence will help coaches to identify the potential adaptations promoted by these drills on these neuromuscular-related capacities, while may provide a state-of-the-art to the researchers in this topic.

Condition being studied: Small-sided games-based programs.

METHODS

Search strategy: A comprehensive computerized search of the following electronic databases was performed: (i) Web of Science; (ii) Scopus; (iii) SPORTdiscus; and (iv) PubMed.

Participant or population: Soccer players.

Intervention: Small-sided games.

Comparator: Control and/or other intervention.

Study designs to be included: Randomized clinical trials or parallel studies.

Eligibility criteria: The a priori inclusion criteria for this review were as follows: (i) randomized-controlled trials (active control; passive control) or parallel studies (SSG-based programs vs. other intervention) conducted in soccer players with no restriction of age, sex or competitive level; (ii) isolated SSG programs (i.e. not combined with other training methods) with no restrictions for duration; (iii) a pre-post outcome for physical fitness, including ST, VHJ and CODt; (iv) original per-reviewed articles written in English that provided full-text.

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OR "SSG" OR "conditioned games" OR "small-sided and conditioned games" OR "reduced games" OR "play formats") AND ("sprint*" OR "velocity*" OR "vertical jump*" OR "jump*" OR "countermovement jump" OR "CMJ" OR "squat jump" OR "SJ" OR "drop jump" OR "DJ" OR "change of direction" OR "COD" OR "agility").

Main outcome(s): The outcomes chosen for this SRMA included ST, VHJ and CODt. The linear ST (s) at different distances was collected, without including values of partial times. The VHJ (measured in cm) was usually assessed during a countermovement jump (CMJ) with or without arm swing, squat jump (SJ) or dropjump (DJ). The CODt was regularly measured at COD tests and the time for performing the test was collected.

Data management: The original studies were exported to reference manager software (EndNoteTM X9, Clarivate Analytics, Philadelphia, PA, USA).

Quality assessment / Risk of bias analysis: The Physiotherapy Evidence Database (PEDro) scale was used to assess the methodological quality of the randomized-controlled trials included in this SRMA. The scale scores the internal study validity in a range of 0 (high risk of bias) to 10 (low risk of bias). Eleven items are measured in the scale. The criterion 1 is not included in the final score. Points for items 2 to 11 were only attributed when a criterion was clearly satisfied. In the case of the non-randomized trials, the methodological index for non-randomized studies (MINORS) was used (Slim et al., 2003). Twelve items were analyzed, in which 0 represented cases of no report, 1 cases of report but inadequate, and 2 in cases of report and adequate.

Strategy of data synthesis: The analysis and interpretation of results in this SRMA were only conducted in the case of at least three study groups provided baseline and follow-up data for the same measure (García-Hermoso, Ramírez-Campillo, & Izquierdo, 2019; Moran, Ramirez-Campillo, & Granacher, 2018; Skrede, Steene-

Johannessen, Anderssen, Resaland, & Ekelund, 2019). Means and standard deviations for a measure (ST; VHJ; CODt) of pre-post SSG-based interventions were converted to Hedges's g effect size (ES). The inverse variance random-effects model for meta-analyses was used because it allocates a proportionate weight to trials based on the size of their individual standard errors (Deeks, Higgins, & Altman, 2008) and enables analysis while accounting for heterogeneity across studies (Kontopantelis, Springate, & Reeves, 2013). The ESs were presented alongside 95% confidence intervals (CIs) and interpreted using the following thresholds (Hopkins, Marshall, Batterham, & Hanin, 2009): 0.6–1.2, moderate; >1.2–2.0, large; >2.0–4.0, very large; >4.0, extremely large. All analyses were carried out using the Comprehensive Meta-Analysis program (version 2; Biostat, Englewood, NJ, USA).

Subgroup analysis: Youth vs. Adults; Shorter vs. Longer periods.

Sensibility analysis: The extended Egger's test (Egger, Smith, Schneider, & Minder, 1997) was used to assess the risk of bias across the studies. In case of bias, a sensitivity analysis was conducted.

Language: English.

Country(ies) involved: Portugal and Chile.

Keywords: football; athletic performance; drill-based games.

Contributions of each author:

Author 1 - Filipe Manuel Clemente - Head of the project; Data search; Methodological assessment; Writing and revision of the article.

Author 2 - Rodrigo Ramirez-Campillo - Data analysis and statistical report; Writing and revision of the article.

Author 3 - José Afonso - Qualitative synthesis; Writing and revision of the article.

Author 4 - Hugo Sarmento - Data search; Methodological assessment; Writing and revision of the article.