INPLASY PROTOCOL

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Support: **None.**

Review Stage at time of this submission: **Formal screening of search results against eligibility criteria.**

Conflicts of interest:
No conflicts of interest.

Effects of training programs on decision-making in youth team sports players: A systematic review and meta-analysis

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Review question / Objective: **This systematic review with meta-analysis was conducted to assess the effects of training programs on the decision-making of youth team sports players.**
Condition being studied: **The use of dedicated-training programs for improving decision-making in team sports players has been growing in the last years. Approaches as imagery training, video-based training, or game-based drills are some of the interventions used in youth players for improving decision-making. However, no systematic review and meta-analysis were conducted to summarize the main evidence about the effects of those programs on the players and identify the magnitude of effects comparing to control groups.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 22 October 2020 and was last updated on 22 October 2020 (registration number INPLASY2020100082).

INTRODUCTION

Review question / Objective: **This systematic review with meta-analysis was conducted to assess the effects of training programs on the decision-making of youth team sports players.**

Rationale: **The use of dedicated-training programs for improving decision-making in team sports players has been growing in**

the last years. Approaches as imagery training, video-based training, or game-based drills are some of the interventions used in youth players for improving decision-making. However, no systematic review and meta-analysis were conducted to summarize the main evidence about the effects of those programs on the players and identify the magnitude of effects comparing to control groups.

Condition being studied: Decision-making based training programs.

METHODS

Search strategy: Keywords and synonyms were entered in various combinations: (youth OR young) AND ("decision making" OR decision OR "decision training") AND ("team sport" OR football OR soccer OR futsal OR handball OR volleyball OR basketball OR hockey OR rugby OR cricket OR "water polo" OR lacrosse OR softball OR korfball OR "american football").

Participant or population: Youth (under-18) team sports players.

Intervention: Decision-making based programs.

Comparator: Control group (passive).

Study designs to be included: Randomized Controlled Trials.

Eligibility criteria: The a priori inclusion criteria for this review were as follows: (i) randomized-controlled trials (passive control) conducted in youth (≤ 18 years old) team sport players with no restriction of sex or competitive level; (ii) decision-making interventions (e.g., imagery, video-based, drill-based games) with no restrictions for duration; (iii) a pre-post outcome for decision-making; (iv) original per-reviewed articles written in English that provided full-text.

Information sources: A comprehensive computerized search of the following electronic databases was performed: (i) Web of Science; (ii) Scopus; (iii) SPORTdiscus; (iv) PubMed; and (v) PsycINFO. The searching process for relevant publications had no restriction regarding year of publication and included articles retrieved until 21th October 2020.

Main outcome(s): The outcomes considered for this systematic review were: (i) action or reaction time (s) for those studies testing the effects of intervention on time-based decision-making tests; (ii) overall success in technical execution for those studies testing the effects on the accuracy of technical actions; (iii) overall success in tactical behavior, for those studies comparing the intervention effects on the number or percentage of tactical behaviors performed; (iv) success in declarative questionnaires about decision-making and tactical behavior.

Quality assessment / Risk of bias analysis: The version 2 of the Cochrane risk-of-bias tool for randomized trials (RoB2) (4)was used to assess the risk of bias in the included randomized-controlled trials. Five dimensions are inspected in this assessment tool: (i) bias arising from the randomization process; (ii) bias due to deviations from intended interventions; (iii) bias due to missing outcome data; (iv) bias in measurement of the outcome; and (v) bias in selection of the reported result. Using RoB2 a qualitative synthesis was performed. The risk of bias was independently assessed by two of the authors (JA and HS). Any disagreement in the rating was resolved through discussion and by a third author (FMC).

Strategy of data synthesis: Although two studies can be used in meta-analyses (5), considering reduced sample sizes are common in the sports science literature (6), analysis and interpretation of results in this systematic review and meta-analysis were only conducted in the case of at least three study groups provided baseline and follow-up data for the same measure. Pre-training and post-training means and SD for dependent variables were used to calculate effect sizes (ES; Hedge's g) for each outcome in the intervention and control groups. Data were standardised using

post-intervention SD values. The random-effects model was used to account for differences between studies that might impact the intervention effect (7,8). The ES values are presented with 95% confidence intervals (CI). Calculated ES were interpreted using the following scale: 0.6–1.2, moderate; >1.2–2.0, large; >2.0–4.0, very large; >4.0, extremely large (9). Heterogeneity was assessed using the I2 statistic, with values of 75% considered to represent low, moderate, and high levels of heterogeneity, respectively (10). The risk of bias was explored using the extended Egger's test (11). In the case of bias, the trim and fill method was applied (12). All analyses were carried out using the Comprehensive Meta-Analysis software (version 2; Biostat, Englewood, NJ, USA). Statistical significance was set at p ≤0.05.

Subgroup analysis: None.

Sensibility analysis: The risk of bias was explored using the extended Egger's test. In the case of bias, the trim and fill method was applied.

Language: English.

Country(ies) involved: Portugal; Chile.

Keywords: decision making; young; team sports; performance.

Contributions of each author:
Author 1 - Ana Filipa Silva - Head of the project; methodological supervision; drafted the manuscript.
Author 2 - Rodrigo Ramirez-Campillo - Statistical analysis and report; drafted the manuscript.
Author 3 - Hugo Sarmento - Data search; methodological assessment; drafted the manuscript.
Author 4 - José Afonso - Methodological assessment; drafted the manuscript.
Author 5 - Filipe Manuel Clemente - Methodological supervision; synthesis of results; drafted the manuscript.