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Effects of the FIFA11+ program on the number of non traumatic injuries in football players. A systematic review

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Data analysis.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202520014

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 4 February 2025 and was last updated on 4 February 2025.

INTRODUCTION

Review question / Objective Systematize the effects of FIFA11+ program on the number of non-traumatic injuries in football players (of any age, genre or competitive level).

Rationale The FIFA11+ program is a manual that includes running, plyometrics, strength and balance exercises developed by FIFA's medical research and evaluation center, F-MARC, with the aim of reducing the probability of injury in football players. Currently, many coaches rely on the use of this method, but the effectiveness in reducing non-traumatic injuries still requires evidence-based synthesis.

Condition being studied FIFA11+ program applied during, minimum, 4 months (duration) and without frequency registered (number of sessions per week) applied in football players from any age, genre or competitive level.

METHODS

Search strategy (((FIFA11+[Title]) OR (FIFA 11+[Title])) OR (11+ program[Title])) AND (injury prevention[Title/Abstract])) NOT (traumatic injuries).

Participant or population Football players from any age, genre or competitive level.

Intervention FIFA11+ program applied during, minimum, 4 months (duration) and without frequency registered (number of sessions per week).

Comparator Passive control groups.

Study designs to be included Observational studies, randomized controlled trials, experimental studies.

Eligibility criteria Inclusion criteria: (i) football players from any age, genre or competitive level (ii) FIFA11+ programmes applied during, minimum, 4

months (duration) and without frequency registered (number of sessions per week) (iii) Passive or active control groups (iv) Peer reviewed, original, fulltext studies written in English or Portuguese.

Exclusion criteria: Unhealthy football players from any age, genre or competitive level (ii) Other injury prevention specified programme, programmes with less 4 months intervention (iii) Written in other language than English or Portuguese, Reviews, letters to editors, trial registrations, proposals for protocols, editorial, book chapters, conference abstracts.

Information sources Electronic databases (Cochrane, Embase, Medline (PubMed), Scopus, SPORTDiscus, and Web of Science) were searched for relevant publications.

Main outcome(s) Amount of non traumatic injuries registered.

Additional outcome(s) Physical performance improvements and other related secondary variables.

Quality assessment / Risk of bias analysis The Grading of Recommendation Assessment, Development, and Evaluation (GRADE) system was used to evaluate the quality of evidence for the study outcomes. Six criteria were considered: risk of bias, inconsistency, indirectness, imprecision, publication bias, and effect size.

Each outcome will be assigned an initial level of evidence based on the study design (e.g., randomized controlled trials start as high-certainty evidence, while observational studies start as low-certainty evidence). The level of evidence will be downgraded or upgraded based on the following criteria: (i) Risk of bias: Assessed using tools such as the Cochrane Risk of Bias tool for randomized studies or other relevant tools for observational studies; (ii) Inconsistency: Evaluated by the degree of heterogeneity across study results, using the I^2 statistic and visual inspection of forest plots; (iii) Indirectness: Determined by assessing the applicability of the evidence to the research question (e.g., variations in population, intervention, comparison, or outcomes); (iv) Imprecision: Judged by the width of confidence intervals and whether they overlap with clinically important thresholds; (v) Publication bias: Investigated through funnel plot asymmetry and statistical tests (e.g., Egger's test), when applicable. The GRADE assessment will categorize the quality of evidence into four levels: high, moderate, low, and very low. These categorizations will guide the interpretation of findings and the

strength of recommendations. Disagreements in GRADE scoring among reviewers will be resolved through discussion or consultation with a third reviewer.

Strategy of data synthesis The data synthesis will include both quantitative and qualitative approaches, depending on the availability and characteristics of the extracted data. A meta-analysis will be conducted using Jamovi software, applying a random-effects model to calculate pooled effect sizes (e.g., standardized mean differences or odds ratios) with 95% confidence intervals. This approach accounts for potential variability between studies.

Heterogeneity among studies will be assessed using the I^2 statistic, with thresholds of 25%, 50%, and 75% indicating low, moderate, and high heterogeneity, respectively. When substantial heterogeneity ($I^2 > 50\%$) is identified, subgroup analyses will be performed to explore potential sources, such as age, genre, or competitive level.

If meta-analysis is not feasible due to insufficient or heterogeneous data, a narrative synthesis will be conducted. This synthesis will summarize the results descriptively, focusing on the primary outcomes of interest, such as injury prevention rates and physical performance improvements.

Publication bias will be assessed by visually inspecting funnel plots and conducting Egger's regression test, if a sufficient number of studies are included ($n \geq 10$). Sensitivity analyses will be performed to assess the robustness of findings by excluding studies with high risk of bias or using alternative statistical approaches.

Subgroup analysis Subgroup analyses will be conducted to explore potential differences in the effectiveness of the FIFA 11+ program across specific groups and contexts. The following subgroups will be analyzed: (i) Age, players will be categorized into age groups (e.g., 18 years) to investigate whether the effectiveness of the FIFA 11+ varies across different stages of physical development; (ii) Genre, male and female players will be analyzed separately to assess potential differences in the program's impact, considering physiological variations between genres; (iii) Playing level: Players will be grouped as amateur, semi-professional, or professional to evaluate the program's effectiveness across varying levels of performance and training intensity.

The subgroup analyses will be performed using stratified meta-analyses within each subgroup, applying random-effects models. Differences between subgroups will be assessed using interaction tests (e.g., Q-test for subgroup differences). These analyses will help identify

specific populations or conditions under which the FIFA 11+ program may be more or less effective.

Sensitivity analysis A sensitivity analysis will be conducted to assess the robustness of the findings. This will involve excluding studies with high risk of bias and reanalyzing the data to determine whether the results remain consistent.

Language restriction English.

Country(ies) involved Portugal.

Keywords Balance; Injury prevention; Physical condition; Plyometry; Strength.

Contributions of each author

Author 1 - Guilherme Conceicao - FMC lead the project, wrote and revised the original manuscript and RRC analyzed and interpreted the data, wrote the statistical report and revised the original manuscript.

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