

# INPLASY PROTOCOL

To cite: Clemente et al.  
Accuracy, precision and  
repeatability of physical field-  
based tests for soccer: A  
systematic review. Inplasy  
protocol 202130099. doi:  
10.37766/inplasy2021.3.0099

Received: 27 March 2021

Published: 27 March 2021

**Corresponding author:**  
Filipe Manuel Clemente

filipe.clemente5@gmail.com

**Author Affiliation:**  
Escola Superior Desporto e  
Lazer, Instituto Politécnico  
de Viana do Castelo,  
Portugal

**Support:** None.

**Review Stage at time of this  
submission:** Preliminary  
searches.

**Conflicts of interest:**  
None declared.

## Accuracy, precision and repeatability of physical field-based tests for soccer: A systematic review

Clemente, FM<sup>1</sup>; Oliveira, R<sup>2</sup>; Akyildiz, Z<sup>3</sup>; Afonso, J<sup>4</sup>.

**Review question / Objective:** This systematic review was conducted to: (1) summarize the accuracy, precision and repeatability levels of field-based tests applied in soccer; and (2) provide a list of the valid and reliable field-based tests to different age-groups and sexes.

**Condition being studied:** Players exposed to a field-based test with or without ball, covering the physical qualities of: (i) aerobic performance; (ii) anaerobic performance; (iii) strength and power; (iv) sprint and change-of-direction; and/or (v) mobility.

**Information sources:** Electronic databases (EBSCO, PubMed, Scielo, SPORTDiscus, Web of Science) were searched for relevant publications on March 30, 2021. Additionally, the reference lists of the studies retrieved were manually searched to identify potentially eligible studies not captured by the electronic searches. Finally, an external expert has been contacted in order to verify the final list of references included in this scoping review in order to understand if there was any study that was not detected through our research.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 27 March 2021 and was last updated on 27 March 2021 (registration number INPLASY202130099).

### INTRODUCTION

**Review question / Objective:** This systematic review was conducted to: (1) summarize the accuracy, precision and repeatability levels of field-based tests applied in soccer; and (2) provide a list of

the valid and reliable field-based tests to different age-groups and sexes.

**Rationale:** Physical field-based tests are commonly used in soccer for assessing fitness status of players. The advantage of using field-based tests is the increase of

ecological validity, while the accuracy and precision may be smaller than laboratorial gold-standard tests. Therefore, is important to guarantee that field-based tests ensure the validity and reliability levels enough to be properly applied in different competitive levels and context.

**Condition being studied:** Players exposed to a field-based test with or without ball, covering the physical qualities of: (i) aerobic performance; (ii) anaerobic performance; (iii) strength and power; (iv) sprint and change-of-direction; and/or (v) mobility.

## METHODS

**Search strategy:** Electronic databases (EBSCO, PubMed, Scielo, SPORTDiscus, Web of Science) were searched for relevant publications on March 30, 2021. Keywords and synonyms were entered in various combinations in title and/or abstract, with two code lines for free terms [(soccer OR football) AND (“Validity” OR “Accuracy” OR “Reliability” OR “Precision” OR “Variability” OR “Repeatability” OR “Reproducibility” OR “Consistency”)] AND one code line for MeSH terms (exercise test OR muscle strength OR physical fitness).

**Participant or population:** Soccer players from any age group, competitive level or sex.

**Intervention:** Exposed to a field-based test with or without ball, covering the physical qualities of: (i) aerobic performance; (ii) anaerobic performance; (iii) strength and power; (iv) sprint and change-of-direction; and/or (v) mobility.

**Comparator:** For validity, the tests must be compared with a laboratorial goal-standard test and/or with a concurrent field-based test.

**Study designs to be included:** No restrictions with regard to study design. In case of more than one time-point, both (pre and post) will be considered.

**Eligibility criteria:** Inclusion criteria: (i) Soccer players from any age group, competitive level or sex; (ii) Exposed to a field-based test with or without ball, covering the physical qualities of: (i) aerobic performance; (ii) anaerobic performance; (iii) strength and power; (iv) sprint and change-of-direction; and/or (v) mobility; (iii) For validity, the tests must be compared with a laboratorial goal-standard test and/or with a concurrent field-based test; (iv) Measures of accuracy/precision (e.g., typical error; mean absolute error) and/or repeatability (e.g., intraclass correlation test; coefficient of variation). Additionally, information about ecological validity will be described; (v) No restrictions with regard to study design. In case of more than one time-point, both (pre and post) will be considered; and (vi) Only original and full-text studies written in English, Portuguese, Spanish, Italian and French. Exclusion criteria: (i) Sports other than soccer (e.g., futsal, beach football, basketball), physical education students, general population; (ii) Technical and tactical tests; laboratorial tests (e.g., cycling, treadmill, weight room); (iii) No gold-standard test or concurrent field-based test; (iv) No statistics related to accuracy/precision and/or repeatability; (v) Written in languages other than English, Portuguese, Spanish, Italian and French. Other article types than original (e.g., reviews, letters to editors, trial registrations, proposals for protocols, editorials, book chapters and conference abstracts).

**Information sources:** Electronic databases (EBSCO, PubMed, Scielo, SPORTDiscus, Web of Science) were searched for relevant publications on March 30, 2021. Keywords and synonyms were entered in various combinations in title and/or abstract, with two code lines for free terms [(soccer OR football) AND (“Validity” OR “Accuracy” OR “Reliability” OR “Precision” OR “Variability” OR “Repeatability” OR “Reproducibility” OR “Consistency”)] AND one code line for MeSH terms (exercise test OR muscle strength OR physical fitness). Additionally, the reference lists of the studies retrieved were manually searched to identify

---

potentially eligible studies not captured by the electronic searches. Finally, an external expert has been contacted in order to verify the final list of references included in this scoping review in order to understand if there was any study that was not detected through our research.

extraction, wrote and revised the original manuscript.

**Main outcome(s):** The following information was extracted from the included original articles: (i) accuracy measure (e.g., typical error, absolute mean error); and (ii) precision measure (e.g., intraclass correlation test, coefficient of variation). Additionally, the following data items were extracted: (i) number of participants (n), age-group (youth, adults or both), sex (men, women or both), training level (years of experience, training sessions per week); (ii) characteristics of the experimental approach to the problem, procedures and settings of each study and the details of the tests and implementation.

**Quality assessment / Risk of bias analysis:** The Downs & Black methodological assessment will be used.

**Strategy of data synthesis:** None.

**Subgroup analysis:** None.

**Sensitivity analysis:** None.

**Language:** English.

**Country(ies) involved:** Portugal; Turkey.

**Keywords:** football; athletic performance; performance assessment; aerobic performance; anaerobic performance; neuromuscular performance.

**Contributions of each author:**

**Author 1 - Filipe Manuel Clemente - FMC** lead the project, wrote and revised the original manuscript.

**Author 2 - Rafael Oliveira -** Wrote and revised the original manuscript.

**Author 3 - Zeki Akyildiz -** wrote and revised the original manuscript.

**Author 4 - José Afonso -** Run the data search, performed the methodological assessment, conducted the data