INPLASY

Identification of Performance Variables in Blind 5-A-Side Football: Physical Fitness, Physiological Responses, Technical-Tactical Actions and Recovery Variables: A Systematic Review

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 6 November 2025 and was last updated on 6 November 2025.

INTRODUCTION

Review question / Objective Identify performance variables in blind 5-a-side football through the analysis of physical fitness factors, physiological demands, technical-tactical actions, and recovery variables.

Rationale Blind 5-a-side football is an intermittent sport that requires the development of specific physical, physiological, and technical-tactical variables, making the identification of recovery processes such as sleep, well-being, and athletes' perception a key factor in performance. However, to date, no systematic review has been reported that analyzes the scientific evidence on performance variables in players with visual impairments.

Condition being studied To date, no systematic review has been found that analyzes differences in physical, physiological, technical, tactical, and recovery variables in blind 5-a-side football. Therefore, the objective of this study was to review the performance variables of physical fitness, physiological demand, technical-tactical actions, and recovery variables in blind 5-a-side foot-ball to establish reference patterns and contributions that can be used by different coaches, sports team professionals, researchers, and institutional affiliations to promote a greater number of studies that allow for a continued understanding of athletic performance in blind 5-a-side football.

METHODS

Search strategy ("blind 5-a-Side soccer players" [All fields]) OR ("blind players" [All fields]) OR ("athletes of 5-a-side football" [All fields]) OR ("blind soccer" [All fields]) AND ("match analysis" [All fields]) OR ("competition" [All fields]) OR ("performance" [All fields]) ("activity" [All fields]) OR ("physical demand" [All fields]) OR ("physiological response*" [All fields]) OR ("GPS" [All fields]) OR

("wearable*" [All fields]) OR ("internal workload" [All fields]) OR ("external workload" [All fields]) OR ("physical fitness" [All fields]) OR ("technical actions" [All fields]) OR ("tactical actions" [All fields]) OR ("recovery variables" [All fields]) OR ("competition monitoring" [All fields]) OR ("visual impairment" [All fields]) AND ("blind person*").

Participant or population Blind 5-a-side players aiming to train or improve their performance (Physiological variables, Physical fitness, Competition monitoring, GPS, Technical and tactical actions, Recovery variables, Performance levels.

Blind players aiming to match analysis, competition, physiological responses (HR, Vo2max, RPE), physical fitness (strength, speed, agility, resistance, balance), technical-tactical actions (passing, shots on goal, dribbling), recovery variables (stress, sleep, well-being, muscle pain, fatigue) and competition monitoring (accelerations, decelerations, total distance).

Intervention Blind players aiming to match analysis, competition, physiological responses (HR, Vo2max, RPE), physical fitness (strength, speed, agility, resistance, balance), technical-tactical actions (passing, shots on goal, dribbling), recovery variables (stress, sleep, well-being, muscle pain, fatigue) and competition monitoring (accelerations, decelerations, total distance).

The interventions evaluated are based on different types of studies: Cross-sectional study, longitudinal study, randomized controlled trial, observational study, quasi-experimental study and experimental study.

Comparator Comparisons were made between the performance levels of blind players based on analysis of matches, competition, and effects on technical, tactical, physical variables and recovery variables.

Study designs to be included Cross-sectional study, longitudinal study, randomized controlled trial, observational study, quasi-experimental study and experimental study.

Eligibility criteria This search equation was used to identify studies in each of the databases. In addition, keyword vocabulary control was performed to improve the retrieval of documents in other languages. Searches were conducted to identify studies without other restrictions in terms of publication date, language, or study design, if they were quantitative studies with results associated with performance variables. When it was not possible to obtain the full texts of the studies identified through institutional subscriptions or open access, attempts were made to contact the corresponding authors directly by email. When this was not possible, the ResearchGate platform was used, as suggested by other studies that have implemented this methodology.

Information sources The search strategies considered the following characteristics:
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The following databases were consulted: Scopus, PubMed (Medline), Web of Science and Science Direct. Searches were also conducted on Google Scholar to increase the identification of documents.

Main outcome(s) In terms of aerobic capacity, VO_2max values reported range from 44 to 52 ml·kg^{-1}·min^{-1} in elite soccer players, with significant improvements after 14- to 16-week in-season training programs [8, 23]. The Brazilian Paralympic team had a VO_2peak of 51.8±5.8 ml·kg^{-1}·min^{-1}, a maximum speed of 17.1±1.4 km·h^{-1} and a maximum heart rate of approximately 190.4±7.5 bpm.
In terms of cardiovascular response, average heart rates of 161 bpm were observed in competition, with peaks above 180 bpm, equivalent to 85–90% of HRmax, which is associated with the internal demands of this sport at the level of conventional elite soccer. PCA analysis showed that younger players have higher HR and a greater number of ACC, while goal scorers accumulate frequency peaks associated with explosive actions. In addition, improvements in %HRmax at the respiratory compensation point were evident after prolonged training programs, reflecting positive adaptations in cardiorespiratory efficiency.

The studies describe profiles where the average body mass is between 64.9 and 81.8 kg, height is around 163.6 and 181 cm, BMI in the range of 22.3 and 25-6 kg·m^{-2}, lean mass at 43.6 and 45.6 kg, and a somatotype with a predominance of mesomorphic-endomorphic, with variations depending on the position on the field. Argentine players were found to have a predominantly mesomorphic somatotype and significant correlations between muscle mass and speed with the ball. Likewise, another study reports that there are no statistically significant differences in fat mass and fat-free mass between visually impaired males and females compared to sighted athletes ($p > 0.05$).

Most studies used video analysis of official matches coded with the IOIF5C battery (a validated instrument for measuring play effectiveness and characteristics), supplemented by experimental laboratory studies using motion capture, EMG, and simulated vision paradigms to explore the perceptual-motor mechanisms behind performance.

Additional outcome(s) All 23 included articles were appraised using JBI tools. The majority (n = 16) were analytical cross-sectional studies, three were quasi-experimental pre-post studies, two were prospective cohort studies, and two were methodological validation study. All included studies demonstrated acceptable internal validity (≥ 70 % 'Yes' responses) and 16 were rated as low-to-moderate risk of bias while three were rated as low risk.
Overall, the methodological quality was low to moderate risk of bias. The main limitations observed were the lack of control groups, small sample sizes, and absence of adjustment for confounders. Conversely, all studies use validated measurement tools and appropriate statistical analyses.

Quality assessment / Risk of bias analysis The methodological quality from the articles included in this review was assessed using the Joanna Briggs Institute (JBI) Critical Appraisal Tools [23,24]. Each study was evaluated using the checklist appropriate to its design: analytical cross-sectional, quasi-experimental, cohort or studies reporting reliability and validity of measurement instruments. The checklists comprised 8–9 items each, scored as Yes, No, Unclear, or Not applicable. Risk of bias was classified as low, moderate, or high based on the proportion of positive ("Yes") responses.

Strategy of data synthesis All 23 included articles were appraised using JBI tools. The majority (n = 16) were analytical cross-sectional studies, three were quasi-experimental pre-post studies, two were prospective cohort studies, and two were methodological validation study. All included studies demonstrated acceptable internal validity (≥ 70 % 'Yes' responses) and 16 were rated as low-to-moderate risk of bias while three were rated as low risk.
Overall, the methodological quality was low to moderate risk of bias. The main limitations observed were the lack of control groups, small sample sizes, and absence of adjustment for confounders. Conversely, all studies use validated measurement tools and appropriate statistical analyses.

Subgroup analysis The two authors (B.A.B.-P; A.D.M.-B.) who led the search and screening of the infor-mation carried out the process independently to avoid bias. The aim was to identify arti-cles that met the criteria established for this review (see Table 1). Any disagreement (5% of the total documents) regarding final inclusion or exclusion was resolved through aca-demic debate, both in the selection and inclusion phases, among the research group. After identifying the selected studies in each of the databases, the file was downloaded in CSV and Excel format to create a single database that would condense all the information re-trieved. The relevant criteria for the selection of studies were defined based on the follow-ing categories: authors, title, keywords, abstract, year, journal, citations received, and DOI. The selection and inclusion of studies in this review was established based on the inclu-sion and exclusion criteria derived from the PICOS strategy (Table 1). When reviewing the condensed database, duplicate studies were identified, and records that did not appear in the search equation (Retrieval) were retrieved.
The inclusion criteria established were: i) studies published without language re-strictions; ii) original studies; iii) quantitative studies; iv) research comparing blind and sighted players; v) research comparing blind players with other disabled sports; vi) doc-uments studying variables related to the performance of blind players; vii) systematic re-views, meta-analyses, bibliometric analyses, narrative or literary reviews. The exclusion criteria were: i) abstracts, meetings, books, reviews, letters, and editorials; ii) articles writ-ten without academic peer review; iii) studies without full access to the original text; iv) gray literature.

Sensitivity analysis Not declared.

Language restriction No linguistic limitations were taken into consideration. Studies in all languages were included.

Country(ies) involved Colombia, Chile, Spain.

Keywords blind soccer; physiological responses; sports technique; tactical demands, sleep.

Contributions of each author
Author 1 - Boryi A. Becerra-Patiño - Author 1 conducted the information search and filtered the database; Worked on the study methodology; Worked on data analysis and methodological quality assessment; Worked on the final review and editing of the study.
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Author 2 - Aura D. Montenegro-Bonilla - Author 2 conducted the information search and filtered the database; Worked on the rationale for the document and the final review of the manuscript.; Worked on the study methodology; Worked on data analysis and methodological quality assessment; Worked on the final review and editing of the study.
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