INPLASY

The impact of COVID-19 on the physical performance of soccer players during the acute infection and post-recovery phases: A systematic review

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ADMINISTRATIVE INFORMATION

Support - None reported.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 March 2025 and was last updated on 23 March 2025.

INTRODUCTION

Review question / Objective Therefore, this systematic review aims to present the related literature on the impact of COVID-19 on soccer players, focusing on physical performance changes after the acute and post-recovery phases. More specifically this review sought to identify and quantify the acute (up to 4 weeks) and post-recovery (more than 4 weeks) changes in strength, aerobic performance and game-related parameters of soccer players who had been infected with COVID-19 and returned to play following the return-to-play protocols.

Rationale While a few systematic reviews and meta-analyses have been conducted on the effects of COVID-19 infection and/or confinement on athletic performance in general athletic populations, none have specifically examined the impact of COVID-19 infection on the performance parameters of male soccer players. Considering the unique demands and characteristics of soccer, there is a clear need for a focused review to better understand the specific impact of COVID-19 infection on this group.

Condition being studied COVID-19 infection on performance parameters such as endurance, strength, and game related data.

METHODS

Search strategy This systematic review followed the preferred reporting items for systematic reviews (PRISMA). A systematic literature search was conducted for articles published up to the end of October 2024 and the time frame was set between 2021-2024. The following databases were searched: MEDLINE (via PubMed), Scopus, Mendeley, SPORTDiscus (via EBSCOhost) and Google Scholar as a secondary source. Additionally, the reference lists of the selected studies were reviewed to identify eligible studies that the electronic searchers did not capture. The search strategies included the following keywords: COVID-19, performance, soccer and infection. The

keywords were combined using the Boolean operators "AND" and "OR".

The selection of studies was based on the following inclusion criteria: (1) studies involving professional and semi-professional adult male soccer (football) players; and (2) investigations of performance parameters such as endurance, strength and game-related variables before and after COVID-19 infection. Articles were excluded based on the following criteria: (1) Non-peer-reviewed studies, review articles, letters to the editor, editorials, posters, conference abstracts and case studies; (2) studies not published in English; (3) studies investigating lockdown rather than infection, psychological parameters, COVID-19 incidence, injuries, sports other than soccer, female soccer players, or adolescent/ youth players; and (4) studies lacking details and quantitative information.

Participant or population Adult male soccer players both professional and semi-professional.

Intervention None-observational studies only.

Comparator pre and post-COVID-19 infection.

Study designs to be included Observational.

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Information sources The following databases were searched: MEDLINE (via PubMed), Scopus, Mendeley, SPORTDiscus (via EBSCOhost) and Google Scholar as a secondary source. Additionally, the reference lists of the selected studies were reviewed to identify eligible studies that the electronic searchers did not capture. The search strategies included the following keywords: COVID-19, performance, soccer and infection. The keywords were combined using the Boolean operators "AND" and "OR".

Main outcome(s) cardiorespiratory data (VO2 max, time on treadmill, VT, RC, velocities at thresholds) strength data (torques and jumps) GPS game related data.

Additional outcome(s) None.

Data management Initial screening was conducted by two experienced investigators (K.P and K.I). The two investigators independently searched for studies based on the titles and abstracts and reviewed the studies' relevance based on the inclusion and exclusion criteria. All articles were collected, and the duplicated studies were removed. Articles that passed the initial screening were selected for a full review. If the two researchers could not agree, the opinion of a third investigator (A.P) was obtained. The following information was obtained from the selected studies: authors and year of publication, the aim of the study, descriptive characteristics of the sample, instruments and methodology, analysis, results, conclusions and application of the results.

Quality assessment / Risk of bias analysis The risk of bias was assessed utilizing the 16-item form that evaluates study quality based on Law and colleagues [12] (Table 1). The selected studies were evaluated on a binary scale (meets the criteria = 1, does not meet the criteria = 0). Study quality was calculated by summing the obtained score and dividing by the total number of scored items (total of 16). Studies were then classified, based on the final score, as having low methodological quality (below 50%), good methodological quality (51-75%) or excellent methodological quality (over 75%), as presented in a previously published study [Sarmento H, Clemente FM, Harper LD, Costa ITD, Owen A, Figueiredo AJ. Small-sided games in soccer–a systematic review. Int J Perf Anal Spor 2018; 18: 693-749].

Strategy of data synthesis The selection process is presented in Figure 1 (Flowchart) which was developed according to the PRISMA guidelines. The initial search identified a total of 2056 articles from primary sources (PubMed: 74, Scopus: 76, SPORTDiscus: 16, MENDELEY: 1890) and 157 from secondary sources (Google Scholar). Duplicates (6 studies) were identified and removed. The remaining studies were screened for relevance based on titles and abstracts, resulting in the removal of 1980 studies from primary sources. After the initial screening, 70 studies were considered, and 15 studies were selected for meeting most of the general inclusion criteria. Upon screening the full texts, 6 studies were excluded due to not meeting the eligibility criteria (age, gender). At the end of the screening procedure, 9 studies were included from the primary sources and 2 studies from the secondary sources, resulting in a total of 11 studies that were

suitable for inclusion in the analysis. Based on the quality assessment, eight studies were classified as excellent, one as good, and two as low quality. Details on the characteristics and methodologies of the included studies are presented.

Subgroup analysis The following information was obtained from the selected studies: authors and year of publication, the aim of the study, descriptive characteristics of the sample, instruments and methodology, analysis, results, conclusions and application of the results.

Sensitivity analysis None.

Language restriction English only.

Country(ies) involved Authors are based in Cyprus and India.

Other relevant information None

Keywords SARS-CoV-2, return to play, isolation, football, game performance.

Dissemination plans Publish.

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