INPLASY

WHAT DO WE MEAN WHEN WE TALK ABOUT SPECIFICITY IN FOOTBALL? A SYSTEMATIC SCOPING REVIEW WITH EVIDENCE GAP MAP

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INTRODUCTION

*R*eview question / Objective The aim of this scoping review is to clarify how the concept of specificity has been understood in football over the past 25 years. Specifically, it seeks to describe how studies have conceptualised and operationalised specificity within professional contexts. In addition, it aims to synthesise the methods used to design and assess representative tasks, including the physical, technical, tactical, cognitive, and structural indicators recorded during training and competition.

Background Elite football requires training to replicate the demands of competition, a principle commonly described in generic terms as training specificity (Clemente et al., 2012; Gamble, 2013). However, coaches, strength and conditioning practitioners, and researchers often use the term with differing and reductionist meanings, separating it into physical, technical–tactical, biomechanical, and cognitive dimensions under the same conceptual label of specificity (Gamble, 2013; Ramos et al., 2021; Ribeiro et al., 2020). This ambiguity hinders the systematic planning of training tasks, the interpretation of training loads, and the comparison of methodological approaches implemented in both performance and developmental contexts (Chena et al., 2022). Moreover, the proliferation of tracking technologies and tactical analysis tools has multiplied the indicators used to justify that a training task is specific, despite the absence of consensual criteria (Baptista, et al., 2020). As a result, markedly different practices are often considered equally specific, generating confusion when assessing their actual transfer to competitive performance (Brearley & Bishop, 2019).

Rationale Despite the apparent consensus that the physiological, neuromuscular, and cognitive responses elicited by training depend directly on the nature of the applied stimulus, and that the degree of transfer is presumed to increase as the similarity between the training context and the competitive environment becomes greater

(Gamble, 2013), a notable gap persists in defining what specificity actually entails in football, which dimensions it should encompass, and how these should be measured in an integrated manner. Much of the existing evidence has focused on internal or external load variables during small-sided games (Beato et al., 2023; Sangnier et al., 2019), leaving the perceptual–cognitive and perceptual–motor facets of football players comparatively underexplored (Machado et al., 2024). Furthermore, studies employ heterogeneous criteria to justify the representativeness of training tasks, relying on technical–tactical (Junior et al., 2023), spatial (Beato et al., 2023), or physiological metrics (Aguiar et al., 2013), which are rarely examined collectively (Coito et al., 2022). This methodological heterogeneity hinders the synthesis of available knowledge and prevents the establishment of clear thresholds by which a task may be considered sufficiently specific for football. Important gaps also remain regarding how specificity relates to weekly periodisation, load distribution, and individualisation according to playing position or developmental stage (Champion et al., 2023). Consequently, there is a clear need for a systematic mapping of the recent literature to identify areas of convergence, divergence, and evidence gaps surrounding the concept of specificity in football.espite the apparent consensus regarding the impact of specificity on physiological responses,Despite these advances, and although there appears to be broad consensus regarding the impact of specificity—namely, that the physiological, neuromuscular, and cognitive responses elicited by training depend directly on the nature of the applied stimulus, and that the degree of transfer is presumed to increase as the similarity between the training context and the competitive environment becomes greater (Gamble, 2013). a notable gap persists in defining what specificity actually entails in football, which dimensions it should encompass, and how these should be measured in an integrated manner. Much of the existing evidence focuses on internal or external load variables during small-sided games (Beato et al., 2023; Sangnier et al., 2019), leaving the perceptual–cognitive and perceptual–motor facets of football players comparatively underexplored (Machado et al., 2024). Furthermore, studies employ heterogeneous criteria to justify the representativeness of training tasks, relying on technical–tactical (Junior et al., 2023), spatial (Beato et al., 2023) or physiological metrics (Aguiar et al., 2013), which are rarely examined collectively (Coito et al., 2022). This methodological heterogeneity hinders the synthesis of available knowledge and prevents the establishment of clear

thresholds from which a task may be considered sufficiently specific for football. Important gaps also remain concerning how specificity relates to weekly periodisation, load distribution, and individualisation according to playing position or developmental stage (Champion et al., 2023). Consequently, there is a need for a systematic mapping of recent literature to identify areas of convergence, divergence, and evidence gaps surrounding the concept of specificity in football.

METHODS

Strategy of data synthesis   The searches were conducted in the following databases: PubMed, Scopus, SPORTDiscus, and Web of Science (all databases).
((Soccer OR football) AND (Specific*) AND (physical OR physiological OR technical OR skill OR tactical OR "cognitive" OR "decision making" OR "open-ended practice activities" OR "small-sided games" OR SSG "small-sided and conditioned games" OR SSCG OR "Representative learning design" OR RLD OR "analytical games" OR "conditioned games" OR "full games" OR competition). In addition, relevant studies known to the authors but not retrieved through the database searches were also included. Finally, citation tracking was performed using a snowballing approach in Web ofScience.

Eligibility criteria   The eligibility criteria for this scoping review are presented in Table 1. To be included, studies had to be original research articles with no restrictions on language or publication date. Articles were required to meet the following criteria based on the PICOS/PECOS framework (Participants, Intervention/Exposure, Comparators, Outcomes, and Study Design), as outlined below: (1) Participants: Professional football players competing in first- and second-division leagues in Europe and the Americas (CONMEBOL and UEFA), as these regions represent the most relevant global competitive contexts; (2) Intervention/Exposure: Any intervention or relevant exposure related to specificity in football (training responses or approaches to the competitive context); (3) Comparators: Optional; (4) Outcomes: Physical measures (such as locomotor demands across different intensity thresholds and mechanical demands at varying intensities), physiological measures (including heart rate responses, blood lactate concentrations, and oxygen consumption), technical and tactical assessments (e.g., frequency of offensive or defensive actions), and indicators of contextual representativeness (degrees of approximation to competitive match conditions);

(5) Study Design: No restrictions were applied regarding eligible study designs. Finally, studies were excluded if they met any of the following criteria: (1) articles involving female football players; (2) narrative reviews, conference proceedings, or book chapters; (3) studies that did not include relevant data on specificity in football; and (4) studies published before the year 2000.

Source of evidence screening and selection
The searches were conducted independently by two researchers (JB-D and DVM) in the databases previously mentioned. An automated process using EndNote 21 for Mac (Clarivate) was employed to remove duplicate records. This procedure was complemented by manual checks to ensure complete duplicate elimination and enhance accuracy. Two independent reviewers (JB-D and DVM) screened the titles, abstracts, and references of each study to identify those deemed relevant. Subsequently, the full texts of the preselected articles were assessed to verify their compliance with the established criteria. When disagreements arose, a third external reviewer (FMC) was consulted to resolve them and reach a final consensus.

Data management
Two researchers (HS and ATC) performed the data extraction using a pre-established template to systematically compile the information. A third researcher (FMC) subsequently reviewed the extracted data to ensure accuracy and consistency. The process was supported by a detailed recording sheet that integrated all relevant elements and the information required for extraction.

Reporting results / Analysis of the evidence
For each study, a broad set of data was collected, covering various aspects related to the participants, the location (country–continent), and the competitive level (first and second division). Regarding study outcomes, information was extracted on the content associated with football specificity that each investigation aimed to examine. This included physical, physiological, technical, tactical, and cognitive parameters, decision-making measures, and variables linked to the structural characteristics of the training tasks, such as open practice activities, small-sided games (SSG), small-sided and conditioned games (SSCG), Representative learning design (RLD), analytical drills, conditioned games, full games, and competitive match play.

Presentation of the results
The results associated with the different dimensions (e.g., physical, physiological, technical, tactical, cognitive, and decision-making variables) were obtained as mean ± standard deviation. In contrast, the parameters related to the structural characteristics of the training tasks (e.g., open practice activities, small-sided games (SSG), small-sided and conditioned games (SSCG), analytical drills, conditioned games, full games, and competitive match play) required additional indicators, such as absolute pitch area (m²), relative area per player (m²), number of players, and tactical orientation.

Language restriction
Not Applicable.

Country(ies) involved
Portugal, England and Chile.

Other relevant information
Not Applicable.

Keywords
internal logic; collective sports; football; training tasks.

Dissemination plans
Journal and conferences.

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