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Holistic soccer profile by position: a theoretical framework

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ABSTRACT
This article provides a holistic framework for the development of the technical, tactical, and fitness capacities required in soccer. It summarizes and organizes the main tactical and technical characteristics and the common physical demands of the game in accordance with different playing positions. Moreover, the typical fitness values found by playing positions are reviewed. A theoretical framework for a more individualized and specific training that integrates technical and tactical dimensions as well as fitness dimensions is proposed. Thus, through the identification of the main moments in a football game, a profile characterization of the contents for each capacity in each moment for all playing positions is presented and described.

Key words: association football, performance, individualization, sports training

Introduction

From a social interaction perspective, soccer should be defined as a short-term dynamic complex system [1], in which players share concrete interaction patterns that enable them to understand one another's playing-task-related messages while modifying their own actions depending on one another's intentions [2]. Notwithstanding, in a soccer match, confrontations between two coordinated dynamic complex systems are expected [3]. Such confrontations are characterized by the nature of order versus disorder and must be controlled with the intention of maintaining order within the team while instigating disorder in the opposing team [4].

Thus, at the inter-team level, fluctuations in the configuration of play are expected owing to the perceived interactions and behaviours of the opposing team that must be anticipated to (re)adjust the organization of the system on the field. On the basis of such behaviours, the team may expand or contract the effective play space in response to the momentary disorder caused by the opponents [4]. On the other hand, at the intra-team level, the positioning of teammates on the field, the ball path, and the game speed affect players' interactions, which, in turn, impact on decision making. In such cases, the respect for the game principles occupies a dynamic guiding role while promoting the use of an organized system that disrupts the opponent's system structure at the same time [3, 4].

By being aware of these sensitive influences among players' behaviour patterns, soccer teams can cope with different tactical behaviours in accordance with the positional roles and specific demands [5]; their dynamic coordinated actions may also be influenced by their position role on the field, which affects players' decision [6]. Thus, in a soccer match, teams can have higher or lower dispersion values, depending on their offensive and defensive principles. However, a decline in players' abilities to ensure optimal tactical behaviours through spatiotemporal interactions is to be expected in the second half of a soccer match because of fatigue [7].

Owing to the dynamic complex system nature of soccer, its characteristic interaction patterns and the principles of play seem to have a direct impact on the

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tactical behaviour of players [8], as well as on the model of play adopted by coaches, playing formations, and development of younger players [9]. These factors can either limit or augment the technical and physical characteristics of players and their activity profiles with and without ball possession [10].

Additionally, real-world information and models produced surrounding player-positional attributes could help both coaches and recruitment staff to implement and develop youth talent selection programs [9, 11].

With these specific characteristics within positional roles and different behaviour patterns, the aim of this article is to discuss and propose a profile characterization of the contents for each capacity in each moment and a theoretical framework for a more individualized and specific training that integrates technical and tactical dimensions as well as fitness dimensions. Thus, the following topics and sections are presented: (i) introduction to the key concepts of the dynamic complex system of soccer; (ii) the moments and principles of play; (iii) specific demands of playing positions; (iv) the model; and (v) conclusions. Ultimately, the aim of the paper is to propose practical guidelines so that coaches can decide on a more substantiated and researched base.

Material and methods

In this section, the authors mainly expose the rationale behind the selection of the articles that provide the theoretical basis for the framework/model. The current research represents a narrative review and not a systematic review. Thus, no specific search strategy was used systematically.

The scientific content presented in the paper was elaborated with the most related literature and there was a focus that each section, table, and the model itself were based on the available and most applicable research. The objective was to provide the reader with a comprehensive contextualization of the specific characteristics (mainly individualization aspects) before introducing the model/framework proposal.

The 66 used references were mainly collected through a focus that balanced between relevance and chronological date of release. Since the major emphasis of the article is the individual characterization of each position, we will consider the sections on the specific demands of playing positions and on the model as the main parts of the study.

In the former one, the applied references were collected on the basis of the typical relevance of the load imposed by playing positions, with the mean parameter values and intervals of confidence of the selected articles provided. We also assumed to gather a minimum of 3 articles and a maximum of 8 articles for each measure of the presented tables. For the inclusion criteria of the cardiorespiratory and physical capacities and for the external load measures, only the studies that categorized their samples by playing position were considered; all reports that did not specify at least 3 different positions were excluded.

In the model section, the 17 references were selected by a search with the main keywords that could characterize each position. For example, for constructing the proposed model of the goalkeeper position, the authors extensively searched mainly Google Scholar by the keywords "goalkeeper + physical attributes; goalkeeper + technical attributes; goalkeeper + tactical attributes; goalkeeper + profile".

The moments and principles of play: why and how to follow them

Following the aforementioned dynamic open-system-based reasoning, it is necessary to build logical thinking about the game itself, which guides players toward the division of the system into the methodological and organized subsystems [12]. In those subsystems, the players' interactions express general coordination and articulations of the different sectors through the temporal synchronization of their behaviours, thus creating several options for solving problems that are inherent to the game. These dynamically organized interactions of the methodological subsystem lead to the execution of 2 moments: (1) offensive methods (attack) and (2) defensive methods (defence) [12, 13].

The relational subsystem, which includes the principles of play, is derived from the methodological subsystem of soccer [12]. The principles in soccer constitute a toolbox of tactical actions that are inherent to the game moments as well as to the game model adopted by coaches. Furthermore, they are intended to facilitate tactical behaviours and interactions among players, allowing them to execute what the game requires by giving solutions to the game problems [14–16]. Table 1 summarizes the fundamental tactical principles.

Within this complex system, the structural subsystem can be further distinguished, in which a double dimension is observed. In this subsystem, the team starts from a 'static' dimension (4-3-3, 4-4-2, and 4-5-1) and gives life to that static structure by defining the tactical tasks assigned to players depending on the selected structure [12].

Table 1. Tactical principles and their related definitions

ATTACK		DEFENCE	
Principle	Definition	Principle	Definition
Penetration	Actions that enable progression towards goal through destabilization of opponent's defensive line with creation of spaces and numerical superiority	Delay	Actions to decrease the space of the attacker in possession and impeding dribbling or passing actions that allows the defence to have time to organize
Offensive coverage	Supportive actions to the player in possession decreasing pressure by creating numerical superiority and increasing players' confidence by ensuring first defensive action when losing possession	Defensive coverage	Supportive actions to the player in delay process increasing pressure on offensive player by decreasing his options and ensuring a new obstacle to be overcome
Width/Length	Dispersion of players in attack without ball that explore wider and deeper spaces to allow greater and safer offensive options that may cause decision making more difficult for opponent's defence	Balance	Creation of defensive superiority and the ability to adjust positioning to offensive actions, ensuring defensive stability that supports players in delay and defensive coverage
Mobility	Movements of the players without ball that allow to receive the ball in the back of defensive line through deep passes and the rupture of defensive structure	Concentration	Gathering defence to protect vital zones from progression of offensive actions, direct play to less vital zones, and allow for a regain of ball possession
Offensive unity	Actions requiring all sectors to move to the offensive midfield ensuring more players in game epicentre for supportive actions that allow for a more organized and safer transition to defence when losing possession	Defensive unity	Actions that limit offensive progression through coordinated interactions that allow to perform the offside rule, reduce space, and ensure more players in the epicentre of play

Regarding the physical demands of a soccer match and in accordance with its dynamic complex system nature, it is imperative to broaden players' knowledge about the demands of different positions in relation to the formations [17] used in the game model chosen by coaches. Notwithstanding the aforementioned differences, similarities have been demonstrated in the overall distance covered between offensive and defensive formations [10, 17]. However, when scrutinizing the possible scenarios of using different formations and their impact on playing positions, it may be possible to observe that different types of tactical behaviours influence the physical demands of each player [10, 17]. Table 2 presents the potential links between moments of play and physical demands.

From the dynamic complex system point of view, it is evident that in soccer, whether in training or in a match, many interactions come into play that express varied forms of behaviour patterns between and within teams [16]. Therefore, it is essential to invoke the physical demands that come from these interactions at the system and subsystem levels [17].

Specific demands: individualization as a key factor

In an elite soccer team, players have to deal with dynamic motions that can be imperative to the final result of a match [18]. Therefore, they can expect to cover approximately 10,000–13,000 m per match [19] and approximately 4500–7000 m per training session. Of these distances, elite soccer players can cover up to approximately 1000 m while high-speed running (19.8–24.9 km · h^{-1}) and up to approximately 400 m at a sprinting speed (> 25 km · h^{-1}) [20], achieving maximal speeds of 25–33 km · h^{-1} during training sessions and competitive matches [20–24]. Also, they need to change velocity as fast as possible. Thus, the acceleration and deceleration profile of a soccer team must be taken into account to ensure the appropriate management of player load [25].

Naturally, such demands and conditions should be considered at the age-group level, mainly because in youth categories, the demands are smaller, although similarly distributed in intensity levels [26]. Adjust-

Table 2. Moments of play and the physical demands in accordance with playing formations

Moment of play	Definition	Physical demands
Offensive organization	Coordinated behaviours in possession aiming at the construction, creation, and finalization subphases of offensive actions	–
Offensive transition	Moment from which the team that regains possession and takes advantage of the opponent's disorganization starts the offensive actions as fast as possible	– Fast change of direction – Greater sprint velocities – Greater fast reaction to possession
Offensive formations	4-3-3 and 4-4-2	– Greater distances jogging (7.2–14.3 km · h^{-1}) – Greater VHIR (19.8–25.1 km · h^{-1}) with ball possession
Defensive organization	Coordinated behaviours without possession aiming at impeding the construction, creation, and finalization subphases of opponent's offensive actions, preventing the goal	–
Defensive transition	Moment from which the team that lost possession starts to impede offensive progression and, at the same time, to organize defence structure	– Fast change of direction – Greater sprint velocities – Greater fast reaction to loss of possession
Defensive formations	4-5-1	– Greater distances walking (0.7–7.1 km · h^{-1}) – Greater VHIR without possession

Positional demands	Defenders	Midfielders	Attackers
4-3-3	– Less TD covered – Less VHIR – More HIR and VHIR in the 1st half	– Less VHIR	– More HIR and VHIR – More HIR in the 1st half
4-4-2	– More TD covered – More HIR – More VHIR	– More VHIR	– Less HIR and VHIR
4-5-1	– Less TD covered – Less HIR – Less VHIR	– More VHIR	– Less HIR and VHIR

VHIR – very high intensity running, TD – total distance, HIR – high intensity running

ments of training stimuli and load should therefore involve the specificities of age group and, at youth stages, the maturation status of the players [27].

However, for the sake of managing player load, coaches would benefit from a better understanding of all the specific demands related to the different playing positions, as this would allow them to individualize training with more accuracy. Data regarding the physical demands by position from professional elite soccer players were gathered from the literature, for each variable. Table 3 summarizes the typical physical demands that occur in a match in the particular playing positions.

All players cover approximately the same total distance during a soccer match, with forwards covering the shortest distances. Although the average total distance covered is lower for the forwards, the maximum value of the total distance covered in this position (11,254 m) is the same as it is for other positions. On the other hand, central defenders cover the shortest total distance with regard to the maximum value registered (10,627 m) when compared with all other positions.

The differences found between the minimum and maximum values in some of the playing positions can be explained by the fact that coaches use different team formations on the field and different game models, which may influence the distances covered in each position. For instance, Bradley et al. [10] analysed the effects of soccer playing formations on high-intensity running profiles and technical performance and found

Table 3. Descriptive statistics (mean [min.; max.]) of total distance; distances covered at running speed, high speed running, and sprint; maximum speed; and number of high accelerations and decelerations across playing positions

Parameter	ED	CD	MF	W	FW
TD (m) [18, 23, 24, 28–32]	11,064 [10,152; 11,451]	10,058 [9669; 10,627]	10,910 [8943; 12,027]	11,672 [10,523; 12,320]	9881 [7733; 11,254]
RUN (m) [18, 23, 24, 28–31]	2224 [1730; 2892]	1500 [1197; 1885]	1929 [828; 3051]	2386 [1987; 3138]	1481 [563; 2341]
HSR (m) [18, 23, 24, 30–33]	874 [340; 1138]	488 [180; 605]	665 [253; 927]	938 [354; 1214]	677 [269; 955]
SPRINT (m) [21, 23, 24, 30, 31, 33–35]	291 [241; 374]	154 [110; 199]	186 [152; 228]	299 [235; 346]	255 [181; 345]
MaxSpeed ($m \cdot s^{-1}$) [21–24]	8.5 [7.7; 9.0]	8.4 [7.3; 8.8]	8.2 [7.5; 8.6]	8.6 [7.9; 9.1]	8.7 [7.8; 9.2]
High ACC (*n*) [32]*	34 [34; 34]	27 [27; 27]	33 [33; 33]	35 [35; 35]	38 [38; 38]
High DCC (*n*) [32]*	56 [56; 56]	45 [45; 45]	53 [53; 53]	62 [62; 62]	55 [55; 55]

ED – external defender, CD – central defender, MF – midfielder, W – winger, FW – forward, TD – total distance, RUN – running, HSR – high speed running, MaxSpeed – maximum speed, ACC – acceleration, DCC – deceleration
The mean [min.; max.] values were calculated by integrating the reported values from the included studies.
* Only one study found for the selected variable.

that forwards covered approximately 30% more distance at high-intensity running in a 4-3-3 formation than in 4-4-2 and 4-5-1 formations. This indicates that although the overall activity profiles of players are not affected by playing formations, high-intensity running activity may be influenced.

The distances covered at running speed (14–19.8 $km \cdot h^{-1}$) are more prominent in external defenders and wingers; the same is the case for distances covered during high-speed running (19.8–24.9 $km \cdot h^{-1}$). This may be explained by the greater distances that these players are required to cover and explore when compared with central defenders, midfielders, and forwards. In other words, the more centrally the players are positioned on the field, the smaller the distances they tend to cover during running, high-speed running, and sprinting. Likewise, external defenders, wingers, and forwards present greater distance of sprints, high accelerations, and high decelerations (> 3 $m \cdot s^{-2}$) than central defenders and central midfielders. However, not many studies have compared the high acceleration and deceleration profiles of different playing positions. This makes it difficult to draw firm conclusions about the data presented here.

In contrast, when it comes to maximum speed ($m \cdot s^{-1}$), all player positions show approximately the same average values. However, if the maximum values are taken into account, the players who reach the highest values in a soccer match are forwards, wingers, and external defenders, probably because these players have a larger area to explore during a match.

From a performance perspective, the players positioned at the wider areas of a soccer field (e.g., external defenders and wingers) may need to cover longer distances at high-speed running and sprinting speeds, as well as to perform numerous high accelerations and decelerations, depending on the playing formation used by the coach. Forwards also cover great distances at sprint speeds despite their central position. Thus, these players would benefit from undergoing differentiated and individualized training stimuli based on their required demands with regard to the distances covered at different running speeds and intensities. Moreover, individualized training must be addressed to the more central players (e.g., central defenders and central midfielders), who would not benefit from the same training stimuli as players in wider positions from a practice perspective. Thus, footballers in wider positions would take advantage of performing longer sprints (i.e., over 30 m) in an analytical fashion, which is not possible in small- or medium-sided games. Meanwhile, central defenders and central midfielders would benefit more from small- and medium-sided games than from activities that involve a lot of sprinting.

Nevertheless, in addition to the distances covered at different speeds, elite soccer players have a well-defined physical capacity, showing a high average of 51–62.9 ml · kg^{-1} · min^{-1} of maximal oxygen uptake (VO_2max) [36–41] and maximal aerobic speeds of approximately 12–17 km · h^{-1} [36, 37, 39, 42]. In turn, lower limb maximal strength has been associated with performance improvements in jumping ability and sprinting times [43, 44]. For these reasons, particular attention should be given to positional differences regarding jump ability and sprint performance. Data regarding the fitness levels by position from professional elite soccer players were gathered from the literature, for each variable. Table 4 depicts the typical fitness levels of players depending on their playing position.

In general, all player positions present high VO_2max values, excluding goalkeepers, which seems to be a natural consequence of the specific characteristics and demands of their position, not requiring large areas of the field to be explored throughout a soccer match. Midfielders have the highest values of VO_2max, followed by external defenders, which may be due to the link between the defensive and offensive sectors, forcing these players to have higher levels of physical fitness. However, when considering the lowest running speed at which VO_2max occurs (e.g., maximal aerobic speed), all players, excluding goalkeepers, present similar values.

Regarding the vertical impulse performance, goalkeepers, central defenders, and forward players perform better than external defenders and midfielders. Very few studies refer to the vertical jump performance of wingers, and only one study [37] has made a distinction between midfielders and wingers in this regard. The same limitations were found with reference to agility performance for different positions on the field; the players who completed the 10-m and 30-m sprints the fastest were external defenders and wingers, with small differences found among all other positions.

To the best of our knowledge, no study has investigated the lower limb maximal strength of soccer players across playing positions. Although Wisløff et al. [43] demonstrated that elite soccer players could lift approximately 170 kg on average, which corresponds to 2.2 times their body weight, these values are likely to be higher. The same authors [43] found strong correlations between maximal strength and 10–30-m sprinting and vertical jump performance.

The model

The proposed model was inspired and underpinned by different framework structures such the ones presented by Hughes et al. [54], Wiemeyer [55], Razali et al. [56], Roberts et al. [11], Berber et al. [9] and is divided into 2 phases: attacking and defensive. In each phase, the authors considered 3 moments, or subphases. In

Table 4. Descriptive statistics (mean [min.; max.]) of cardiorespiratory and physical capacities

Parameter	GK	ED	CD	MF	W	FW
VO_2max (ml · kg^{-1} · min^{-1}) [36, 37, 39–41, 45]	54.1 [51; 58.7]	59.4 [57.2; 61.5]	57.5 [52.3; 63.7]	61.2 [57.1; 64.2]	58 [58; 58]	59.2 [55.8; 62.9]
MAS (km · h^{-1}) [36, 37, 39, 42]	14.2 [12.7; 15.2]	15.4 [14.4; 16.5]	15.3 [13.4; 16.5]	15.9 [14.2; 16.9]	16.5 [16.5; 16.5]	15.3 [13.6; 16.2]
CMJ (cm) [36, 37, 46–51]	39.7 [30; 45.6]	40.4 [36.8; 43.5]	44 [37.3; 57.8]	38.6 [30; 47.7]	45.7 [45.7; 45.7]	41.4 [31; 56.4]
SJ (cm) [36, 37, 40, 46, 51, 52]	41.4 [35.8; 0.8]	38.5 [34.8; 42.1]	39.8 [36.3; 42.4]	38.6 [36.1; 41.5]	41.6 [41.6; 41.6]	40.3 [36.7; 44.2]
10-m sprint (s) [37, 47, 50, 52]	1.9 [1.7; 2.4]	1.7 [1.7; 1.7]*	1.9 [1.7; 2.1]	1.9 [1.7; 2.2]	1.6 [1.6; 1.6]*	1.8 [1.7; 2]
30-m sprint (s) [46, 47, 50, 53]	4.4 [4.3; 4.5]	4.2 [4.2; 4.2]*	4.4 [4.3; 4.6]	4.4 [4.3; 4.6]	– –	4.4 [4.3; 4.6]

GK – goalkeeper, ED – external defender, CD – central defender, MF – midfielder, W – winger, FW – forward, VO_2max – maximal oxygen uptake, MAS – maximal aerobic speed, CMJ – countermovement jump, SJ – squat jump
The mean [min.; max.] values were calculated by integrating the reported values from the included studies.
* Only one study found for the selected variable

Table 5. The model: table of concepts

Concept	Description	Concept	Description
TECHNICAL			
Passing	The act of passing the ball to another player of the team	Throw	A pass made with a player's hand(s)
Ball control with feet	The skill of controlling and positioning the ball in good conditions to continue the play with the use of the feet	Kick	The act of moving the ball with the use of the feet
Tackle	An attempt to obtain possession from an opponent whether by a challenge or physical influence	Dribbling	An action that is responsible for moving the ball around the pitch without passing the ball to other teammates using the feet
Heading	The act of touching the ball with the player's head with the aim of moving it to another place	Shot stopping	The capability of avoiding a shot from the opposite team
Coordination	The skill of coordinating the player's body structure to achieve a certain action or motion	Recovery	The motion through which a player recovers useful play space to operate in a more efficient way
Save	An action towards avoiding the ball going inside the goal	Speed	The time that a player takes to complete an action
Punch	An action only allowed to goalkeepers of moving the ball away with their hands in a punching motion	Shooting	A touch aimed towards the goal with the intention of scoring
Long pass	A pass that is executed with the intent of moving the ball to a place normally further from the teammate immediately next to the player with the ball possession	Passes in the defensive third	A pass that is made in the most rearward third of the field
Ball control	The skill of controlling and positioning the ball in good conditions to continue the play with the use of any allowed body part	Ball touches	The action of touching the ball with the intent of controlling or dribbling it
Running with the ball	The action of possessing the ball and running simultaneously	Clearances	The act of touching and moving the ball with the intent of moving it away from a dangerous situation in terms of defensive phase
Strong 1 to 1 play	A skill that aids a player in solving 1 vs. 1 moments	Interceptions	The moment when a player anticipates a play and gets ball possession, either in the defensive or in the attacking phase of the game
Support play	The moment when a player works towards helping the development of the play	1 to 1 play and covering	The capability of defending the space and the opponent during an individual duel
Crossing	The act of passing the ball from a more external position to a more central one	Defensive header	A header that occurs in the defensive phase
Aerial duels	The capability of disputing the ball without feet on the ground, or with the head	Pressing opposition	The action of placing defensive pressure against the opponent with the goal of disturbing individual and/or team actions
Forward pass	A pass that is made from a more rearward position to a more advanced position on the field	Short pass	A pass that is executed when the space between 2 players is short

Good technical skills	The competence of possessing good general skills that can assist the player in dealing with the game moments in technical terms	Ball reception	The action of touching the ball with the intent of controlling it
Creativity	The capability of creating actions that can solve problems which are not normally recognized	Capability to achieve and shoot at the goal	The skill to solve situations that finish with an attempt of shooting the ball at the goal
Dribble pass	A pass preceded by a dribble action	Pass in the middle third	A pass that is made in the central third of the field
Passes to the left and right	The capability of executing passes to both sides in the frontal plane of the player	Key pass	A pass that can create a decisive or potentially important team action
Ball possession	The moment that corresponds to the time that a player has the ball in their control	Recoveries	The action of recovering the ball possession
Ground duels	The capability of disputing the ball with feet on the ground	Backwards pass	A pass that is made from more advanced areas to more rearward ones
Full-back cover	The action to cover defensively the space or the possible transitions after an action made by a full-back or external defender	Tricks	A skill that contemplates creativity and can solve situations through high-level technical actions
Good goal-getter qualities	A characteristic of players who make use of or create goal opportunities	Throwing the ball back into play	The act of putting the ball back into the game by using both hands
Taking corners	The act of taking the set piece when the opponent is the last one to touch the ball getting out of the pitch	Backing	Backpedalling or backwards running to achieve a more prepared and efficient position to task at hand
Carrying the ball	The act of having the possession of the ball and executing one task or movement	Ability of single play	The skill of managing to create individual plays and to finish or to create finishing situations for teammates
Finishing	Putting an end to a play in a successful way, that is to say, goal		
TACTICAL			
Vision	The capability of seeing with accuracy the area and the players near the centre of the player action	Forcing offside	A defensive phase moment that occurs through the movement of a position or a line towards achieving an opponent offside
Organization	The capability of setting up own and other teammates' positions and action towards a more organized collective play	Good flanks	The capability of coordinating the movements of the field flanks with every position and action that occurs in that particular space
Communication	The action where players talk to one another with the goal of comprehending the game and deciding in a better way	Vision – awareness of space	Being aware of the space and movement of players, so that the planning of the play can be facilitated
Position play	The capability of executing the asked demands for each field position	Anticipation	The skill of understanding the context and adapting the player's position to anticipate a moment that can be detrimental or beneficial to the team
Good view of the game	Seeing and comprehending the game in a way that can help create or solve problems that arise during both phases	Running off the ball	The action of moving through the field in a way that contributes to a more efficient occupancy of space that can benefit every teammate

Organizing and anticipatory capabilities	The capability of setting up own and other teammates' positions and action towards a more organized collective play so that the probability of anticipating detrimental events is decreased	When to cross	The know-how of the timing to cross the ball
Passing	Passing the ball with a purpose to achieve the main goal of the group	Support play	The moment when a player works towards helping the development of the play
Behaviours within the attacking third	Positional and characteristic actions of the position in the most advanced third of the field	Behaviours within central areas	Positional and characteristic actions of the position in the central area of the field
Behaviours within the defensive and midfield thirds	Positional and characteristic actions of the position in the most rearward and central third of the field	Behaviours on the right side of the playing field	Positional and characteristic actions of the position in the right lateral extreme of the field
Behaviours within the midfield and attacking thirds	Positional and characteristic actions of the position in the most advanced and central third of the field	Attacking play	The intent of participating in attacking phase actions
Ability to read game	Capability of interpreting the references of the game and adapting to the context	Decision making	The act of choosing the best possible decision while facing the environment
PHYSICAL			
Height	Structural/anthropometric height	Flexibility	A measure of muscle range of motion; has a static and a dynamic component
Strength	The ability to produce force	Stamina	The capability of enduring physical effort
Power	The ability to exert force at higher speeds	Speed	The skills and abilities needed to achieve high movement velocities
Agility	The skills and abilities needed to change direction, velocity, or mode in response to a stimulus	Good running capabilities	The capability of using running skills to efficiently move through the field
Coordination	The organization of the different elements of the complex body or activity and enabling them to work together effectively	Good physical condition	The general ability to endure game physical demands
Reaction time	The time it takes to react to a stimulus	High velocity	The skill of executing actions at a high speed
Acceleration	Change in velocity of the body per unit of time		

Based on previous studies [57, 58]

each moment, they characterized each phase in terms of the players' technical, tactical, and physical capacities. The main concepts are described in Table 5.

An important note is that this model constitutes an introduction to what could be considered a framework of the aforementioned characteristics, as the goal is to establish a structure that gives coaches and athletes a well-thought-out and scientific guideline for prescribing and administering a training plan.

The goalkeeper

According to several studies [9, 53–55, 59], the suggested profile of this position can be characterized by the framework presented in Table 6.

As implied in the research, the goalkeeper should be balanced in terms of their technical skills, having qualities like passing and ball control, with well-developed feet to face the attacking phase of the game. During the defensive phase, the goalkeeper will benefit from having well-trained shot-stopping, coordination, and saving skills. In tactical aspects, it is important for goalkeepers to be consistent regarding their vision as well as organization and communication ca-

Table 6. Training contents framework for the goalkeeper

ATTACKING PHASE	
Technical	Passing; Throw; Ball control with feet; Kick; Tackle; Hold the ball; Protect the ball; 1v1; Long balls; Handling; Initial distribution of the ball; Footwork
Tactical	Vision; Organization; Communication; Distribution; Position play; Transition; Initiate build-up; Provide a safe passing option; Relieve pressure; Organize and coordinate team members; Positioning; Develop and maintain situation awareness; Maintain position in team structure; Maintain possession; Manage match tempo; Play in line with coach ethos; Delay attacks; Provide visual personal identification; Recognize/anticipate team member actions; Recognize/anticipate opposition actions; Understand coach's intent; Spatial awareness
Physical	Height; Strength; Power; Agility; Coordination; Reaction time; Flexibility
DEFENSIVE PHASE	
Technical	Shot stopping; Coordination; Recovery; Speed; Save; Punch; Interceptions; Clearances; 1v1; Dive; Tip; Footwork; Cut down angles; Aerial challenges; Tackling
Tactical	Vision; Organization; Communication; Distribution; Position play; Transition; Organize and coordinate team members; Positioning; Coordinate the defence; Develop and maintain situation awareness; Restrict time and space of opposition; Maintain position in team structure; Gain possession; Manage match tempo; Play in line with coach ethos; Deny attacks; Manage defensive line; Organize team members at opposition set pieces; Recognize/anticipate team member actions; Recognize/anticipate opposition actions; Understand coach's intent; Spatial awareness
Physical	Height; Reaction time; Strength; Power; Agility; Coordination; Flexibility

Characteristics based on previously published studies [9, 28, 53, 59, 60]

pabilities. All these capacities can and should be optimized with good levels of reaction time, strength, power, and coordination. Additionally, as demonstrated in previous studies, structural height can be an advantage for players in this position.

The central defender (including the sweeper)

According to several studies [9, 11, 28, 34, 46, 53–56, 61–64], the suggested profile of this position is characterized as shown in Table 7.

As indicated in the literature, the central defender will benefit from having well-developed technical skills such as heading, long passing, dribbling (attacking phase), as well as ball clearance, ball interception, and tackling (defensive phase) capabilities. In terms of tactical development, it is suggested that these players have a good view and read of the game as well as well-trained organizational and anticipatory capabilities. With reference to the playing area, they could take advantage of being exposed to actions within the defensive and midfield thirds. Regarding the physical aspects of this position, structural height, strength, speed, and power are important for these players to meet the demands of the game.

The full-back (or external defender)

According to several studies [9, 11, 34, 54, 56, 61–63] the suggested profile of this position can be characterized as described in Table 8.

The full-back, or external defender, is one of the least-explored positions in the literature. However, they have been described as players who will benefit from being strong at defensive clearances, interceptions, tackling, crossing, and backing. Full-backs should also have good passing skills. This position can take advantage of training time exposure within the defensive and midfield thirds. All of this should be balanced with physical features like acceleration, speed, power, agility, and stamina.

The midfielder (including the central defensive midfielder, holding midfielder, central midfielder, and central offensive midfielder)

According to several studies [9, 11, 28, 34, 46, 53–56, 61–66], the suggested profile of this position can be characterized as presented in Table 9.

The most detailed positional area in the literature is the midfield. It is suggested that the highly evident characteristics of a midfielder are as follows. Midfielders should have excellent dribbling and passing (in

Table 7. Training contents framework for the central defender (including sweeper)

ATTACKING PHASE	
Technical	Heading; Long pass; Dribbling; Ball control; Passing; Running with the ball; Strong 1 to 1 play; Support play; Crossing; Shooting; Passes in the defensive third; Ball touches; Aerial duels; Passing accuracy; Effective passes; Receptions; Hold the ball; Protect the ball; First touch
Tactical	Vision; Organization; Communication; Good view of the game; Organizing and anticipatory capabilities; Behaviours within the defensive and midfield thirds; Behaviours on the right side of the playing field; Ability to read game; Transition; Initiate build-up; Organize and coordinate team members; Positioning; Develop and maintain situation awareness; Maintain position in team structure; Maintain possession; Play in line with coach ethos; Delay attacks; Manage match tempo; Provide visual personal identification; Recognize/anticipate team member actions; Recognize/anticipate opposition actions; Understand coach's intent; Spatial awareness; Attack at set pieces; Decision making
Physical	Height; Strength; Speed; Power; Stamina; Agility
DEFENSIVE PHASE	
Technical	Heading; Clearances; Interceptions; 1 to 1 play and covering; Tackle; Defensive header; Aerial duels; Pressing opposition; Pressure ball carrier; Block shots
Tactical	Vision; Organization; Communication; Good view of the game; Organizing and anticipatory capabilities; Behaviours on the right side of the playing field; Behaviours within the defensive and midfield thirds; Ability to read game; Transition; Organize and coordinate team members; Break up opposition attacks; Positioning; Retreat defence; Opposition offsides; Develop and maintain situation awareness; Restrict time and space of opposition; Maintain position in team structure; Gain possession; Play in line with coach ethos; Manage match tempo; Tactical fouls; Recognize/anticipate team member actions; Understand coach's intent; Spatial awareness; Marking; Decision making
Physical	Height; Strength; Speed; Power; Stamina; Agility

Characteristics based on previously published studies [9, 11, 28, 34, 46, 53–56, 61–64]

Table 8. Training contents framework for the full-back (or external defender)

ATTACKING PHASE	
Technical	Crossing; Long pass; Ball touches; Tackle; Forward pass; Dribbling; Running with the ball; Aerial duels; Passing; Throwing the ball back into play; Backing; Create goal scoring opportunities; Passing accuracy; Effective passes; Duels; Block shots and crosses; Headers; Shots on goal; Successful 1v1; Receptions; Hold the ball; Protect the ball; First touch
Tactical	Support play; When to cross; Running off the ball; Behaviours within the defensive and midfield thirds; Behaviours on the right side of the playing field; Communication; Transition; Initiate build-up; Positioning; Runs without the ball; Overlaps; Communication; Develop and maintain situation awareness; Maintain position in team structure; Maintain possession; Play in line with coach ethos; Delay attacks; Provide visual personal identification; Recognize/anticipate team member actions; Recognize/anticipate opposition actions; Understand coach's intent; Spatial awareness; Break lines
Physical	Speed; Power; Stamina; Acceleration; Agility
DEFENSIVE PHASE	
Technical	Clearances; Interceptions; Tackle; Pressing opposition; Defensive header; Aerial duels; Backing; Communication; Prevent attempts at goal and crosses; Pressure ball carrier; Successful 1v1
Tactical	Support play; Running off the ball; Forcing offside; Behaviours within the defensive and midfield thirds; Behaviours on the right side of the playing field; Transition; Break up opposition attacks; Stretch opposition; Positioning; Retreat defence; Opposition offsides; Runs without the ball; Develop and maintain situation awareness; Communication; Restrict time and space of opposition; Maintain position in team structure; Gain possession; Play in line with coach ethos; Tactical fouls; Recognize/anticipate team member actions; Recognize/anticipate opposition actions; Understand coach's intent; Spatial awareness; Break lines; Marking
Physical	Speed; Power; Stamina; Acceleration; Agility

Characteristics based on previously published studies [9, 11, 46, 54, 56, 61–64]

Table 9. Training contents framework for the midfielder (including central defensive midfielder, holding midfielder, central midfielder, and central offensive midfielder)

ATTACKING PHASE	
Technical	Dribbling; Passing; Shooting; Short pass; Crossing; Ball touches; Ball receptions; Forward pass; Ball control; Good 1 to 1 play; Good technical skills; Creativity; Capability to achieve and shoot at the goal; Long pass; Dribble pass; Passes in the middle third; Passes to the left and right; Key pass; Running with the ball; Support play; Heading; Ball possession; Taking corners; Backing; Carrying the ball; Runs without the ball; Hold the ball; Protect the ball; Aerial challenges; Technique under pressure; First touch
Tactical	Vision; Organization; Communication; Good view of the game; Behaviours within the midfield and attacking thirds; Behaviours on the right side of the playing field; Ability to read game; Decision making; Transition; Connect defence and attacking players; Assist and continue build-up; Bring attacking players into play; Provide attacking support; Positioning; Overlaps; Supporting runs; Switch the play; Develop and maintain situation awareness; Maintain position in team structure; Maintain possession; Manage match tempo; Play in line with coach ethos; Delay attacks; Recognize/anticipate team member actions; Recognize/anticipate opposition actions; Understand coach's intent; Spatial awareness; Attack at set pieces; Open passing lanes; Switch field of play; Recognize when and how to support team members; Create space for self and team members; Free kicks; Recognize speed of game; Control speed of game; Decision making
Physical	Speed; Stamina; Strength; Good running capabilities
DEFENSIVE PHASE	
Technical	Tackle; Interceptions; Pressing opposition; Heading; Good technical skills; Recoveries; Backing; Attacking play; Duels; Aerial challenges
Tactical	Vision; Organization; Communication; Good view of the game; Behaviours within the midfield and attacking thirds; Behaviours on the right side of the playing field; Ability to read game; Decision making; Transition; Connect defence and attacking players; Disturb build-up; Protect central defence; Positioning; Retreat defence; Supporting runs; Press opposition attack; Press opposition defenders; Develop and maintain situation awareness; Restrict time and space of opposition; Maintain position in team structure; Gain possession; Manage match tempo; Play in line with coach ethos; Tactical fouls; Recognize/anticipate team member actions; Recognize/anticipate opposition actions; Understand coach's intent; Spatial awareness; Marking; Recognize when and how to support team members; Secondary ball wins; Pressure opposition; Recognize speed of game; Decision making
Physical	Speed; Stamina; Strength; Good running capabilities

Characteristics based on previously published studies [9, 11, 28, 34, 46, 53–56, 61–66]

direction and distance) skills, accompanied by the capability to shoot and cross the ball, and they can be considered goo options to take corners. More defensive midfielders can benefit from being proficient in backing in the field and having good capabilities of holding and carrying the ball. In tactical terms, it is important for midfielders to have a good view and read of the game, capability of decision making, and organizational skills. Their behaviours normally occur within the midfield and attacking thirds, so it is suggested that this position might take advantage of exposure to these specific areas of the field. Strength, speed, and good running capabilities are believed to be crucial to optimize the aforementioned features.

The winger (including the right and left midfielder and winger)

According to several studies [9, 11, 28, 34, 46, 54–56, 61–65], the suggested profile of this position can be characterized as shown in Table 10.

Wingers, or external midfielders, normally have their main presence and behaviours within the midfield and attacking thirds and the flanks of the field. As demonstrated in the literature, it is important that these players can position themselves well along the lateral extremes of the field. In technical aspects, wingers take advantage of having excellent dribbling, crossing, and shooting skills; they can be responsible for taking corners. Capacities like speed, power, strength,

Table 10. Training contents framework for the winger (including right and left midfielder and winger)

ATTACKING PHASE	
Technical	Dribbling; Crossing; Shooting; Ball touches; Ball reception; Passing; Running with the ball; Support play; Good 1 to 1 play; Ground duels; Backwards pass; Key pass; Ball possession; Heading; Taking corners; Carrying the ball; Create goal scoring opportunities; Passing accuracy; Effective passes; Duels; Block shots and crosses; Headers; Shots on goal; Successful 1v1; Receptions; Hold the ball; Protect the ball; Aerial challenges; Runs with the ball; Technique under pressure
Tactical	Vision; Organization; Communication; Good flanks; Behaviours within the midfield and attacking thirds; Behaviours on the right side of the playing field; Initiate build-up; Positioning; Runs without the ball; Overlaps; Communication; Develop and maintain situation awareness; Maintain position in team structure; Maintain possession; Play in line with coach ethos; Delay attacks; Provide visual personal identification; Recognize/anticipate team member actions; Recognize/anticipate opposition actions; Understand coach's intent; Spatial awareness; Break lines
Physical	Speed; Stamina; Power; Strength; Good physical condition; Acceleration; Agility
DEFENSIVE PHASE	
Technical	Tackle; Pressing opposition; Full-back cover; Interceptions; Heading; Prevent attempts at goal and crosses; Pressure ball carrier; Successful 1v1; Aerial challenges
Tactical	Vision; Organization; Communication; Good flanks; Behaviours within the midfield and attacking thirds; Behaviours on the right side of the playing field; Break up opposition attacks; Stretch opposition; Positioning; Retreat defence; Opposition offsides; Runs without the ball; Develop and maintain situation awareness; Communication; Restrict time and space of opposition; Maintain position in team structure; Gain possession; Play in line with coach ethos; Tactical fouls; Recognize/anticipate team member actions; Recognize/anticipate opposition actions; Understand coach's intent; Spatial awareness; Break lines; Marking
Physical	Speed; Stamina; Power; Strength; Good physical condition; Acceleration; Agility

Characteristics based on previously published studies [9, 11, 28, 34, 46, 54–56, 61–65]

Table 11. Training contents framework for the forward (or striker)

ATTACKING PHASE	
Technical	Shooting; Finishing; Heading; Reception; Dribbling; Interception; Passing; Running with the ball; Support play; Crossing; Ball control; Tricks; Good goal-getter qualities; Good 1 to 1 play; Ground duels; Key pass; Aerial duels; Ball possession; Ability of single play; Creativity; Runs with the ball; Hold the ball; Protect the ball; First touch
Tactical	Vision – awareness of space; Anticipation; Organization; Communication; Behaviours within the attacking third; Behaviours within central areas; Bring others into offensive situations; Assist in goal scoring; Positioning; Runs without the ball; Overlaps; Provide visual personal identification; Recognize/anticipate team member actions; Recognize/anticipate opposition actions; Understand coach's intent; Spatial awareness; Create space for self and team members; Stretch opposition defensive lines; Get into scoring positions
Physical	Speed; Agility; Power; Strength; Stamina; High velocity; Height
DEFENSIVE PHASE	
Technical	Heading; Interception; Tackle; Pressing opposition; Aerial duels
Tactical	Vision – awareness of space; Anticipation; Organization; Communication space; Organization; Communication; Behaviours within the attacking third; Behaviours within central areas; Initiate disturb build-up of opposition; Positioning; Runs without the ball; Press opposition defenders; Recognize/anticipate team member actions; Recognize/anticipate opposition actions; Understand coach's intent; Spatial awareness; Pressure opposition; Close passing lanes
Physical	Speed; Agility; Power; Strength; Stamina; High velocity; Height

Characteristics based on previously published studies [9, 11, 28, 34, 46, 54–56, 61–66]

acceleration, and agility can benefit athletes who play this role.

The forward (or striker)

According to several studies [9, 11, 28, 34, 46, 54–56, 61–66], the suggested profile of this position can be characterized as described in Table 11.

The most advanced position on the field, the forward, is normally occupied by a player who has an attacking mindset and strong technical skills. As indicated in the studies mentioned above, qualities like shooting, heading, ball reception, creativity, individual plays, and dribbling are technical features that a striker will benefit from. Vision-awareness of space, anticipation, and exposure to actions in the central attacking third of the field are tactical characteristics that will be of use to players in this position during the game. In terms of physical attributes, high velocity and agility are of significant importance for strikers.

Conclusions

The theoretical framework proposed in this article is intended to help coaches easily identify the training requirements of each playing position. The model is meant to represent the current literature on the theme and establish a bridge between the research and the operational realm of our field. Naturally, more specific work should be conducted to consider the best model of play or even the individualization principle in accordance with each player's needs. With regard to the built framework, the characteristics presented in this paper are those that the authors found to be the most relevant to the structure. This does not imply that these are the main attributes to be trained across the positions in all teams, but they can be considered as general guidelines.

Our proposal was limited to the literature search and the availability of relevant works. In terms of technical and tactical characteristics, there were positions that were described in more detail than others. Specifically, we observed a lack of research on some positions, namely goalkeepers, full-backs, and wingers. Furthermore, some aspects can represent future important items to investigate:

– a possible systematic review on the individualization training process;

– a practical guideline of which exercises can implement a more individual training approach;

– a more detailed research on the psychological content of training within each position;

– better insights into the attributes of the goalkeeper, full-back, and winger positions, as well as more detailed information on the different phases of the game (attacking and defensive).

In addition to possibly being an assistant tool for coaches in planning and prescribing a more individualized training, this framework might also be useful to aid coaching and scouting staff in identifying talent since it could represent a more qualitative assessment of a player's potential for a certain position.

Ethical approval

The conducted research is not related to either human or animal use.

Disclosure statement

No author has any financial interest or received any financial benefit from this research.

Conflict of interest

The authors state no conflict of interest.

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