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Height Matters? Examining Position-Specific Anthropometric Differences in Football Players

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ABSTRACT

Background: Height is an important anthropometric factor in football and may influence positional roles and performance. Players in different positions are required to perform specific tasks, which may lead to differences in physical characteristics such as height. However, evidence on height differences across playing positions is still limited.
Methods: This study analyzed data from 100 football players (20 per position). Mean height was compared across positions using one-way ANOVA, followed by Tukey post hoc test to identify pairwise differences.
Results: There was a significant difference in height across playing positions ($F(4, 95) = 13.26$, $p < 0.001$). Goalkeepers showed the greatest mean height (189.80 cm), followed by defenders (183.85 cm), attackers (182.40 cm), unspecified players (180.95 cm), and midfielders (177.95 cm). Tukey post hoc analysis showed that goalkeepers were significantly taller than all other positional groups, while defenders were significantly taller than midfielders.
Conclusions: Height differs across playing positions in football and reflects position-specific demands. These findings suggest that height can be considered in talent identification and player selection, particularly for positions that require aerial ability. However, performance in football is influenced by multiple factors, not height alone.

Keywords: : Training load; Injury risk; Distance running; Workload monitoring; Acute–chronic workload ratio.

1. Introduction

Football is a multifactorial sport in which performance outcomes are influenced by the interaction of technical, tactical, physiological, and anthropometric characteristics. Among various anthropometric characteristics, height is particularly relevant because it directly influences position-specific actions such as aerial duels, defensive clearances, heading ability, and goal coverage (Reilly et al., 2000; Stølen et al., 2005; Gil et al., 2007). Anthropometric profiling is widely used in sport science to understand the physical demands of different playing roles and to support evidence-based talent identification systems (Williams & Reilly, 2000; Vaeyens et al., 2008; Deprez et al., 2015).

Height plays a crucial role in several match-related situations, particularly those involving aerial duels, defensive clearances, and goal coverage. Players with greater stature possess mechanical advantages, such as increased reach, higher interception probability, and improved effectiveness in heading situations (Nevill et al., 2008; Carling et al., 2009). These advantages are especially relevant for goalkeepers, whose performance is highly dependent on their ability to cover the goal area and respond to aerial threats (Prasetya & Chow, 2023). Similarly, defenders benefit from increased height to enhance their effectiveness in aerial contests and set-piece

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situations, which are critical components of modern football (Bloomfield et al., 2007; Lago-Peñas et al., 2011; Sarmento et al., 2014).

In contrast, midfielders are typically required to perform repeated high-intensity actions, maintain ball control under pressure, and exhibit superior agility and aerobic endurance. As such, the importance of height may be reduced relative to other physiological and technical attributes in this positional group (Rampinini et al., 2007; Bradley et al., 2009; Di Salvo et al., 2007). Attackers, meanwhile, demonstrate more heterogeneous profiles, as their role may vary between physically dominant target players and more agile, speed-oriented forwards (Gil et al., 2007; Bush et al., 2015). These variations highlight the complex interaction between anthropometric characteristics and functional role demands in football (Murtagh et al., 2018).

Figure 1. Positional Roles in Football (www.fifa.com)

Figure 1 illustrates the different playing positions in football and their associated functional demands. Goalkeepers and defenders are more frequently involved in aerial duels and defensive actions, which often require greater height and physical presence. In contrast, midfielders typically engage in continuous movement, ball distribution, and high-intensity running, emphasizing agility and endurance over anthropometric advantages such as height.

Although previous studies have examined anthropometric and physical characteristics of football players, findings regarding positional height differences remain inconsistent across age groups, competitive levels, and populations. Recent studies have emphasized that anthropometric profiles may be influenced by maturation status, selection processes, and competitive demands, suggesting that further position-specific analysis is still needed. Therefore, this study aimed to examine whether significant differences in body height exist across football playing positions. It was hypothesized that height would differ significantly among positions, with goalkeepers showing the greatest mean height and midfielders showing the lowest mean height.

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From a sport science perspective, understanding position-specific anthropometric differences is essential for optimizing player selection, development, and performance. Talent identification models increasingly emphasize the alignment between an athlete's physical profile and the demands of a specific playing position (Williams & Reilly, 2000; Vaeyens et al., 2008). Moreover, long-term athlete development frameworks highlight the importance of integrating anthropometric data with physiological and technical indicators (Malina et al., 2004; Philippaerts et al., 2006). This gap in the literature provides the rationale for the present study, which statistically examines whether height differs significantly across football playing positions. However, despite the theoretical rationale and practical importance, empirical evidence quantifying height differences across positions remains limited and sometimes inconsistent across populations and competitive levels (Deprez et al., 2015; Murtagh et al., 2018). Therefore, a systematic statistical examination of height differences across playing positions is necessary to validate these assumptions. Such analysis not only contributes to the scientific understanding of positional demands but also provides practical insights for coaches, scouts, and sport scientists involved in player development.

2. Methods

Study Design

This study used a cross-sectional design to examine differences in height across playing positions in football.

Participants

The dataset included 100 football players divided equally into five positional groups: goalkeepers (n = 20), defenders (n = 20), midfielders (n = 20), attackers (n = 20), and unspecified/missing position players (n = 20). All participants were male football players. Available data included playing position and height; however, detailed information regarding age, competition level, club or league origin, and playing experience was not available in the dataset. This limitation was considered when interpreting the findings.

The dataset included 100 football players, divided equally into five positional groups:

- Goalkeepers (*n* = 20)
- Defenders (*n* = 20)
- Midfielders (*n* = 20)
- Attackers (*n* = 20)
- Unspecified/Missing (*n* = 20)

Variables

Two variables were analyzed:

- Playing position (categorical)
- Height (cm) (continuous)

Data Analysis

Data analysis was conducted using descriptive and inferential statistics.

First, the mean height for each playing position was calculated to describe the differences between groups.

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Second, a one-way ANOVA was used to determine whether there were significant differences in height among the five positions.

Finally, when significant differences were found, a post hoc test (Tukey HSD) was performed to identify which positions differed from each other.

The level of significance was set at $p < 0.05$.

3. Results

This section presents the descriptive and inferential statistical findings on height differences across playing positions in football. The analysis begins with mean comparisons, followed by ANOVA and post hoc results.

Table 1. Mean Height by Playing Position

Position	n	Mean Height ± SD (cm)
Goalkeeper	20	189.80 ± SD
Defender	20	183.85 ± SD
Attacker	20	182.40 ± SD
Unspecified	20	180.95 ± SD
Midfielder	20	177.95 ± SD

As shown in Table 1, goalkeepers were the tallest group, while midfielders were the shortest. Defenders and attackers showed relatively similar height values.

To determine whether these differences were statistically significant, a one-way ANOVA was conducted. The results are presented in Table 2.

Table 2. One-Way ANOVA Results

Source	df	F	p-value
Between Groups	4	13.26	<0.001

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Within Groups	95	

The ANOVA results indicate a significant effect of playing position on height ($F(4, 95) = 13.26$, $p < 0.001$).

To identify which groups differed significantly, a Tukey HSD post hoc test was performed. The results are summarized in Table 3.

Table 3. Tukey HSD Post Hoc Comparisons

Comparison	Mean Difference (cm)	Significance
Goalkeeper vs Defender	+5.95	Significant
Goalkeeper vs Attacker	+7.40	Significant
Goalkeeper vs Midfielder	+11.85	Significant
Goalkeeper vs Unspecified	+8.85	Significant
Defender vs Midfielder	+5.90	Significant
Defender vs Attacker	+1.45	Not Significant
Defender vs Unspecified	+2.90	Not Significant
Attacker vs Midfielder	+4.45	Not Significant
Attacker vs Unspecified	+1.45	Not Significant
Midfielder vs Unspecified	-3.00	Not Significant

The post hoc analysis revealed that goalkeepers were significantly taller than all other positions. Additionally, defenders were significantly taller than midfielders. No other pairwise comparisons showed statistically significant differences. Overall, these findings confirm that height differs across playing positions in football, with the most pronounced differences involving goalkeepers, while other outfield positions exhibit more similar anthropometric profiles.

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4. Discussion

The present study found that goalkeepers had the greatest mean height (189.80 cm), which was 5.95 cm taller than defenders, 7.40 cm taller than attackers, and 11.85 cm taller than midfielders. This pattern is consistent with previous research indicating that goalkeepers generally possess greater stature than outfield players due to the positional requirement for reach, aerial dominance, and goal coverage. The findings demonstrated that height varies significantly among positions, with goalkeepers being the tallest and midfielders the shortest. These results support the hypothesis that anthropometric characteristics are position-specific and aligned with the functional demands of each playing role.From a sport science perspective, the significantly greater height observed in goalkeepers is consistent with the biomechanical and tactical requirements of the position. Goalkeepers rely heavily on reach, wingspan, and vertical coverage to intercept crosses, block shots, and dominate aerial space. Taller stature provides a mechanical advantage by increasing the effective blocking area and reducing reaction demands (Nevill et al., 2008; Reilly et al., 2000). Previous studies have consistently shown that elite goalkeepers tend to be taller than outfield players, reinforcing height as a critical selection criterion for this position (Carling et al., 2009; Gil et al., 2007). Similarly, defenders were found to be taller than midfielders, which aligns with their role in aerial duels and defensive clearances. Defensive actions such as heading, marking during set pieces, and contesting long balls require both physical presence and height advantage (Bloomfield et al., 2007; Lago-Peñas et al., 2011). Taller defenders are more effective in winning aerial duels, which are crucial for preventing goal-scoring opportunities (Rampinini et al., 2007).

In contrast, midfielders exhibited the lowest mean height, suggesting that anthropometric characteristics may be less critical for this position compared to physiological and technical attributes (Solikah et al., 2025). Midfield players are required to perform frequent high-intensity running, maintain ball possession, and execute complex tactical decisions under pressure (Stølen et al., 2005). As such, agility, balance, and aerobic capacity may be more important than height (Di Salvo et al., 2007; Bradley et al., 2009). This supports the notion that positional demands in football are multifactorial and that optimal player profiles differ depending on tactical roles. Interestingly, attackers did not differ significantly from defenders or midfielders, indicating a more heterogeneous anthropometric profile. This may reflect the evolving nature of attacking roles in modern football, where different tactical systems require diverse player characteristics. For example, traditional target forwards may benefit from greater height for aerial play, while modern forwards often rely on speed, agility, and technical skill (Gil et al., 2007; Vaeyens et al., 2006). This variability suggests that height alone may not be a definitive predictor of success for attacking players.

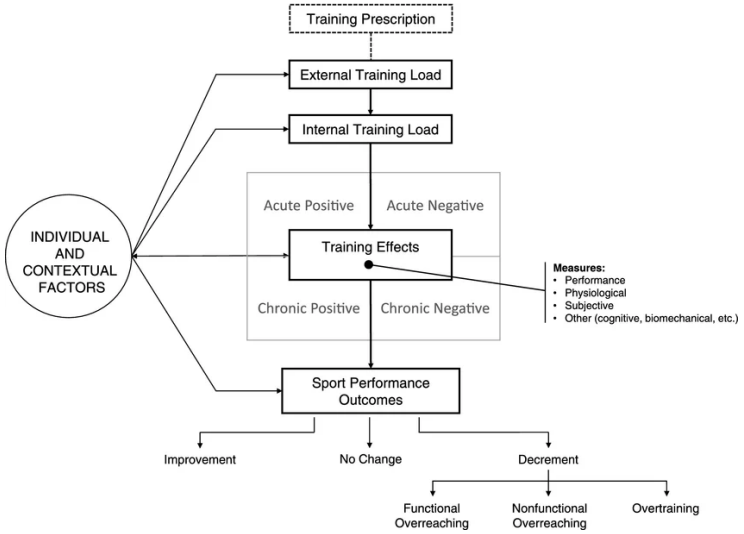

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Figure 2. Conceptual Model of Anthropometry and Position-Specific Performance in Football

Figure 2 illustrates the conceptual relationship between anthropometric characteristics, positional demands, and performance outcomes in football. Anthropometric attributes, such as height, influence a player's suitability for specific positions by aligning with functional demands (e.g., aerial ability for goalkeepers and defenders). These position-specific demands subsequently impact performance outcomes. However, performance is also influenced by technical, tactical, and physiological factors, highlighting the multifactorial nature of football performance.

Although these findings provide practical insights for position-specific player evaluation and talent identification, several methodological limitations should be considered when interpreting the results. From a talent identification perspective, the findings highlight the importance of aligning anthropometric characteristics with positional demands. Talent identification models emphasize the need to match physical attributes with sport-specific requirements to enhance long-term athlete development (Williams & Reilly, 2000; Vaeyens et al., 2008). Height can serve as a useful screening variable, particularly for positions such as goalkeeper and central defender, where physical presence is critical. However, over-reliance on anthropometric criteria may lead to the exclusion of talented players who compensate through superior technical or tactical abilities. These findings also have practical implications for coaching and player development. Coaches should adopt a position-specific approach when evaluating players, considering not only anthropometric characteristics but also physiological, technical, and cognitive factors. Moreover, youth development programs should avoid early specialization based solely on physical attributes, as maturation differences may influence anthropometric measurements during adolescence (Malina et al., 2004; Philippaerts et al., 2006).

Despite the meaningful findings, this study has several limitations. First, the analysis focused solely on height as an anthropometric variable, without considering other relevant measures such as body mass, body composition, or limb length. Second, the dataset did not account for competitive level, age, or playing style, which may influence anthropometric profiles. Third, the sample size, although balanced, was relatively limited and may not fully represent elite football populations.

Future research should incorporate a more comprehensive anthropometric profile, including variables such as body composition and muscle distribution, as well as performance-related metrics. Longitudinal studies are also recommended to examine how anthropometric characteristics influence player development and positional transitions over time.

5. Conclusions

This study examined position-specific differences in height among football players and demonstrated that anthropometric characteristics, particularly height, vary significantly across playing positions. The findings revealed that goalkeepers are the tallest players, followed by defenders, while midfielders exhibit the lowest mean height. Significant differences were primarily observed between goalkeepers and all other positions, as well as between defenders and midfielders. These results confirm that height is an important factor associated with positional roles in football, reflecting the specific functional and performance demands of each position. In particular, greater height appears to provide a clear advantage for goalkeepers and, to a lesser extent, defenders, especially in situations involving aerial play and physical contests.

From a practical perspective, the findings highlight the relevance of anthropometric profiling in talent identification and player development. Coaches and practitioners are encouraged to consider height as one of

several key attributes when assigning or developing players for specific positions, while also acknowledging that successful performance depends on a combination of physical, technical, and tactical factors. Future studies should incorporate additional anthropometric indicators such as body mass, body composition, limb length, and wingspan, as well as longitudinal tracking of positional transitions, to provide a more comprehensive understanding of how physical characteristics influence football player development over time.

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