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Assessing Individual Running Demands in Position Games: A Comparison Between Official Matches and Different Task Sizes in Young Professional Soccer Players

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ABSTRACT

The objectives of this study were to compare external loads between matches and position games based on player roles and to evaluate the load disparities between matches and different position games, individually considering each position. Twenty-five players (age: 21.9 ± 1.9 years; height: 177.9 ± 5.2 cm; weight: 75.5 ± 4.8 kg) were evaluated during 37 official matches and 18 position games classified according to their pitch sizes: small, medium, and large (50.8 ± 6.6 m^2, 80.5 ± 4.6 m^2, and 115.9 ± 25.2 m^2 relative area per player, respectively). Players were categorized as: central defenders (CD), fullbacks (FB), defensive midfielders (CM), offensive midfielders (OM), wide midfielders (WM), and forwards (F). Using GPS, various metrics were recorded: distance covered (DC), DC > 21 $km \cdot h^{-1}$, peak speed, maximum accelerations and decelerations, and lower and higher than 3 $m \cdot s^{-2}$ ($Acc_{<3}$; $Acc_{>3}$; $Dec_{<3}$; and $Dec_{>3}$, respectively). Variables were normalized per minute (except peak speed, maximum accelerations, and decelerations). In all positions, matches consistently exhibited higher DC > 21 $km \cdot h^{-1}$ ($p < 0.01$), peak speed ($p < 0.01$), $ACC_{<3}$ ($p \leq 0.01$), $DEC_{<3}$ ($p < 0.01$), and maximum accelerations and decelerations ($p < 0.01$). Small and large formats showed the same disparities across all positions ($p < 0.05$), whereas in medium position games, this trend was observed exclusively among FB and F ($p < 0.05$). Position games displayed greater $ACC_{>3}$ and $DEC_{>3}$ than matches for certain player positions, but these depended on the size of the drill ($p < 0.05$). Position games present different external loads than matches, depending on the players' positions and the size of these tasks.

1 | Introduction

Soccer performance depends on a myriad of factors, including technical, tactical, psychological, physical, and physiological aspects (Stolen et al. 2005). Understanding the influence of each of these factors on the success of this sport is a major concern of applied science in football. One attempt, yielding poor results so far, has been to link physical performance to team success, as contradictory results have been found (Díez et al. 2021). Although some previous studies reported that the most successful teams in the English Premier League and Italian Serie A covered less total distance at a lower intensity than the unsuccessful teams (Rampinini et al. 2009; Di Salvo et al. 2009), a more recent study in Spanish La Liga found similar running demands between the most successful and least successful teams in this league (Asian Clemente et al. 2019). On this basis,

Summary

- Official matches exhibit higher metrics, including DC > 21 km·h^{-1}, peak speed, ACC$_{<3}$, DEC$_{<3}$, maximum accelerations, and maximum decelerations than position games.
- When differentiating position games by size, both small and large position games show the previous same disparities across all player positions compared to matches, whereas in medium position games, this performance trend is observed exclusively among FB and F.
- Position games display greater demands of ACC$_{>3}$ and DEC$_{>3}$ than matches for certain player positions, but these differed depending on the size of the position game.

it can be stated that physical demands are a poor indicator of team success (Díez et al. 2021).

However, monitoring of both competition and training sessions by soccer coaches, technical staff members, and sports scientists has become a vital task in football due to its potential influence on player performance and injury prevention (Miguel et al. 2021). Match monitoring has demonstrated that running demands during competition are highly related to the playing position and tactics adopted by soccer players (Di Salvo et al. 2007, 2009; Bradley et al. 2009; Asian-Clemente et al. 2022a; Lorenzo-Martinez et al. 2021). In a soccer match, it is commonly understood that fullbacks, wide midfielders, and forwards are the positions with the highest demand in terms of high-intensity activity and sprinting during games, showing higher demands compared to the positions of central backs and central midfielders, which correspond to the lowest and highest values of the total distance covered, respectively (Di Salvo et al. 2009; Bradley et al. 2009; Asian-Clemente et al. 2022a; Lorenzo-Martinez et al. 2021; Torreño et al. 2016). It is acknowledged that these demands are influenced by multiple factors (Paul, Bradley, and Nassis 2015), with the tactical behavior (i.e., playing formation, playing style, and tactics) chosen by coaches recognized as one of the most influential factors (Asian-Clemente et al. 2022a; Lorenzo-Martinez et al. 2021). For this reason, it is imperative that technical staff have a thorough understanding of the running demands of their players during competition, depending on their tactical requirements, in order to develop specific training programs that use drills that simulate the demands of the game (Asian-Clemente et al. 2022a).

In professional soccer teams, one of the methods most commonly used by coaches to prepare for competition according to their tactical principles is the use of position games. These are sided games where soccer players must perform according to specific role positions, with the aim of replicating similar situations encountered in a competitive play (Asian-Clemente et al. 2024a). Until now, as far as the authors know, only one investigation has been documented in the scientific literature that examined the external load of position games and traditional possession-orientated exercises (Asian-Clemente et al. 2024a). This study confirms that both types of activities have distinct running demands, with position games demonstrating higher demands of high-intensity accelerations and decelerations, as well as maximum values of acceleration and deceleration, whereas traditional possession games exercises involve greater distances covered, higher peak speeds, and increased player load. Moreover, the aforementioned study (Asian-Clemente et al. 2024a) underscores disparities in external load across position games of varying dimensions, indicating that larger formats entail greater distances covered, distances above 21 km·h^{-1}, maximum accelerations and decelerations, and player load. In contrast, smaller formats are correlated with more frequent accelerations and decelerations of lower intensity.

Despite being a widely used resource, position games are currently under-researched in the literature, and it remains unclear whether position games indeed impose similar external loads to those found in competitive matches. A recently published study showed that during matches, soccer players exhibit higher demands in terms of total distance covered, distance covered at high speeds, and the number of maximum and low-intensity accelerations and decelerations, but lower demands for high-intensity accelerations and decelerations compared to position games (Asian-Clemente, Beltran-Garrido, and Requena 2025). Although it seems that matches and position games have different external load requirements, it is currently unknown whether these differences affect each of the individual positions that players may occupy. Therefore, the objectives of this study were (1) to compare external loads of young adult soccer players between official matches and position games based on player roles and (2) to evaluate the disparities in external loads between competitive matches and small, medium, and large position games, individually considering each position.

2 | Methods

2.1 | Subjects

Twenty-five young adult soccer players from the second team of a professional Spanish first division league participated in this study (age: 21.9 ± 1.9 years; height: 177.9 ± 5.2 cm; weight: 75.5 ± 4.8 kg; % body fat [Faulkner]: 11.1 ± 1.4%). The study only included data from players who completed entire matches, excluding those who were substituted or injured. Similarly, players who were moved to a different position during the course of the match were excluded from the analysis. In both matches and position games, players were categorized into six individual playing positions, including central defenders (CD), fullbacks (FB), defensive midfielders (CM), offensive midfielders (OM), wide midfielders (WM), and forwards (F). Data from goalkeepers were excluded. Data were collected from daily workload monitoring during team training sessions and official match monitoring; therefore, no approval from the ethics committee was required (Winter et al. 2009). However, the study was conducted in accordance with the Declaration of Helsinki recommendations, and participants were informed about the study design and objectives, giving their consent before starting it.

3 | Procedures

Throughout the 2021–2022 season, a comparative analysis was performed using a descriptive design to assess the external load between position-specific games and official matches. Using GPS systems to measure players' load, a total of 37 official matches and 18 training sessions were evaluated, resulting in 328 (CD: 76, FB: 69, CM: 33, WM: 52; OM: 60, F: 38) and 193 individual data points (CD: 57, FB: 45, CM: 19, WM: 13; OM: 37, F: 22), respectively. All matches occurred during the regular season, whereas training sessions were part of daily squad monitoring. Both home and away matches were monitored, taking place on a field that adhered to the minimum standard size of 100 × 64 m as established by the Fédération Internationale de Football Association. Therefore, the minimum area relative to each player was consistently > 320 m^2, excluding goalkeepers. The predominant system used in matches was the 1-4-3-3 formation, although the 1-4-2-3-1 formation was also used.

The three position games were conducted in a 9 versus 9 + 2 floaters format and were categorized according to their pitch sizes: small (33.8 ± 2.9 m × 31.0 ± 3.7 m, relative area per player = 50.8 ± 6.6 m^2), medium (42.0 ± 1.9 m × 38.7 ± 2.1 m, relative area per player = 80.5 ± 4.6 m^2), and large (48.8 ± 5.2 m × 46.5 ± 4.8 m, relative area per player = 115.9 ± 25.2 m^2). During these games, soccer players were instructed to adhere to specific positional roles in a 1-4-2-3 system of play, a variation of the 1-4-3-3 and 1-4-2-3-1, designed for 9 players on the team and 2 floaters. Their main objective was to maintain possession of the ball as long as possible. The players were divided into two teams by the coach based on their positions and the skills assessed, ensuring balanced teams. In addition, two players acted as floaters, assuming roles in goalkeeper or striker positions based on team possession, always playing with the offensive team. Each session began with a standardized 20-min warm-up that included running, ball possession drills, and dynamic stretching exercises before progressing to designated drills. The tasks were executed in a continuous format lasting 8 min, allowing a maximum of two touches per player. These games were presented in a randomized sequence across different days within the 36-week regular season, aligning with the microcycle's tactical and physical demands. The coaches actively engaged, providing verbal encouragement, constructive feedback, and ensuring prompt ball reintroduction if the ball left the playing field.

To assess the external load on soccer players during matches and position games, all players were equipped with GPS devices (WIMU Pro, RealTrack Systems, Almería, Spain) with a sampling rate of 10 Hz. The validity and reliability of this device in collecting time-motion variables have been thoroughly analyzed and it has been established as a suitable instrument for football purposes (Bastida Castillo et al. 2017, 2018). Various metrics were recorded, including total distance covered (DC), distance covered above 21 $km{\cdot}h^{-1}$ (DC > 21 $km{\cdot}h^{-1}$), peak speed, maximum accelerations and decelerations, as well as accelerations lower and higher than 3 $m{\cdot}s^{-2}$ ($Acc_{<3}$; $Acc_{>3}$, respectively) and decelerations higher and lower −3 $m{\cdot}s^{-2}$ ($Dec_{<3}$; $Dec_{>3}$). These specific variables have been widely used in the prior literature (Asian-Clemente et al. 2024a; Asín-Izquierdo, Gutiérrez-García, and Galiano 2024).

4 | Statistical Analysis

Taking into account the different durations of matches and position games, all variables studied, except peak speed, maximum accelerations and decelerations, were normalized per minute to conduct the study. To confirm the data normality of each dataset, a Kolmogorov–Smirnov test, a Q-Q plot of residuals, and a random coefficient histogram were used. Data that did not follow a normal distribution were transformed before further analysis (Field 2017). Mixed model analyses were used to compare the effects of game condition position games and matches on the dependent parameters of each player position and the effects of the different sizes. The model used for each dependent parameter included type of task (i.e., position game, match, small, medium, and large) and player position (i.e., central defenders "CD", full backs "FB", central midfielders "CM", wide midfielders "WM", offensive midfilders "OM", and forwards "F") as independent fixed factors and random intercepts on the individual player. A log-likelihood ratio test was used to assess the goodness of fit of the models. To assess between-type-of-task differences at each position, simple effects were calculated with the type of task as the simple effect variable and player position as the moderator variable. Standardized mean difference and Cohen effect sizes were obtained and interpreted as: < 0.2 = trivial; 0.2–0.6 = small; 0.6–1.2 = moderate; 1.2–2.0 = large; > 2.0 = very large (Hopkins et al. 2009). Statistical significance was established at $\alpha < 0.05$. Unless otherwise stated, all values are presented as estimated marginal mean (SE) or estimated marginal mean and 95% CI. Data analysis was performed using JAMOVI for Mac (version 2.3.13; the jamovi project (Jamovi 2022)) and the GAMLj jamovi module: General analyses for linear models (Gallucci 2019).

5 | Results

5.1 | Matches Versus Position Games

The external load values for each player position in the matches and position games conditions are presented in Table 1. Descriptive statistics and comparative analyses between conditions for all variables are shown in Figure 1. The effect sizes of the differences between the conditions for all variables are presented in Figure 2.

All position roles exhibited significantly lower DC > 21 $km{\cdot}h^{-1}$ (small to moderate effects), peak speed (small to moderate effects), $ACC_{<3}$ (trivial to small effects), $DEC_{<3}$ (trivial effect), maximum accelerations (small effect), and maximum decelerations (with small to moderate effects) during position games compared to matches. Similarly, CD, FB, WM, and F showed significantly higher DC during matches (trivial effect). In contrast, in position games, FB and WM achieved significantly higher $ACC_{>3}$ (trivial effect) than in matches. Likewise, CD, WM, and F also achieved more $DEC_{>3}$ during training tasks (trivial effect).

TABLE 1 | External load values of the competitive matches (match) and position games.

Variable	Position	Position game	Match	*p*-value	ES (95% CI)	Descriptor
DC ($m \cdot min^{-1}$)	CD	94.25 ± 1.96	101.62 ± 2.30	< 0.001	−0.05 (−0.18, 0.07)	Trivial
	FB	94.76 ± 2.02	104.05 ± 2.46	< 0.001	−0.09 (−0.22, 003)	Trivial
	CM	111.72 ± 2.78	115.82 ± 3.26	0.242	0.00 (−012, 0.12)	Trivial
	WM	100.42 ± 2.29	110.72 ± 3.88	0.007	−0.05 (−0.18, 0.07)	Trivial
	OM	110.83 ± 1.95	114.39 ± 2.61	0.183	0.00 (−0.13, 0.12)	Trivial
	F	94.51 ± 3.08	104.48 ± 3.47	0.002	−0.08 (−0.21, 0.04)	Trivial
DC > 21 $km \cdot h^{-1}$ ($m \cdot min^{-1}$)	CD	1.88 ± 0.41	4.64 ± 0.37	< 0.001	−0.44 (−0.61, −0.27)	Small
	FB	1.51 ± 0.48	7.42 ± 0.39	< 0.001	−0.73 (−0.9, −0.55)	Moderate
	CM	1.47 ± 1.08	5.60 ± 0.54	< 0.001	−0.23 (−0.39, −0.06)	Small
	WM	2.10 ± 0.48	7.25 ± 0.63	< 0.001	−0.46 (−0.64, −0.29)	Small
	OM	2.10 ± 0.47	7.03 ± 0.42	< 0.001	−0.57 (−0.75, −0.39)	Small
	F	2.02 ± 0.63	7.39 ± 0.58	< 0.001	−0.50 (−0.68, −0.32)	Small
Peak speed ($km \cdot h^{-1}$)	CD	20.34 ± 0.34	28.69 ± 0.41	< 0.001	−0.98 (−1.12, −0.85)	Moderate
	FB	19.86 ± 0.36	29.93 ± 0.47	< 0.001	−0.98 (−1.12, −0.85)	Moderate
	CM	19.60 ± 0.50	29.94 ± 0.59	< 0.001	−0.72 (−0.85, −0.59)	Moderate
	WM	20.65 ± 0.40	30.15 ± 1.02	< 0.001	−0.43 (−0.56, −0.30)	Small
	OM	19.99 ± 0.35	30.17 ± 0.48	< 0.001	−0.93 (−1.07, −0.80)	Moderate
	F	19.89 ± 0.55	30.96 ± 0.67	< 0.001	−0.8 (−0.93, −0.67)	Moderate
$ACC_{<3}$ ($counts \cdot min^{-1}$)	CD	26.45 ± 0.36	27.33 ± 0.42	0.016	−0.11 (−0.23, 0.02)	Trivial
	FB	25.70 ± 0.37	28.71 ± 0.44	< 0.001	−0.32 (−0.45, −0.20)	Small
	CM	25.74 ± 0.50	27.50 ± 0.58	0.005	−0.13 (−0.25, 0.00)	Trivial
	WM	26.66 ± 0.40	28.37 ± 0.69	0.010	−0.12 (−0.24, 0.01)	Trivial
	OM	25.96 ± 0.35	27.56 ± 0.47	< 0.001	−0.15 (−0.28, −0.03)	Trivial
	F	26.10 ± 0.56	28.40 ± 0.63	< 0.001	−0.19 (−0.31, −0.06)	Trivial
$ACC_{>3}$ ($counts \cdot min^{-1}$)	CD	0.70 ± 0.04	0.62 ± 0.05	0.083	0.08 (−0.05, 0.20)	Trivial
	FB	0.80 ± 0.04	0.60 ± 0.05	< 0.001	0.16 (0.04, 0.29)	Trivial
	CM	0.68 ± 0.06	0.64 ± 0.07	0.696	0.02 (−0.11, 0.14)	Trivial
	WM	0.87 ± 0.05	0.65 ± 0.09	0.016	0.11 (−0.02, 0.23)	Trivial
	OM	0.67 ± 0.04	0.65 ± 0.06	0.755	0.02 (−0.12, 0.15)	Trivial
	F	0.71 ± 0.06	0.58 ± 0.07	0.075	0.08 (−0.04, 0.21)	Trivial
$DEC_{<3}$ ($counts \cdot min^{-1}$)	CD	26.27 ± 0.37	27.39 ± 0.43	0.003	−0.13 (−0.26, −0.01)	Trivial
	FB	25.58 ± 0.38	28.63 ± 0.46	< 0.001	−0.32 (−0.44, −0.19)	Small
	CM	25.35 ± 0.52	27.27 ± 0.60	0.003	−0.13 (−0.26, −0.01)	Trivial
	WM	26.39 ± 0.41	28.33 ± 0.71	0.005	−0.13 (−0.25, 0.00)	Trivial
	OM	25.73 ± 0.36	27.35 ± 0.48	< 0.001	−0.15 (−0.28, −0.03)	Trivial
	F	25.71 ± 0.58	28.20 ± 0.64	< 0.001	−0.2 (−0.32, −0.07)	Trivial
$DEC_{>3}$ ($counts \cdot min^{-1}$)	CD	0.95 ± 0.05	0.73 ± 0.06	< 0.001	0.16 (0.03, 0.29)	Trivial
	FB	0.90 ± 0.05	0.78 ± 0.07	0.076	0.08 (−0.05, 0.21)	Trivial
	CM	1.02 ± 0.08	0.86 ± 0.09	0.113	0.07 (−0.05, 0.20)	Trivial
	WM	1.17 ± 0.06	0.87 ± 0.11	0.008	0.12 (−0.01, 0.25)	Trivial
	OM	1.01 ± 0.05	0.90 ± 0.07	0.174	0.07 (−0.07, 0.20)	Trivial
	F	1.04 ± 0.08	0.82 ± 0.09	0.020	0.11 (−0.02, 0.23)	Trivial

(Continues)

TABLE 1 | (Continued)

Variable	Position	Position game	Match	*p*-value	ES (95% CI)	Descriptor
Maximum accelerations ($m \cdot s^{-2}$)	CD	4.16 ± 0.07	4.94 ± 0.08	< 0.001	−0.40 (−0.53, −0.27)	Small
	FB	4.05 ± 0.07	5.04 ± 0.09	< 0.001	−0.46 (−0.59, −0.33)	Small
	CM	4.09 ± 0.10	5.14 ± 0.13	< 0.001	−0.33 (−0.46, −0.20)	Small
	WM	4.25 ± 0.08	5.29 ± 0.17	< 0.001	−0.27 (−0.40, −0.14)	Small
	OM	3.98 ± 0.07	5.19 ± 0.10	< 0.001	−0.56 (−0.70, −0.42)	Small
	F	4.09 ± 0.11	5.06 ± 0.13	< 0.001	−0.32 (−0.45, −0.19)	Small
Maximum decelerations ($m \cdot s^{-2}$)	CD	−5.12 ± 0.10	−6.59 ± 0.13	< 0.001	0.47 (0.34, 0.60)	Small
	FB	−4.72 ± 0.11	−6.78 ± 0.14	< 0.001	0.64 (0.50, 0.77)	Moderate
	CM	−4.56 ± 0.16	−6.64 ± 0.19	< 0.001	0.42 (0.29, 0.55)	Small
	WM	−5.14 ± 0.12	−7.09 ± 0.24	< 0.001	0.35 (0.23, 0.48)	Small
	OM	−4.67 ± 0.11	−6.81 ± 0.16	< 0.001	0.6 (0.46, 0.74)	Small
	F	−4.71 ± 0.16	−6.99 ± 0.20	< 0.001	0.48 (0.35, 0.60)	Small

Note: Values are presented as mean ± SE.
Abbreviations: ACC = accelerations; CD = central defender; CM = central midfielder; DC = total distance covered; DEC = decelerations; ES = effect size; F = forward; FB = fullback; Match = mean values of the competitive match; Max = maximum; position game = mean values of the position game; *p*-value = *p*-value of the statistical model; OM = offensive midfielder; WM = wide midfielder.

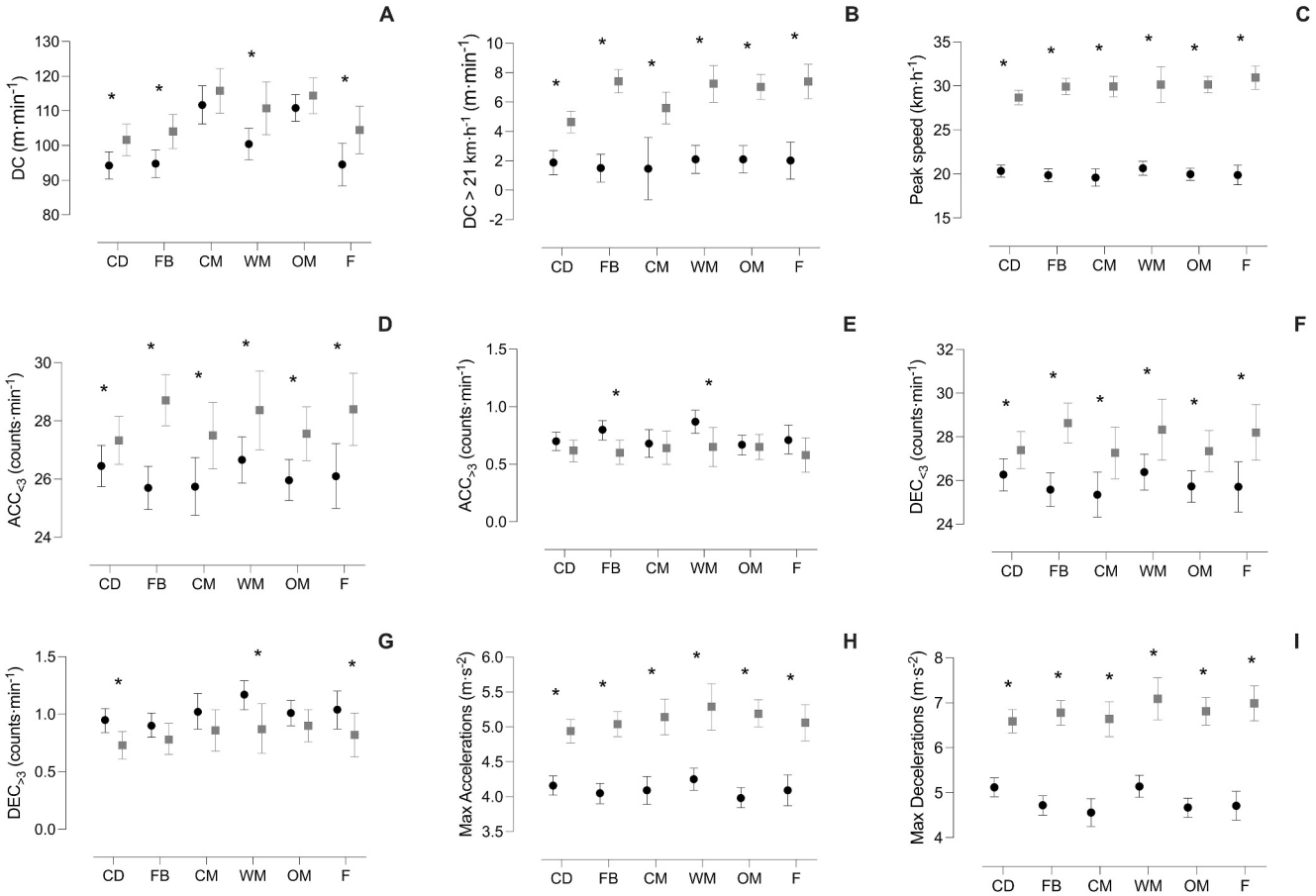

FIGURE 1 | Comparative analyses between the conditions in competitive matches (gray squares) and position games (black dots) in the external load variables A) DC, B) DC > 21 $km \cdot h^{-1}$, C) peak speed, D) $ACC_{<3}$, E) $ACC_{>3}$, F) $DEC_{<3}$, G) $DEC_{>3}$, H) max accelerations, and I) max decelerations. * = Statistically significant differences between conditions. ACC = accelerations; CD = central defender; CM = central midfielder; DC = total distance covered; DEC = decelerations; F = forward; FB = fullback; Max = maximum; OM = offensive midfielder; WM = wide midfielder.

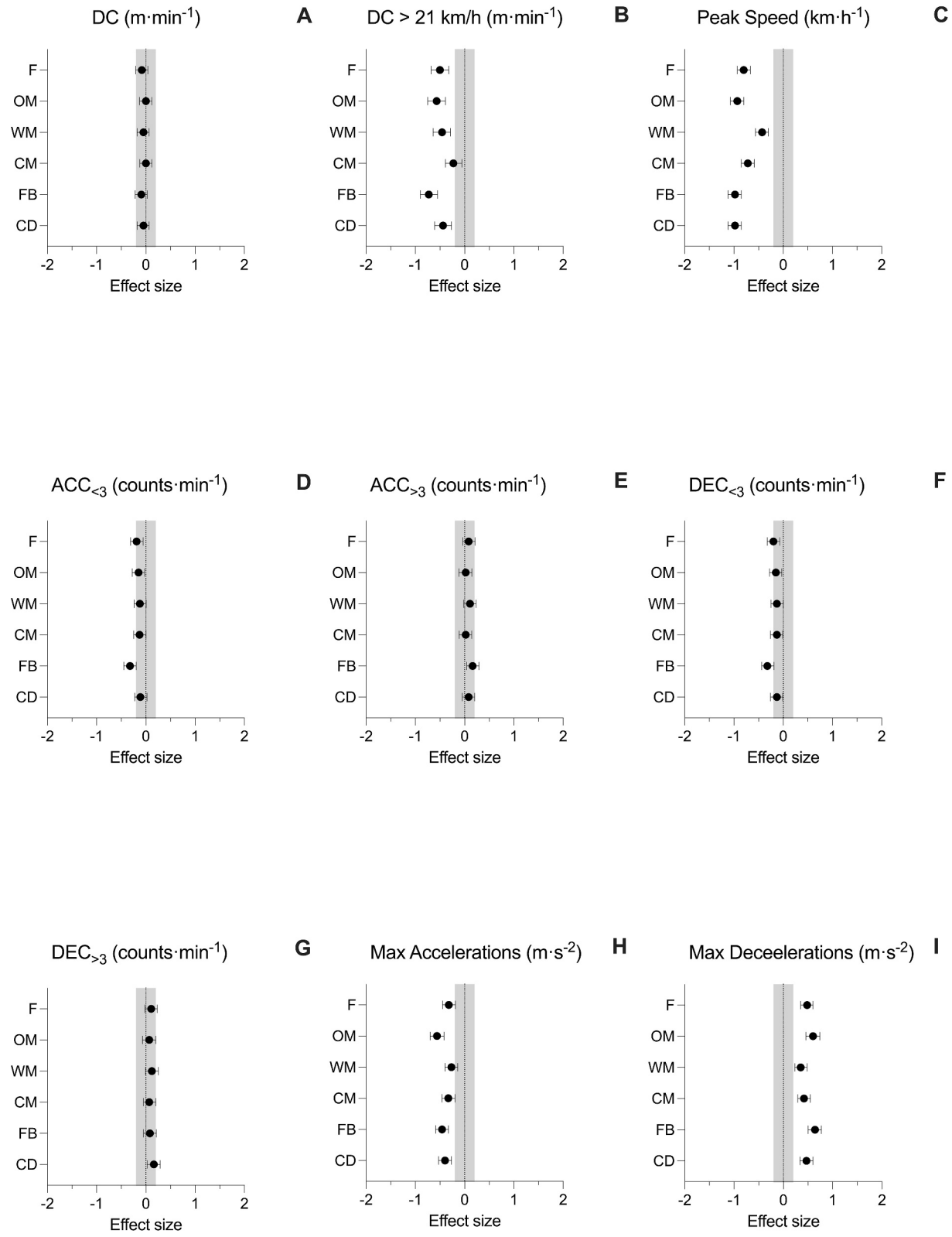

FIGURE 2 | Effect sizes of the differences between competitive matches and position games conditions for external load variables: A) DC, B) DC > 21 km·h^{-1}, C) peak speed, D) $ACC_{<3}$, E) $ACC_{>3}$, F) $DEC_{<3}$, G) $DEC_{>3}$, H) max accelerations, and I) max decelerations. ACC = accelerations; CD = central defender; CM = central midfielder; DC = total distance covered; DEC = decelerations; F = forward; FB = fullback; Max = maximum; OM = offensive midfielder; WM = wide midfielder. A value lower than zero denotes an effect size favoring the match condition. The gray dashed vertical lines delimit the lower (−0.20) and the upper limit (0.20) of a trivial effect size.

5.2 | Matches Versus Position Games of Various Sizes Based on Role Position

The external load metrics for each player position during the matches and the position games of different sizes are detailed in Table 2. Comprehensive statistical summaries and comparative analyses across conditions for all variables are presented in Figure 3, whereas the corresponding effect sizes are depicted in Figure 4.

5.3 | Matches Versus Small Position Games

Significantly reduced DC values (trivial to small effects), peak speed (small to moderate effects), $ACC_{<3}$ (with trivial to small effects), $DEC_{<3}$ (trivial to small effects), maximum accelerations (small effect), and maximum decelerations (small to moderate effects) were observed in small position games compared to matches in all positions. Furthermore, during small position games, CD, FB, WM, and F also achieved a smaller quantity of DC > 21 $km \cdot h^{-1}$ compared to matches (small effect). In contrast, in the smallest formats of position games, significantly higher $ACC_{>3}$ were achieved by CD, FB, and WM (trivial effect) and higher $DEC_{>3}$ by CD and F (trivial effect).

5.4 | Matches Versus Medium Position Games

The comparison of player demands between medium position games and matches revealed that, during the latter, all positions studied achieved higher values of DC > 21 $km \cdot h^{-1}$ (small effect), peak speed (small to moderate effects), maximum accelerations (trivial to small effects) and maximum decelerations (small to moderate effects). Similarly, a significantly higher DC was achieved in the positions of CD and FB during competition (trivial effect), along with a significantly higher amount of $ACC_{<3}$ and $DEC_{<3}$ in the positions of FB and F (trivial effect). However, medium position games were more demanding in terms of $ACC_{>3}$ in the FB, WM, and F positions (trivial effect) and of $DEC_{>3}$ in CD, WM, OM, and F (trivial effect) positions.

5.5 | Matches Versus Large Position Games

The comparison between matches and larger formats of position games revealed significant differences between various positions. Large position games exhibited significantly reduced DC > 21 $km \cdot h^{-1}$ (trivial to small effects), peak speed (small to moderate effects), $ACC_{<3}$ (trivial to small effects), $DEC_{<3}$ (trivial to small effects), maximum accelerations (trivial to small effects), and maximum decelerations (small effect) than matches in all positions. Furthermore, the F also covered significantly higher DC during the competition than during these position games (trivial effect). In contrast, during the large position games, FB achieved a significantly greater number of $ACC_{>3}$ and $DEC_{>3}$ (trivial effect), whereas CD, CM, and WM recorded a higher number of $DEC_{>3}$ (trivial effect).

6 | Discussion

This study had dual objectives: first, to compare external loads between official matches and position games based on player roles; and second, to analyze external load discrepancies between competitive matches and position games of varying sizes (small, medium, and large), considering each position individually. The main findings of this investigation were as follows: In all analyzed positions, official matches consistently exhibited higher metrics, including DC > 21 $km \cdot h^{-1}$, peak speed, $ACC_{<3}$, $DEC_{<3}$, maximum accelerations, and maximum decelerations than position games. When differentiating position games by size, both small and large position games showed the previous same disparities across all player positions compared to matches, whereas in medium position games, this performance trend was observed exclusively among FB and F. Position games displayed greater demands of $ACC_{>3}$ and $DEC_{>3}$ than matches for certain player positions, but these differed depending on the size of the position game.

According to the literature, providing training stimuli similar to competition leads to better performance (Asian-Clemente et al. 2024a). It is widely recognized that the more specific and representative training tasks are, the better they transfer to real game performance and lead to improvements (Rico-González et al. 2022; DeWeese et al. 2015). Consequently, professional coaches use position games as a means to refine player skills and raise performance levels for actual matches. This investigation aligns with the previously published literature. Asian-Clemente, Beltran-Garrido, and Requena 2025 reinforced that during competitive matches, all player positions consistently experienced greater requirements across most of the variables examined compared to position games. The findings of this study are consistent with previous research conducted on small-sided games (Casamichana, Castellano, and Castagna 2012; Dalen et al. 2021; Martín-García et al. 2020; Martin-Garcia et al. 2019) and transition games (Asian-Clemente et al. 2022b, 2024b), all of which have noted discrepancies in the load imposed by these activities compared to matches. In particular, this study found higher demands for DC > 21 $km \cdot h^{-1}$, peak speed, $ACC_{<3}$, $DEC_{<3}$, maximum accelerations, and maximum decelerations in matches compared to position games. Furthermore, CD, FB, WM, and F also exhibited elevated values of DC during competitive matches. Previously, the literature comparing the external load of matches and position games without differentiating between player positions also reported higher values for these variables during competition. However, that study observed greater requirements for high-intensity accelerations and decelerations during position games (Asian-Clemente, Beltran-Garrido, and Requena 2025). The increased demands observed during matches could potentially be attributed to variations in the format used during position games (9 vs 9 + 2 compared to 11 vs 11 in matches), as well as the larger relative playing area per player in competitive environments (> 320 m^2) compared to training drills (small position game = 50.8 m^2, medium position game = 80.5 ± 4.6 m^2, and large position games = 115.9 m^2). Previous studies have demonstrated that pitch dimensions and the relative area per player are critical factors that influence the workload encountered by soccer players during small-sided games (Castillo et al. 2021; Dios-Álvarez et al. 2024). Similarly, previous research

TABLE 2 | Between-conditions effect sizes for each external load variable.

Variable	Position	Small versus match	Medium versus match	Large versus match
DC ($m \cdot min^{-1}$)	CD	−0.34 (−0.46, −0.21)^{S}	−0.10 (−0.23, 0.02)^{T}	−0.02 (−0.14, 0.11)^{T}
	FB	−0.32 (−0.45, −0.19)^{S}	−0.20 (−0.33, −0.07)^{T}	0.01 (−0.12, 0.14)^{T}
	CM	−0.18 (−0.31, −0.06)^{T}	0.01 (−0.12, 0.13)^{T}	0.03 (−0.1, 0.16)^{T}
	WM	−0.29 (−0.42, −0.17)^{S}	−0.04 (−0.16, 0.09)^{T}	−0.05 (−0.18, 0.07)^{T}
	OM	−0.27 (−0.4, −0.15)^{S}	0.03 (−0.1, 0.16)^{T}	0.04 (−0.09, 0.16)^{T}
	F	−0.26 (−0.39, −0.13)^{S}	−0.01 (−0.14, 0.11)^{T}	−0.10 (−0.23, 0.03)^{T}
DC > 21 $km \cdot h^{-1}$ ($m \cdot min^{-1}$)	CD	−0.30 (−0.48, −0.13)^{S}	−0.44 (−0.61, −0.26)^{S}	−0.13 (−0.3, 0.04)^{T}
	FB	−0.42 (−0.6, −0.24)^{S}	−0.58 (−0.77, −0.39)^{S}	−0.55 (−0.73, −0.37)^{S}
	CM	N/A	−0.21 (−0.38, −0.04)^{S}	−0.12 (−0.3, 0.05)^{T}
	WM	−0.23 (−0.4, −0.06)^{S}	−0.38 (−0.55, −0.2)^{S}	−0.41 (−0.59, −0.24)^{S}
	OM	N/A	−0.51 (−0.71, −0.3)^{S}	−0.43 (−0.6, −0.26)^{S}
	F	−0.39 (−0.56, −0.21)^{S}	−0.48 (−0.66, −0.31)^{S}	−0.48 (−0.66, −0.31)^{S}
Peak speed ($km \cdot h^{-1}$)	CD	−1.00 (−1.14, −0.86)^{M}	−0.78 (−0.92, −0.65)^{M}	−0.72 (−0.85, −0.59)^{M}
	FB	−1.02 (−1.16, −0.89)^{M}	−0.86 (−1.01, −0.71)^{M}	−0.81 (−0.94, −0.67)^{M}
	CM	−0.72 (−0.85, −0.58)^{M}	−0.65 (−0.79, −0.52)^{M}	−0.57 (−0.7, −0.44)^{S}
	WM	−0.56 (−0.69, −0.43)^{S}	−0.38 (−0.51, −0.25)^{S}	−0.4 (−0.53, −0.27)^{S}
	OM	−0.90 (−1.03, −0.76)^{M}	−0.89 (−1.03, −0.74)^{M}	−0.66 (−0.8, −0.53)^{M}
	F	−0.84 (−0.98, −0.71)^{M}	−0.63 (−0.76, −0.5)^{M}	−0.68 (−0.81, −0.54)^{M}
$ACC_{<3}$ ($counts \cdot min^{-1}$)	CD	−0.12 (−0.24, 0.01)^{T}	0.00 (−0.12, 0.13)^{T}	−0.16 (−0.28, −0.03)^{T}
	FB	−0.31 (−0.43, −0.18)^{S}	−0.10 (−0.24, 0.04)^{T}	−0.33 (−0.45, −0.2)^{S}
	CM	−0.14 (−0.27, −0.01)^{T}	−0.03 (−0.15, 0.1)^{T}	−0.15 (−0.28, −0.03)^{T}
	WM	−0.11 (−0.24, 0.01)^{T}	−0.04 (−0.17, 0.08)^{T}	−0.15 (−0.28, −0.03)^{T}
	OM	−0.21 (−0.34, −0.09)^{S}	−0.02 (−0.15, 0.11)^{T}	−0.14 (−0.27, −0.02)^{T}
	F	−0.16 (−0.29, −0.04)^{S}	−0.12 (−0.24, 0.01)^{T}	−0.17 (−0.3, −0.04)^{T}
$ACC_{>3}$ ($counts \cdot min^{-1}$)	CD	0.12 (−0.01, 0.24)^{T}	0.02 (−0.11, 0.14)^{T}	0.05 (−0.08, 0.18)^{T}
	FB	0.11 (−0.01, 0.24)^{T}	0.12 (−0.05, 0.29)^{T}	0.16 (0.03, 0.29)^{T}
	CM	0.00 (−0.13, 0.12)^{T}	−0.04 (−0.16, 0.09)^{T}	0.09 (−0.04, 0.21)^{T}
	WM	0.10 (−0.03, 0.23)^{T}	0.15 (0.02, 0.28)^{T}	0.05 (−0.07, 0.18)^{T}
	OM	0.00 (−0.13, 0.13)^{T}	0.06 (−0.09, 0.22)^{T}	−0.02 (−0.14, 0.11)^{T}
	F	−0.01 (−0.13, 0.12)^{T}	0.13 (0.00 0.26)^{T}	0.08 (−0.05, 0.2)^{T}
$DEC_{<3}$ ($counts \cdot min^{-1}$)	CD	−0.13 (−0.26, −0.01)^{T}	−0.04 (−0.17, 0.08)^{T}	−0.15 (−0.28, −0.03)^{T}
	FB	−0.29 (−0.42, −0.17)^{T}	−0.11 (−0.25, 0.03)^{T}	−0.32 (−0.45, −0.19)^{S}
	CM	−0.14 (−0.27, −0.02)^{T}	−0.03 (−0.15, 0.1)^{T}	−0.16 (−0.29, −0.04)^{T}
	WM	−0.12 (−0.25, 0.01)^{T}	−0.05 (−0.18, 0.08)^{T}	−0.16 (−0.29, −0.04)^{T}
	OM	−0.21 (−0.34, −0.08)^{S}	−0.03 (−0.16, 0.1)^{T}	−0.13 (−0.26, −0.01)^{T}
	F	−0.18 (−0.31, −0.05)^{T}	−0.11 (−0.24, 0.01)^{T}	−0.18 (−0.3, −0.05)^{T}
$DEC_{>3}$ ($counts \cdot min^{-1}$)	CD	0.09 (−0.04, 0.22)^{T}	0.17 (0.04, 0.29)^{T}	0.1 (−0.02, 0.23)^{T}
	FB	0.00 (−0.13, 0.13)^{T}	0.07 (−0.09, 0.23)^{T}	0.13 (0.00, 0.26)^{T}
	CM	0.09 (−0.04, 0.21)^{T}	−0.07 (−0.2, 0.05)^{T}	0.17 (0.04, 0.29)^{T}
	WM	0.07 (−0.06, 0.2)^{T}	0.12 (−0.01, 0.25)^{T}	0.13 (0.00, 0.26)^{T}
	OM	0.04 (−0.09, 0.17)^{T}	0.12 (−0.03, 0.28)^{T}	0.00 (−0.12, 0.13)^{T}
	F	0.15 (0.02, 0.27)^{T}	0.11 (−0.02, 0.24)^{T}	0.00 (−0.13, 0.12)^{T}
Maximum accelerations ($m \cdot s^{-2}$)	CD	−0.28 (−0.41, −0.15)^{S}	−0.31 (−0.44, −0.19)^{S}	−0.32 (−0.44, −0.19)^{S}
	FB	−0.40 (−0.53, −0.28)^{S}	−0.45 (−0.62, −0.28)^{S}	−0.33 (−0.46, −0.2)^{S}

(Continues)

TABLE 2 | (Continued)

Variable	Position	Small versus match	Medium versus match	Large versus match
	CM	−0.26 (−0.39, −0.13)^{S}	−0.32 (−0.45, −0.19)^{S}	−0.19 (−0.32, −0.06)^{T}
	WM	−0.26 (−0.39, −0.13)^{S}	−0.21 (−0.33, −0.08)^{S}	−0.25 (−0.38, −0.12)^{S}
	OM	−0.40 (−0.53, −0.27)^{S}	−0.51 (−0.68, −0.35)^{S}	−0.39 (−0.52, −0.26)^{S}
	F	−0.33 (−0.46, −0.21)^{S}	−0.20 (−0.33, −0.07)^{T}	−0.21 (−0.34, −0.08)^{S}
Maximum decelerations (m·s^{-2})	CD	0.42 (0.29, 0.54)^{S}	0.33 (0.21, 0.46)^{S}	0.33 (0.21, 0.46)^{S}
	FB	0.48 (0.35, 0.61)^{S}	0.61 (0.43, 0.78)^{M}	0.47 (0.34, 0.6)^{S}
	CM	0.34 (0.21, 0.47)^{S}	0.37 (0.24, 0.49)^{S}	0.27 (0.14, 0.39)^{S}
	WM	0.38 (0.25, 0.51)^{S}	0.25 (0.12, 0.37)^{S}	0.28 (0.15, 0.41)^{S}
	OM	0.42 (0.3, 0.55)^{S}	0.61 (0.45, 0.77)^{M}	0.36 (0.23, 0.49)^{S}
	F	0.44 (0.31, 0.57)^{S}	0.33 (0.21, 0.46)^{S}	0.34 (0.21, 0.47)^{S}

Note: Values are presented as effect size (95% CI).
Abbreviations: ACC = accelerations; CD = central defender; CM = central midfielder; DC = total distance covered; DEC = decelerations; F = forward; FB = fullback; L = large; Large = mean values of the large position games; M = moderate; Match = mean values of the competitive match; Medium = mean values of the medium position games; OM = offensive midfielder; *p*-value = *p*-value of the statistical model; S = small; Small = mean values of the small position games; T = trivial; VL = large; WM = wide midfielder.

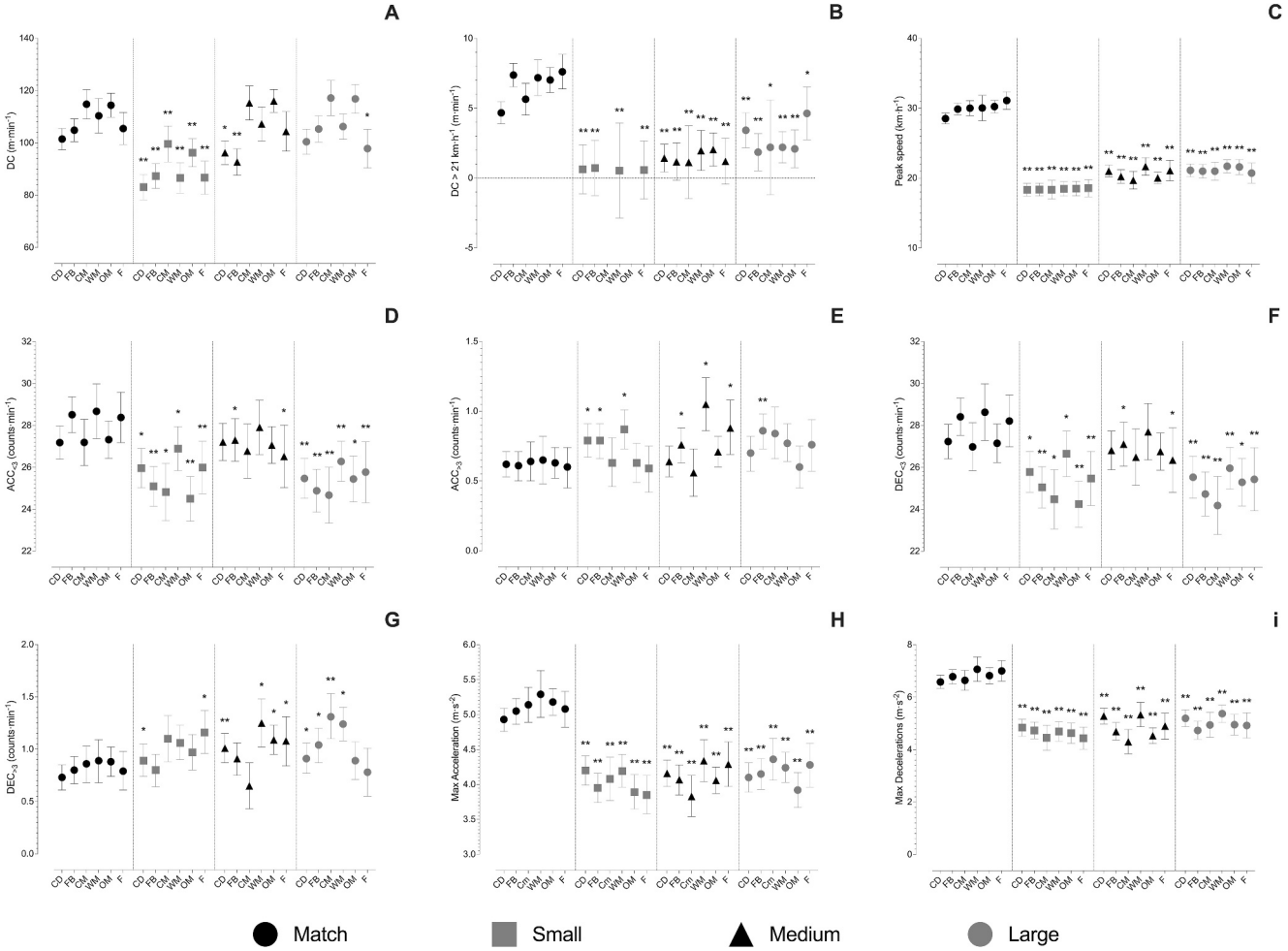

FIGURE 3 | Comparative analyses between the conditions (match, small, medium, and large) for different player positions with external load variables: A) DC, B) DC > 21 km·h^{-1}, C) peak speed, D) ACC$_{<3}$, E) ACC$_{>3}$, F) DEC$_{<3}$, G) DEC$_{>3}$, H) max accelerations, and I) max decelerations. * = Statistically significant differences between conditions ($p < 0.05$), ** = Statistically significant differences between conditions ($p < 0.001$). ACC = accelerations; CD = central defender; CM = central midfielder; DC = total distance covered; DEC = decelerations; F = forward; FB = fullback; Max = maximum; OM = offensive midfielder; WM = wide midfielder.

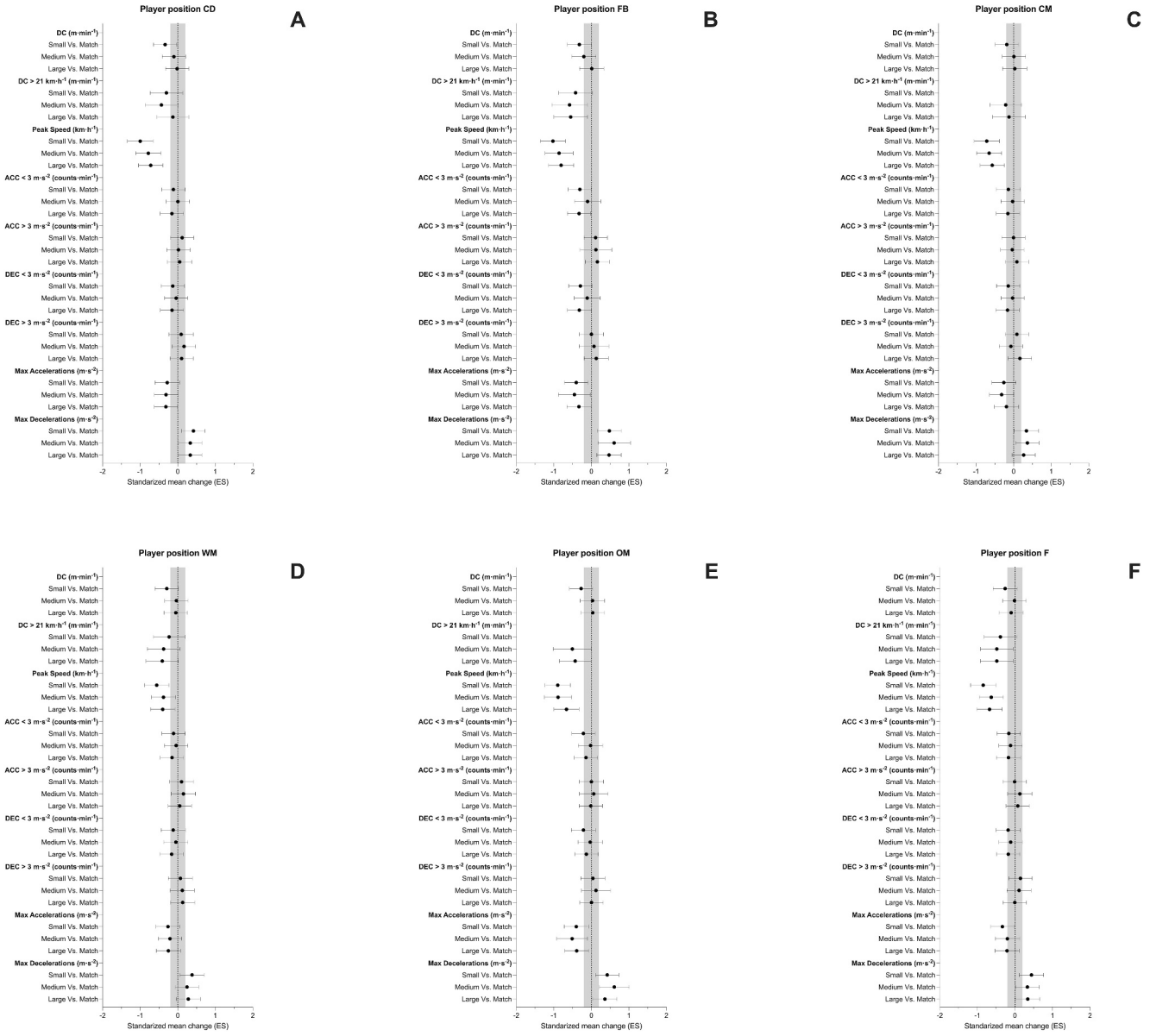

FIGURE 4 | Effect sizes of the differences between competitive matches (match) and small position games (small), medium position games (medium), and large position games (large) conditions for the different external load variables analyzed and the player positions. A) Central defender, B) fullback, C) central midfielder, D) wide midfielder, E) offensive midfielder, F) forward. ACC = accelerations; CD = central defender; CM = central midfielder; DC = total distance covered; DEC = decelerations; F = forward; FB = fullback; Max = maximum; OM = offensive midfielder; WM = wide midfielder. A value lower than zero denotes an effect size favoring the match condition. The gray dashed vertical lines delimit the lower (−0.20) and the upper limits (0.20) of a trivial effect size.

comparing various formats of possession games and analyzing the most demanding phases of matches has consistently indicated that all player positions generally exhibit reduced locomotor demands (total distance covered, high-intensity running, and sprinting) and a higher mechanical load (high accelerations and decelerations) during these games compared to matches (Martín-García et al. 2020; Martin-Garcia et al. 2019). Consistent with these findings, the limited space within position games, coupled with players spending more time in close proximity to the ball, may have contributed to FB and WM having higher $ACC_{>3}$ and CD, WM and F more $DEC_{>3}$ than observed in competitive matches. The exceptions to this trend were the two central midfield positions (CM and OM), which did not show significant differences of $ACC_{>3}$ and $DEC_{>3}$ between the activities. Although central midfielders are typically tasked with transitioning plays between defense and attack (Dios-Álvarez et al. 2024), the limited spatial dimensions inherent in position games may have constrained their movement intensities to prevent encroachment on surrounding positional areas.

When comparing the positional demands of official matches with those of each differentiated position game based on its size, the findings were closely aligned with the previously published literature comparing position games and matches (Asian-Clemente, Beltran-Garrido, and Requena 2025). Across the three sizes of the studied position games, players in all positions exhibited lower DC > 21 $km \cdot h^{-1}$, peak speed, maximum accelerations, and maximum decelerations than in the matches.

Likewise, these results are consistent with previous findings by other researchers, who have asserted that small-sided games with formats smaller than official or friendly matches (involving fewer players and smaller relative playing areas per player) do not meet the speed, sprint, or peak speed requirements of full matches (Casamichana, Castellano, and Castagna 2012; Martín-García et al. 2020; Martin-Garcia et al. 2019; Asian-Clemente et al. 2022b; Dios-Álvarez et al. 2024). Although these studies did not specifically consider maximum acceleration and deceleration variables, it is well known that players face greater difficulty in achieving high-speed situations when playing in smaller spaces (Asian-Clemente et al. 2021), limiting the potential to achieve maximum acceleration and deceleration values within the game scenario.

Another variable, DC, yielded varying results depending on the size of the position games. While in the small position game, all positions exhibited lower demands than in the matches, during medium position games, CD and FB showed lower values, and in the large position game, only F position reported lower demands. These findings are consistent with previous studies that indicate that as the format of position (Asian-Clemente, Beltran-Garrido, and Requena 2025) or possession game (Martín-García et al. 2020; Martin-Garcia et al. 2019) increases, these tasks tend to more closely approximate the demands of competition. In line with this notion, a recent publication has stated that relative areas smaller than 100 m^2 per player during small-sided games fulfill 53% of the DC demands of the worst-case scenario of a match in one minute, and as these areas increase, these differences tend to become reduced (Dios-Álvarez et al. 2024). Similarly, in a study comparing position games of different sizes, although position-specific demands were not indicated, larger formats were found to impose greater DC demands on soccer players (Asian-Clemente et al. 2024a), which could explain the differences found in the current study.

Regarding the demands of accelerations and decelerations in small-sided games when coaches employ different pitch sizes, the literature has presented conflicting findings (Castillo et al. 2021). In accordance with the specific literature (Asian-Clemente, Beltran-Garrido, and Requena 2025), the results of this study indicate that the mechanical load behavior (acceleration and deceleration requirements) during the position games depends on the selected variable, the position of the player, and the size of the tasks. Specifically, concerning $ACC_{<3}$ and $DEC_{<3}$, a previous work has shown that position games, regardless of their size (small, medium, or large), present a lower number of these types of accelerations and decelerations compared to matches (Asian-Clemente, Beltran-Garrido, and Requena 2025). In this study, considering the individual external load of players based on their positions, it was observed that the three position game formats showed lower or equal values for these variables compared to matches. In small and large position games, all positions exhibited lower $ACC_{<3}$ and $DEC_{<3}$, whereas in medium position games, FB and F positions showed differences compared to competition matches. Previous research has suggested that during matches, a higher proportion of time is spent at speeds between 0.0 and 6.9 $km \cdot h^{-1}$ compared to similar training drills (Casamichana, Castellano, and Castagna 2012), which could result in higher demands for low-intensity accelerations and decelerations. Similarly, it has been recommended in the previous literature that small-sided games with a relative area per player of approximately 80–90 m^2 are generally conducive to tactical training during drills (Fradua et al. 2013). Given that this was the area of the medium position games, it could explain why similar results were found for CD, CM, OM, and WM positions, while the differences in FB and F positions may be attributed to these positions showing the highest values during matches. This aligns with the findings of previous authors (Dios-Álvarez et al. 2024), although they observed the highest acceleration demands in the FB and WM positions. In the results of this study, despite WM being one of the positions with the highest values of these variables during competition, they exhibited similar results during medium position games. Discrepancies between studies in the WM position may be attributed to the fact that those authors only studied accelerations > 3 $m \cdot s^{-2}$ and their tasks had a different format.

Regarding $ACC_{>3}$ and $DEC_{>3}$, the results obtained also confirmed that the requirements of these variables depend on the type of drills and positions. Consistent with previous publications (Martín-García et al. 2020; Martin-Garcia et al. 2019), possession games, characterized by a smaller relative area per player and fewer players, exhibited more high-intensity accelerations and decelerations than matches. Likewise, small-sided games played with a smaller area per player (e.g., 100 m^2) reproduce the most demanding match scenarios in terms of high-intensity accelerations and decelerations compared to formats with a larger relative area per player, such as 200 m^2 or 300 m^2 (Dios-Álvarez et al. 2024). In general, it has been stated that small, medium, and large position games present higher demands for high-intensity accelerations and decelerations compared to matches (Asian-Clemente, Beltran-Garrido, and Requena 2025). However, when considering each position, it has been shown that CD and FB showed higher $ACC_{>3}$ or $DEC_{>3}$ values in all three sizes of position games compared to full matches, MF and OM only showed higher $DEC_{>3}$ than matches in the large and medium position game respectively, and WM and F exhibited higher values of both variables in the medium size of position game. This diversity of results depending on the role occupied by the player in the task and sizes of position games suggests the need for further investigation into the demands of these tasks to gain a deeper understanding of position games.

Although the results of this study provide some insight into position games, the findings should be interpreted with caution due to several limitations. First, this study was conducted solely with a single professional team, raising the question of whether these results can be generalized to other populations, such as young developing players or female footballers. Additionally, only one position game format (9 vs 9 + 2) was examined, with the largest size having a relative area per player of 115.9 m2 and limited to a maximum of 2 touches per player. Considering that the relative area per player, the number of players, and the number of allowed touches are highly influential variables in task demands, it would be beneficial to investigate position games with different formats and varying numbers of allowed touches. Similarly, the external load of position games was compared to that of matches in which two different playing systems were used. Given that this study did not differentiate the load of the competition based on the system used, it would

be interesting to conduct studies comparing the demands of position games with different playing systems. Secondly, the number of satellites and horizontal dilution of precision were not estimated during the data collection. Therefore, these aspects should be considered when interpreting the data, and it would be interesting to conduct future position game studies that provide this information. Lastly, no internal load variables were studied, leaving a gap in understanding relating to players' physiological responses. Conducting studies that analyze internal load variables during position games could prove valuable in further understanding these training drills.

The present study has several practical implications for coaches in structuring their training sessions. These results reveal that when using position games during training sessions, coaches should be aware that these exercises may not replicate the same physical demands required in the competition. Moreover, players may experience varying external loads depending on their positions within the task, which could lead to different adaptations and, consequently, an increased risk of injury. For this reason, it is recommended to analyze the individual load each player experiences during these exercises and compare it with their competitive performance. If the desired objectives are not achieved, complementary tasks should be implemented for each player, such as other activities proposed in the literature, like transition games (Asian-Clemente et al. 2023a, 2023b, 2024c). These tasks could provide a greater stimulus, particularly for high-speed and sprinting demands, better preparing players for the challenges they may face in competition. Similarly, it should be noted that the position games investigated in this study could be used on the days leading up to the match (match day −1 or −2), as they exhibit reduced load compared to matches for most of the studied variables. Additionally, since they demonstrate higher requirements for high-intensity accelerations and decelerations, they could effectively activate players ahead of the match. Similarly, they could be used during the microcycle acquisition phase (match day −3 or −4). However, in this case, it would be advisable to complement the training with other tasks, as recommended earlier.

7 | Conclusions

This study showed that the position games collectively exhibited lower running demands compared to matches in all positions, including lower DC > 21 $km \cdot h^{-1}$, peak speed, $ACC_{<3}$, $DEC_{<3}$, and maximum accelerations and decelerations. When position games were differentiated according to their size, this trend persisted in small and large position games. However, in medium position games, all positions showed lower values of DC > 21 $km \cdot h^{-1}$, peak speed, and maximum accelerations and decelerations. In addition, the position games displayed higher $ACC_{>3}$ and $DEC_{>3}$ than the matches for certain positions, depending on the size of the position game and the role occupied by the player.

Acknowledgments

The authors have nothing to report.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The authors have nothing to report.

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