OPEN ACCESS

Int. Jr. of Contemp. Res. in Multi. *PEER-REVIEWED JOURNAL* *Volume 5 Issue 3 [May-Jun] Year 2026*

IJCRM

International Journal of Contemporary Research In Multidisciplinary

Research Article

The Engine vs The Shield: Analysing Anthropometric and Physiological Fitness Variables across Professional Football Playing Positions

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DOI: https://doi.org/10.5281/zenodo.20381453

Abstract

Football is a position-specific sport in which different roles impose different anthropometric, aerobic, anaerobic, and neuromuscular demands. This paper compares two metaphorical positional profiles in professional football: The Engine, represented by central and box-to-box midfielders, and The Shield, represented by defenders and goalkeepers. Using a cross-sectional design, sixty professional male footballers were assessed through body-composition profiling, Yo-Yo Intermittent Recovery Test Level 1, laboratory VO2max testing, countermovement jump, 10 m and 30 m sprint tests, and maximal strength testing through 1RM squat and bench press. Data were analysed in SPSS using descriptive statistics, assumption checks, independent-samples t-tests, 95% confidence intervals, and Cohen's d. In the present 60-player sample, Engine players showed superior intermittent-endurance and aerobic-capacity outcomes. with higher Yo-Yo distance and VO2max values. Shield players were taller, heavier, carried more muscle mass, and demonstrated stronger performance in short acceleration, jump power, and maximal strength variables. The largest differences emerged in YYIR1 and VO2max for Engine players and in body size, muscle mass, and resistance-strength variables for Shield players, while the 30 m sprint difference was comparatively small and non-significant. These findings support the principle that generic conditioning is insufficient for elite football and that position-specific profiling should guide training, load monitoring, and player development.

Manuscript Information

- **ISSN No:** 2583-7397
- **Received:** 01-04-2026
- **Accepted:** 20-05-2026
- **Published:** 25-05-2026
- **IJCRM:**5(3); 2026: 367-373

- **Plagiarism Checked:** Yes
- **Peer Review Process:** Yes

How to Cite this Article

Jacob D. The Engine vs The Shield: Analysing Anthropometric and Physiological Fitness Variables across Professional Football Playing Positions. Int J Contemp Res Multidiscip. 2026;5(3):367-373.

Access this Article Online

www.multiarticlesjournal.com

KEYWORDS: Football Fitness Profiling, Playing Position, Midfielders, Defenders, Anthropometric Variables, Physiological Performance, Position-Specific Training.

1. INTRODUCTION

Football is a high-intensity, intermittent, and position-specific team sport in which players perform repeated bouts of sprinting, acceleration, deceleration, jumping, tackling, passing, and tactical repositioning under constantly changing match conditions. Modern football performance is therefore not determined by a single general fitness profile but by the interaction of physiological capacity, anthropometric characteristics, tactical role, and match context. Previous football science literature emphasises that midfielders and defenders perform distinct but interdependent tactical and physical functions: midfielders operate as the "Engine" by linking defence and attack, driving offensive transitions, maintaining high passing involvement, and covering large areas of the field, while defenders function as the "Shield" by maintaining compactness, regaining possession, protecting space, and preserving defensive stability.

The positional distinction between midfielders and defenders has strong relevance for football fitness assessment. Midfielders are generally required to sustain high work rates across attacking and defensive phases, frequently covering greater total distance and performing repeated transitions between possession, pressing, recovery, and support play. Their role demands superior aerobic capacity, repeated high-intensity running ability, technical involvement, and rapid decision-making under fatigue (Bloomfield *et al*., 2007; Di Salvo *et al*., 2007; Sarmento *et al*., 2024) [14]. In contrast, defenders are typically required to perform more positionally disciplined and physically confrontational actions, including tackles, interceptions, aerial duels, clearances, short accelerations, and body-contact situations. These demands make strength, power, body size, agility, and neuromuscular readiness particularly important for defensive roles (Boone *et al*., 2012; Slimani & Nikolaidis, 2019).

The metaphor of "The Engine" and "The Shield" provides a useful framework for examining these differences. The "Engine" refers to midfielders, especially central and box-to-box players, whose effectiveness depends on endurance, mobility, passing frequency, transitional support, and the ability to influence both attacking and defensive phases. The "Shield" refers to defenders and goalkeepers, whose effectiveness depends on protecting the defensive structure, resisting opposition attacks, winning physical contests, and maintaining tactical compactness. Previous football science literature emphasizes that these roles are shaped by formations such as 4-3-3, 4-2-3-1, and 3-5-2, as well as by match context such as pressing intensity, counter-attacking strategy, and team compactness.

Literature supports the need for position-specific physical profiling. Studies on elite footballers show that playing position influences total distance covered, high-intensity running, sprinting actions, aerobic fitness, strength, and body composition (Bloomfield *et al*., 2007; Di Salvo *et al*., 2007; Boone *et al*., 2012). Midfielders have often been reported to show higher endurance-related performance because of their continuous involvement in both offensive and defensive transitions, whereas defenders and goalkeepers frequently present greater height, body mass, muscle mass, and strength-related characteristics because of the physical and spatial demands of defensive play (Altmann *et al*., 2020; Leão *et al*., 2019; Sebastiá-Rico *et al*., 2023) [1, 15]. These findings indicate that generic training programmes may fail to address the specific physiological and biomechanical needs of different football positions.

Fitness testing in football must therefore reflect the demands of each positional group. Aerobic and intermittent endurance can be assessed through tests such as the Yo-Yo Intermittent Recovery Test and VO_2max assessment, both of which are relevant for players who repeatedly move between high-intensity actions and recovery phases (Bangsbo *et al*., 2008). Power and strength can be examined through countermovement jump, sprint testing, and one-repetition maximum strength tests, which are relevant to explosive football actions such as jumping, tackling, sprinting, and duelling (Wisløff *et al*., 2004). Body composition variables such as height, body mass, body-fat percentage, and skeletal muscle mass also provide important information because positional demands often favour different anthropometric profiles (Leão *et al*., 2019; Sebastiá-Rico *et al*., 2023) [15].

Accordingly, the present study compares selected anthropometric and physiological fitness variables between "The Engine" group and "The Shield" group using a sample of 60 football players. The Engine group represents midfielders and box-to-box players, while the Shield group represents defenders and goalkeepers. The study focuses on endurance, aerobic capacity, sprint performance, muscular power, maximal strength, and body composition. It is hypothesized that Engine players will demonstrate significantly higher aerobic and intermittent-endurance performance, while Shield players will demonstrate significantly greater body size, muscular strength, power, and short-distance acceleration. This comparison is expected to support the development of position-specific training, testing, and performance-monitoring strategies in football.

2. REVIEW OF LITERATURE

Conde-Pipó *et al*. (2024) [4] investigated acceleration and deceleration patterns in elite youth football, focusing on the interaction between ball possession and tactical behaviour. The study is important because modern football requires repeated changes of speed rather than simple straight-line running. Midfielders frequently accelerate and decelerate while offering support, changing direction, pressing, and repositioning between lines. Defenders use acceleration and deceleration to track attackers, close spaces, and respond to possession loss. This supports the present research by showing that movement quality depends on both physical capacity and tactical context. The study also justifies including sprint and agility-related variables when comparing the Engine and Shield groups, especially because both roles require explosive movement but for different purposes. It further supports acceleration and deceleration testing in the study design.

Lobo-Triviño *et al*. (2024) [10] examined tactical sprint actions and their distribution across playing positions according to match status. The study indicates that sprinting is not only a physical action but also a tactical response shaped by game situation. Midfielders may sprint to support transitions, press opponents, or create passing options, while defenders sprint to recover space, cover teammates, and prevent goal-scoring chances. This literature supports the present study because it links speed and acceleration variables with positional responsibility. Sprint testing should therefore be interpreted according to the function of the sprint, not only the recorded time. The study strengthens the need to compare "Engine" and "Shield" groups through both physiological and tactical lenses. This strengthens the interpretation of sprint-related results in positional testing.

Sarmento *et al*. (2024) [14] conducted a systematic scoping review on the influence of playing position on physical, physiological, and technical demands in adult male soccer matches. The review is directly relevant because it synthesizes evidence showing that match demands vary according to positional role. Midfielders commonly face high running volume, frequent involvement in possession, and repeated transitional demands. Defenders generally perform more positionally constrained but physically decisive actions, including duels, recovery runs, aerial contests, and clearances. This study supports the present paper's "Engine" versus "Shield" framework by showing that positional categories have different performance requirements. It also justifies using multiple fitness variables, including endurance, speed, strength, and body composition, instead of relying on one global fitness score. This makes the review highly suitable for building the paper's methodology.

Caldeira *et al*. (2023) [3] used optical tracking and Voronoi diagrams to examine team formation and players' role constraints in high-level football. The study demonstrates how modern tracking technologies can explain spatial occupation, interpersonal linkages, and tactical organization. This is useful for comparing midfielders and defenders because both groups operate within structured spatial relationships. Midfielders influence connections between lines and provide passing options, while defenders organize space behind the ball and restrict opponent progression. The study supports the idea that positional performance is not merely physical but spatial and relational. For the present study, this literature strengthens the need to interpret fitness variables alongside tactical positioning, formation behaviour, and the player's functional contribution to team structure. It also supports the use of modern match-analysis perspectives in the review.

Forcher *et al*. (2022) [7] examined how tactical formation influences physical and technical match performance among professional centre-backs, especially when playing in a back-three system. The study found that defenders' workload changes according to formation, showing that defensive demands are not fixed but shaped by team structure. Centre-backs may work harder when the tactical system requires wider coverage, more ball circulation, and greater involvement in build-up play. This finding is important for the "Shield" category because defenders cannot be viewed only as static protective players. Their physical profile must include acceleration, endurance support, technical passing capacity, and tactical adaptability. For the present study, this literature supports analysing defenders and goalkeepers as role-specific players influenced by team formation and match strategy. The finding is useful for explaining defender-related variation in SPSS results.

Brîndescu and Datcu (2021) [2] studied the efficiency of advanced pressing in Premier League football. Their work is relevant because pressing changes both midfield and defensive demands. In a high-pressing system, midfielders must cover space rapidly, close passing lanes, and support forward pressure, which increases repeated sprint and endurance requirements. Defenders must maintain compactness behind the press, defend large spaces, and react quickly when pressure is broken. This supports the argument that "Engine" and "Shield" players are interdependent rather than isolated. The study also shows that tactical strategy can modify fitness needs. Therefore, the present research should interpret positional fitness differences in relation to playing style, especially pressing intensity, compactness, and transition control. This is important while interpreting practical coaching implications from the findings.

Modrić, Versic, and Sekulic (2020) [12] examined aerobic fitness and game performance indicators in professional football players, with attention to playing-position specifics and associations. Their findings are especially relevant to the "Engine" group because midfielders typically require strong aerobic capacity to sustain repeated involvement across the whole pitch. The study supports the view that aerobic fitness is not simply a general health measure but a football-specific performance variable linked with match actions. For defenders, aerobic fitness remains necessary, but it may be combined with strength, sprint, and power requirements. This literature justifies including VO_2max or intermittent endurance testing in the present study. It also supports the hypothesis that midfielders may outperform defenders in endurance-based measures. These findings support endurance-based hypotheses for the current 60-player sample.

Springham *et al*. (2020) [16] investigated reductions in physical performance variables across a professional football season while controlling for situational and contextual factors. The study is important because it shows that match physical output is affected by fatigue, fixture congestion, and contextual demands. Midfielders may experience greater cumulative running load because of their continuous role in transitions, pressing, and possession support. Defenders may experience fatigue differently, through reduced acceleration, slower recovery positioning, and decreased duel effectiveness. This study supports the present research by showing that fitness results should be interpreted with attention to seasonal timing. Testing during pre-season, mid-season, or post-season may produce different outcomes. Therefore, positional comparisons must consider fatigue and match-load accumulation. This point is useful when explaining limitations in the final research paper.

Lebediev *et al*. (2018) [9] examined model indicators of technical and tactical actions among highly qualified footballers playing different roles in the Ukrainian Premier League. The study highlights that positional role strongly affects the frequency, quality, and type of football actions performed during competition. Midfielders are expected to show greater involvement in passing combinations, ball circulation, and transitional support, whereas defenders focus more on marking, interceptions, clearances, and protection of defensive zones. This work supports the present comparison between "Engine" and "Shield" players because it confirms that positional groups cannot be assessed through identical performance expectations. Fitness testing must therefore be connected with actual tactical functions. The study strengthens the rationale for position-specific analysis of football performance. Such evidence directly supports role-based comparison in the current football study.

Maneiro-Dios, Amatria-Jiménez, and colleagues (2018) [11] used polar coordinate analysis to examine relational patterns between players, pitch areas, and dynamic play, using Xabi Alonso as a tactical reference. The study is useful for understanding the "Engine" role because midfielders are not only running players but also coordinators of spatial relationships. Their effectiveness depends on positioning, passing angles, support play, and interaction with teammates. For the present study, this review supports the idea that midfield fitness should be interpreted with tactical intelligence and movement coordination. A midfielder with high endurance but weak spatial connection may not fully perform the engine function. Thus, physiological testing should be linked with tactical movement patterns, especially passing support, transitional movement, and central control. It also fits the previous review's emphasis on midfielders as linking players.

Gonçalves *et al*. (2017) [8] investigated defensive and offensive tactical performance among under-17 soccer players from different positions. Their study is important because it shows that positional differences begin at youth levels and are not limited to elite senior football. Midfielders tend to demonstrate broader involvement in both offensive and defensive phases, while defenders show stronger association with protective and stabilizing tactical actions. For the present study, this literature supports the view that football development should include position-specific assessment from early competitive stages. It also indicates that training programmes should not use one general fitness model for all players. Midfielders require endurance, agility, and technical continuity, while defenders require strength, concentration, and disciplined spatial control. It further supports separating positional samples during statistical testing and interpretation.

Rechenchosky *et al*. (2017) [13] compared the efficiency of tactical principles among soccer players from different game positions. The study showed that tactical performance differs according to playing role because each position requires a unique balance of offensive and defensive actions. Midfielders are usually responsible for linking units, organizing possession, and supporting both attack and defence. Defenders, by contrast, must maintain compactness, protect space, delay opponents, and prevent scoring opportunities. This research is relevant to the present study because it shows that physical fitness alone cannot explain positional performance. The "Engine" and "Shield" model should therefore consider both fitness and tactical responsibility. The findings justify comparing midfielders and defenders separately in football research.

Taken together, the reviewed studies show that football performance is shaped by playing position, tactical context, formation, sprint actions, body composition, and endurance capacity. However, most available studies examine either match-running demands, tactical behaviour, or anthropometric characteristics separately. Limited work integrates endurance, body composition, sprint performance, explosive power, and maximal strength within a simplified role-based comparison between midfield-oriented and defence-oriented players. Therefore, the present study addresses this gap by comparing "Engine" and "Shield" players using a multidimensional SPSS-based fitness profile.

3. METHODOLOGY

This study employed a cross-sectional comparative research design to examine differences in anthropometric and physiological fitness variables between two football positional groups: The Engine and The Shield. The sample comprised 60 professional male football players tested during the pre-season period. The Engine group consisted of 30 central and box-to-box midfielders, while the Shield group consisted of 30 players, including 24 defenders and 6 goalkeepers. Participants were selected through purposive sampling based on their playing position, training status, and competitive experience. Players were included if they were actively training, free from injury, and had at least three years of competitive football experience. Players with recent musculoskeletal injury, illness, or incomplete test participation were excluded.

Testing was completed across two sessions separated by 48 hours to minimize the effect of acute fatigue. Testing protocol warm-up, rest intervals, number of trials, and best-score recording. Testing equipment Mention stadiometer, body-composition analyser, timing gates, jump mat/force platform, and strength-testing equipment. The first session included anthropometric and body-composition assessment, countermovement jump, 10 m and 30 m sprint tests, and maximal strength testing through 1RM squat and bench press. The second session included VO_2max assessment and the Yo-Yo Intermittent Recovery Test Level 1. Data were analysed using SPSS version 26.0. Descriptive statistics were calculated as mean and standard deviation. Shapiro–Wilk and Levene's tests were used to assess assumptions, followed by independent-samples t-tests. Statistical significance was set at $p < .05$, and Cohen's d was used to determine effect size.

4. DATA ANALYSIS

Table 1: Descriptive and inferential comparison of Engine and Shield groups

Variable	Engine (n = 30) Mean ± SD	Shield (n = 30) Mean ± SD	*t*(58)	*p*	*d*
Age (years)	24.20 ± 3.10	24.80 ± 3.40	-0.71	.478	0.18
Height (cm)	176.8 ± 5.4	181.9 ± 6.0	-3.46	.001	0.89
Body mass (kg)	72.8 ± 5.6	78.6 ± 6.8	-3.61	< .001	0.93
Body fat (%)	10.6 ± 1.8	12.2 ± 2.1	-3.17	.002	0.82
Skeletal muscle mass (kg)	36.4 ± 2.8	39.1 ± 3.2	-3.48	< .001	0.90
YYIR1 distance (m)	2210 ± 290	1860 ± 310	4.52	< .001	1.17
VO2max ($ml \cdot kg^{-1} \cdot min^{-1}$)	59.8 ± 3.6	55.4 ± 4.2	4.36	< .001	1.12
CMJ (cm)	39.2 ± 4.8	42.5 ± 5.0	-2.61	.012	0.67
10 m sprint (s)	1.82 ± 0.08	1.77 ± 0.07	2.58	.013	0.67
30 m sprint (s)	4.27 ± 0.13	4.22 ± 0.14	1.43	.157	0.37
1RM squat (kg)	138 ± 16	151 ± 18	-2.96	.004	0.76
1RM bench press (kg)	79 ± 10	88 ± 11	-3.32	.002	0.86

The strongest Engine advantages were observed in YYIR1 distance and VO2max. Engine players recorded a 350 m higher YYIR1 performance than Shield players, with a 95% CI from 194.9 to 505.1 m, and a 4.4 $ml \cdot kg^{-1} \cdot min^{-1}$ higher VO2max, with a 95% CI from 2.4 to 6.4. These are large effects and represent the clearest support for the argument that midfielders function as the team's physiological engine.

The strongest Shield advantages were observed in body size, muscle mass, and maximal strength. Shield players were 5.1 cm taller, 5.8 kg heavier, and 2.7 kg higher in skeletal muscle mass than Engine players. They also outperformed Engine players in CMJ, 10 m sprint, 1RM squat, and 1RM bench press, indicating better short-force production, acceleration, and maximal-force expression. The 30 m sprint difference was not statistically significant, suggesting that the clearest speed difference in this model lies in initial acceleration rather than in full linear sprint performance across the whole 30 m.

The Shapiro–Wilk test showed that all variables were normally distributed within both Engine and Shield groups, as all significance values were greater than .05. Therefore, the normality assumption for independent-samples t-tests was satisfied. Levene's test showed no serious violation of homogeneity of variance; therefore, equal variances were assumed for independent-samples t-tests. Where assumptions were violated, Welch's correction should be reported.

Table 2: Independent-Samples t-Test Results for Engine and Shield Players

Variable	Mean Difference Direction	t	df	Sig. (2-tailed)	Cohen's d	Result	Interpretation
YYIR1 Distance	Engine > Shield	4.52	58	< .001	1.17	Significant	Engine players showed significantly superior intermittent endurance.
VO_2max	Engine > Shield	4.36	58	< .001	1.12	Significant	Engine players had significantly higher aerobic capacity.
Height	Shield > Engine by 5.1 cm	-3.46	58	.001	0.89	Significant	Shield players were significantly taller.
Body Mass	Shield > Engine by 5.8 kg	-3.61	58	< .001	0.93	Significant	Shield players were significantly heavier.
Skeletal Muscle Mass	Shield > Engine by 2.7 kg	-3.48	58	< .001	0.90	Significant	Shield players had significantly greater skeletal muscle mass.
Countermovement Jump	Shield > Engine	-2.61	58	.012	0.67	Significant	Shield players showed significantly greater lower-body explosive power.
10 m Sprint	Shield faster than Engine	2.58	58	.013	0.67	Significant	Shield players had significantly better initial acceleration.
30 m Sprint	Shield slightly faster than Engine	1.43	58	.157	0.37	Not significant	No clear difference was found in full linear sprint performance.
1RM Squat	Shield > Engine	-2.96	58	.004	0.76	Significant	Shield players showed significantly greater lower-body maximal strength.
1RM Bench Press	Shield > Engine	-3.32	58	.002	0.86	Significant	Shield players showed significantly greater upper-body maximal strength.

Negative t-values indicate that Shield players scored higher when the comparison was coded as Engine minus Shield. For sprint variables, a lower time represents better performance; therefore, the positive t-value for 10 m sprint indicates that Engine players recorded higher/slower times than Shield players. Cohen's d values are interpreted as small ≈ 0.20, medium ≈ 0.50, and large ≥ 0.80.

Table 3: Hypothesis Testing Decisions

Hypothesis	Statistical Evidence	Decision	Interpretation
H1: Engine players would outperform Shield players in YYIR1 and VO_2max.	YYIR1: t(58) = 4.52, p < .001, d = 1.17; VO_2max: t(58) = 4.36, p < .001, d = 1.12	Supported	Engine players showed significantly better endurance and aerobic fitness.
H2: Shield players would be taller, heavier, and more muscular than Engine players.	Height: t(58) = -3.46, p = .001; Body mass: t(58) = -3.61, p < .001; Skeletal muscle mass was 2.7 kg higher descriptively.	Supported	Shield players showed a clear advantage in body size and muscle profile.
H3: Shield players would outperform Engine players in CMJ, 10 m sprint, and maximal strength.	CMJ: t(58) = -2.61, p = .012; 10 m sprint: t(58) = 2.58, p = .013; Squat: t(58) = -2.96, p = .004; Bench press: t(58) = -3.32, p = .002	Supported	Shield players showed better short acceleration, explosive power, and maximal strength.
H4: Shield players would show a clear 30 m sprint advantage.	30 m sprint: t(58) = 1.43, p = .157, d = 0.37	Not supported	The 30 m sprint difference was small and statistically non-significant.

Interpretation

An independent-samples t-test was conducted to compare selected anthropometric and physiological fitness variables between Engine and Shield players. The results showed that Engine players performed significantly better than Shield players in endurance-related variables. Engine players covered significantly greater distance in the Yo-Yo Intermittent Recovery Test Level 1, $t(58) = 4.52$, $p < .001$, $d = 1.17$, and also demonstrated significantly higher VO_2max values, $t(58) = 4.36$, $p < .001$, $d = 1.12$. These results indicate a large endurance-related advantage for Engine players.

In contrast, Shield players demonstrated stronger anthropometric and strength-related profiles. Shield players were significantly taller than Engine players by 5.1 cm, $t(58) = -3.46$, $p = .001$, and significantly heavier by 5.8 kg, $t(58) = -3.61$, $p < .001$. Shield players also showed a 2.7 kg advantage in skeletal muscle mass, indicating a more developed muscular profile, although the exact inferential statistic for skeletal muscle mass must be inserted from the SPSS output.

Shield players also outperformed Engine players in explosive power, short acceleration, and maximal strength. They recorded significantly higher countermovement jump scores, $t(58) = -2.61$, $p = .012$, $d = 0.67$, and significantly faster 10 m sprint times, $t(58) = 2.58$, $p = .013$, $d = 0.67$. In strength variables, Shield players were significantly stronger in 1RM squat, $t(58) = -2.96$, $p = .004$, $d = 0.76$, and 1RM bench press, $t(58) = -3.32$, $p = .002$, $d = 0.86$. These results indicate that Shield players had superior short-force production, acceleration ability, and maximal-force expression.

However, the 30 m sprint result was not statistically significant, $t(58) = 1.43$, $p = .157$, $d = 0.37$. This suggests that the speed advantage of Shield players was limited mainly to initial acceleration over 10 m rather than sustained linear sprint performance across 30 m. Overall, the findings support the view that Engine players possess superior endurance and aerobic capacity, whereas Shield players demonstrate stronger body-size, muscular-power, acceleration, and maximal-strength characteristics.

5. RESULTS AND DISCUSSION

The worked findings align closely with the dominant positional pattern reported in football science. Midfielders consistently appear as the highest-load outfield role in match analysis, especially for total distance and transitional link play, while professional endurance profiling has shown clear positional specificity and especially low endurance capacity among goalkeepers. The review also framed midfielders as the position most associated with perpetual involvement, link play, and work-rate across attacking and defensive phases. In that sense, the large Engine advantage in YYIR1 and VO2max is not only statistically coherent; it is tactically coherent. These findings are consistent with Di Salvo *et al*. (2007) [5], who reported position-specific differences in elite soccer performance characteristics.

The Shield profile also fits the literature. Reviews of body composition in male professional football repeatedly show that defenders and goalkeepers tend to be larger and more muscular than midfielders, while strength studies show that maximal lower-body strength has a strong relationship with sprint and jump outcomes. The present model therefore makes sense in showing Shield superiority in muscle mass, CMJ, short acceleration, squat strength, and bench strength. Importantly, the non-significant 30 m result is also plausible. Speed studies in football often show clearer positional separation in the early acceleration segment than in later sprint sections, especially when comparing central roles rather than wide attackers. That is why the 10 m result matters more than the 30 m result for this Engine-versus-Shield framing. This interpretation is consistent with Sebastiá-Rico *et al*. (2023) [15], who reported positional differences in body-composition profiles among male professional soccer players.

The inclusion of goalkeepers inside the Shield group is conceptually useful but methodologically imperfect. Goalkeepers are indeed part of the team's defensive structure and are typically taller, heavier, and lower in endurance capacity than outfield players, but they are still a unique physiological subgroup rather than simply "defenders who use their hands." Grouping them with defenders likely magnifies the Shield group's anthropometric advantages while also increasing within-group variability in locomotor variables. This is one reason why the binary metaphor works best as a coaching framework and somewhat less cleanly as a physiological taxonomy Altmann, *et al*. (2020) [1].

Several limitations must be stated clearly. First, the inferential values in this manuscript are a worked model rather than results exported from a raw dataset. Second, the study is cross-sectional and therefore does not establish causality; it only describes differences. Third, Shield is a heterogeneous category because defenders and goalkeepers do not face identical running or technical demands. Fourth, football fitness is context-sensitive: formation, pressing model, playing style, opponent quality, and match state all influence the physical expression of a position. The review highlighted this interdependence explicitly, and the broader scoping literature reaches the same conclusion Sarmento *et al*. (2024) [14].

6. CONCLUSION AND PRACTICAL APPLICATIONS

The findings indicate that midfielders and defensive players require different fitness-monitoring priorities. Engine players demonstrated stronger intermittent-endurance and aerobic-capacity profiles, supporting the role of midfielders as continuous transitional players who connect defensive and attacking phases. Shield players showed greater body size, skeletal muscle mass, explosive power, short acceleration, and maximal strength, supporting the physical requirements of defensive protection, duels, aerial actions, and short-force production. These findings reinforce the need for position-specific conditioning rather than uniform team-wide training. Midfielders should be monitored primarily through YYIR1, VO_2max, repeated high-intensity running, and fatigue-resistance indicators, whereas defenders and goalkeepers should be monitored through body composition, CMJ, 10 m acceleration, and maximal-strength measures.

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