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Analysis of Physical Fitness Variables Among Nigerian University Football Players

A Case Study of University of Ilorin Football League

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Abstract
This study was conducted to compare the physical fitness variables among University of Ilorin (UNILORIN) football league players. Ex-post facto research design was used in the study. The population of the study comprised all league players across the levels in the university. A sample of 42 participants was selected for the study from various playing positions (goalkeeper, defenders, midfielders and attackers). Five fitness variables were tested namely; cardiorespiratory endurance, muscular endurance, flexibility, agility and speed. Descriptive statistics using mean and standard deviation were used in answering the research question, with the norm ratings of each of the fitness variables measured, being used in grouping the participants into categories in which they belong, suitable for health and optimum performance. The data was analyzed using Analysis of Variance (ANOVA) at 0.05 level of significance. The results of the findings birthed the conclusion that; strikers possess superior strength levels than players in other positions and midfielders had higher levels of agility in comparison with goalkeepers and defenders. It was recommended among others that: coaches and trainers should give adequate consideration to the fitness levels of football players in aiding effective identification and selection of athletes while also carrying out periodic tests on the fitness and performance variables of their players at routine intervals to ensure enhanced fitness.

Keywords
physical fitness, human kinetics, football players, fitness testing, position, optimum performance

INTRODUCTION

Football, a globally celebrated sport, is characterised by its high-intensity, intermittent nature, demanding a multifaceted blend of physical attributes to meet the complex requirements of match play. Players must execute dynamic movements such as sprinting, tackling, jumping, and rapid directional changes, all of which rely on a combination of aerobic and anaerobic capacities, strength, agility, and coordination (Stølen et al., 2020). The World Health Organization (2020) describes physical fitness as the ability to engage in physical activity without duress, pointing out its importance in health, wellness and optimum sporting performance. According to Corbin, Welk, Corbin and Welk (2021), physical fitness within the field of sport, football especially, comprises health-related components (muscular strength, muscular endurance, cardio-respiratory endurance, flexibility, and body composition) and performance-related components (agility, speed, power, balance, and coordination). These characteristics have proven crucial towards the achievement of the diverse technicalities and physical demands of the sport, across different positions of play and level of competition (Bangsbo et al., 2015).

The physical demands of the game of football vary based on the position of play, with goalkeepers, defenders, midfielders and attackers requiring requisite levels of fitness in order to perform and deliver optimally on the field of play. Defenders have been noted to require improved levels of strength and power in order to aid their tackling and aerial dominance. Furthermore, midfielders are expected to possess increased levels of cardio-respiratory endurance, to sustain repetitive movements across longer distances during game play, with strikers exclusively reliant on the need for improved levels of speed and agility to get past defenders at a much faster pace (Reilly & Doran, 2020; Faude et al., 2021). The need for training programmes directed towards position-centred requirement have been delved into, in recent studies. Loturco et al. (2020) reported that professional football players display key disparities in speed and aerial performance, when compared in terms of playing positions, with attackers showcasing elevated levels of sprint speed in comparison to defenders. Nobari *et al.* (2022) further pointed out that midfielders operate on an increased level of gameplay, evidenced from their back-and-forth sprint movement over greater distances, prompting the need for an improved level of cardio-respiratory endurance, when compared to other positions of play.

In the sports world within the University of Ilorin, football is regarded as a bedrock and frontline figure of the institution's drive towards sport excellence. This has been displayed through the consistent participation in National University Games (NUGA) and local leagues. Due to the lack of access to advanced training equipment and resources, often available to professional clubs, university teams face challenges relating to inadequate infrastructure, crude training methods and designs evident in a lack of specific training programmes aligned to meet positional demands during gameplay (Owoeye et al., 2023). These challenges are evident in training approaches that fail to meet the distinct fitness needs of players across different playing positions thus, predisposing players to performances below par, fraught with risks of injury (Owoeye et al., 2014). Almagro *et al*. (2021) also reiterated on absence or substandard position-specific training as being a principal cause of overuse injuries, frequently noticed in amateur and semi-professional levels of competitive play, where there is less inclination towards proper recovery and training monitoring.

Recent studies have further unraveled the benefits of individualized fitness programmes and assessments in optimizing performance in the game of football. McLaren et al. (2023) delved into the physical fitness profiles of semi-professional football players and noted significant disparities in aerobic capacity and anaerobic power across age brackets and positions of play. It has been discovered that young soccer players within the age range of 18–22 years possessed greater levels of speed and agility but possessed lower endurance levels, in comparison with older players between the ages of 23–30 years and this prompts the need for age-centric training models. Ribeiro *et al*. (2024) investigated the impact of positional demands on physical fitness, reporting that midfielders and attackers require improved levels of speed and agility in comparison with defenders. These findings point towards the need for a tailored training regimen that embodies both positional and age-related disparities in physical fitness.

OBJECTIVES OF THE STUDY

The objectives of the study were to examine the:

i. fitness variables (cardio-respiratory endurance, muscular strength, flexibility, agility, speed) of Unilorin league players.
ii. differences in the fitness variables of Unilorin league players based on position of play
iii. differences in the fitness variables of Unilorin league players based on level

MATERIALS AND METHODS

Ex-post facto research design was used for this study. The population for this study comprised eighty-four (84) registered athletes in Unilorin Football League, Proportionate sampling of 50% was used to select the participants from each level, participating in the league.

Table 1 Distribution of Unilorin League Players from the Population

S/N	Level	Population of Participants	50% of Population
1.	100	21	11
2.	200	22	12
3	300	20	10
4	400	21	11
Total		84	42

The standardized instruments used for data collection were calibrated before use. These included; Seca 213 portable stadiometer to measure body height; HANA weighing scale, to measure body weight; Stopwatch (Promado) in timing participants during tests. 12 minutes walk (Cooper test), push up test, sit and reach test, Illinois run test, 50m dash were utilized as field tests in the measurement of cardio-respiratory endurance, muscular strength, flexibility, agility and speed. Descriptive statistics of mean and standard deviation were employed alongside placement in fitness categories, based on the normative reference values of each of the fitness variable measured and inferential statistics of ANOVA was used to test the hypotheses at 0.05 alpha level.

RESULTS

Analysis of Demographic Information

Table 2 Distribution of the Participants by Level, Age and Position of Play

Levels	Frequency	Percentage (%)
100	10	23.8
200	11	26.2
300	11	26.2
400	10	23.8
Total	**42**	**100.0**
Age (years)		
18-20	14	33.3
21-23	17	40.5
24-26	11	26.2
Position of Play		
Defenders	11	26.2
Midfielders	12	28.6
Attackers	14	33.3
Goalkeeper	5	11.9
Total	**42**	**100.0**

Table 3 Descriptive Analysis of the fitness variables (cardio-respiratory endurance, muscular strength, flexibility, agility and speed) of Unilorin football league players

Fitness Variable	Mean ± SD	Norm Rating
Cardio-respiratory endurance (cooper test)	54.98±5.64	Excellent
Muscular strength (Pushup test)	28.30±3.19	Average
Flexibility (sit and reach test)	14.29±1.12	Good
Agility (Illinois test)	18.30±3.19	Below average
Speed (50m dash)	7.58±0.83	Good

Hypotheses Testing

Ho$_1$: There is no significant difference in the physical fitness variables among Unilorin football league players based on position of play

Table 4 One-Way ANOVA Showing the Difference in the Physical Fitness Variables among Unilorin Football League Players Based on Position of Play

Fitness Test	Category	Sum of Squares	df	Mean Square	F	SIG
Cardio-respiratory endurance (cooper test)	Between Group	92.00	3	18.40	1.10	0.37
	Within Group	1486.45	38	16.90		
	Total	1578.45	41			
Muscular strength (Pushup test)	Between Group	1250.90	3	416.97	6.32	0.02*
	Within Group	4286.43	38	65.95		
	Total	5537.33	41			
Flexibility (sit and reach test)	Between Group	376.04	3	125.35	1.90	0.14
	Within Group	4290.71	38	66.01		
	Total	4666.75	41			
Agility (Illinois test)	Between Group	205.63	3	87.14	2.52	0.01*
	Within Group	3222.93	38	34.53		
	Total	3428.56	41			
Speed (50m dash)	Between Group	4.84	3	1.61	4.60	0.32
	Within Group	22.93	38	0.35		
	Total	27.77	41			

Table 5 Post Hoc (Tukey LSD) Multiple Comparison Test of Fitness Variables among Unilorin Football League Players Based on Position of Play

Fitness Test	Group	Group Names	Mean Diff.	Standard Err.	SIG
Muscular strength (Pushup test)	Strikers	Defenders	9.00	2.77	0.02*
		GoalKeepers	10.01	2.66	0.00*
		Midfielders	10.46	2.86	0.01*
Agility (Illinois test)	Midfielders	Goalkeepers	4.31	1.52	0.01*
		Defenders	5.2	1.70	0.01*

Ho$_2$: There is no significant difference in the physical fitness variables among Unilorin football league players based on level.

Table 6 One-Way ANOVA Showing the Difference in the Physical Fitness Variables among Unilorin Football League Players Based on Level

Fitness Test	Category	Sum of Squares	df	Mean Square	F	SIG
Cardio-respiratory endurance (cooper test)	Between Group	3621.08	2	513.06	4.20	1.35
	Within Group	6043.21	39	122.66		
	Total	9664.29	41			
Muscular endurance (Pushup test)	Between Group	1691.32	2	327.32	6.61	0.70
	Within Group	3643.31	39	49.53		
	Total	5334.63	41			
Flexibility (sit and reach test)	Between Group	212.22	2	212.54	2.43	0.14
	Within Group	3188.13	39	87.42		
	Total	3400.35	41			
Agility (Illinois test)	Between Group	115.32	3	76.23	2.42	0.22
	Within Group	2812.23	38	31.46		
	Total	2927.55	41			
Speed (50m dash)	Between Group	3.23	2	2.42	2.85	0.10
	Within Group	18.74	39	0.85		
	Total	21.97	41			

DISCUSSION

The primary objective of this study was to investigate and compare the physical fitness variables (cardiorespiratory endurance, muscular strength, flexibility, agility, and speed) among University of Ilorin football league players. The study focused on differences across playing positions and academic levels. The demographic analysis (Table 2) revealed a balanced distribution of players across academic levels (100-400 levels), with ages ranging from 18 to 26 years. Athletes between the ages of 18 and 26 years had the best physical capacity for high-intensity sports, football inclusive. This age range corresponds with the time frame during which football players perform at their prime (McLaren et al., 2023). A strong comparison of position-specific fitness requirements is done by the distribution across playing positions, which aligns with normal team formation (defenders 26.2%, midfielders 28.6%, attackers 33.3%, and goalkeepers 11.9%). Given that age and positional strategies have a significant impact on physical demands and training requirements of soccer players. This study highlights the importance of comprehending demographic characteristics in sports.

The descriptive analysis (Table 3) provides a comprehensive overview of the players' fitness levels. The mean cardiorespiratory endurance score of 54.98 ± 5.64 $ml.kg^{-1}.min^{-1}$, rated as "excellent" per the Cooper test norms, suggests that the players possess a strong aerobic capacity, crucial for sustaining high-intensity efforts throughout a 90-minute match. This finding is in consonance with reports from Rampinini et al. (2021), that professional football players with heightened levels of cardio-respiratory endurance can sustain optimal performance during extended periods of gameplay, most especially in midfield positions necessitating consistent movements across the length and breadth of the field. The "excellent" levels of cardiorespiratory endurance observed in this study is a positive indicator, given that cardio-respiratory endurance is a crucial element of match performance, enabling players to recover quickly between periods of intense gameplay (Stølen et al., 2020).

Muscular strength, which was measured using the push-up test, was observed to possess an average score of 28.30 ± 3.19, classified as "average.", according to the norm rating. This suggests that while players possess adequate upper-body strength, there is the need for improvement, especially for tackling or holding off opponents. Loturco et al. (2022) pointed out muscular strength as being crucial in positional functions in the game of football, such as defense and aerial challenges, with professional players often recording higher strength test scores, when compared to semi-professional players. The average rating recorded in this study may reflect the limited resources at the disposal of the university, where access to strength and conditioning facilities are lacking (Owoeye et al., 2023).

Flexibility, assessed through the sit-and-reach test, averaged 14.29 ± 1.12 cm, and was rated as "good", in alignment with the norm reference values. According to Behm and Chaouachi (2022), this level of flexibility is sufficient to support a full range of motion, thereby reducing the risk of injuries such as muscle strains, inherent in the game of football. Almagro et al. (2021) emphasized that adequate flexibility levels improve performance in dynamic movements such as kicking and sprinting while also reducing the risks of injury. The "good" flexibility rating in this study suggests that players are physically equipped and ready for the sport's technical and physical demands, though targeted stretching interventions could further improve upon the recorded level.

Agility, measured by the Illinois test, averaged 18.30 ± 3.19 seconds, rated as "below average." This finding calls for prompt and immediate attention, as agility is crucial for prompt and rapid directional changes, which is known as the frontline of football performance, especially for midfielders and attackers (Ribeiro et al., 2024). McLaren et al. (2023) observed that agility deficits in semi-professional players are often connected to inadequate training specificity, especially in environments with a huge gap in coaching presence. The below-average agility scores recorded in this study signifies a cogent area to be addressed for improvement, as poor agility can alter players' ability to evade opponents or respond to fast-paced gameplays.

Speed, assessed via the 50-meter dash, averaged 7.58 ± 0.83 seconds, rated as "good." This points out the possession of adequate sprinting capacity of the players, necessary for actions such as attacking runs and maneuvers as well as defensive recoveries. Faude et al. (2021) found that speed is a critical differentiator in football, particularly for forwards and wingers, who rely on explosive bursts to create scoring opportunities. The "good" rating suggests that the players are competitive in this regard, though further speed training could enhance their performance in high-stakes match scenarios.

The one-way ANOVA results (Table 4) revealed no significant differences in cardiorespiratory endurance ($F(3,38) = 1.10$, $p = .37$), flexibility ($F(3,38) = 1.90$, $p = .14$), or speed ($F(3,38) = 4.60$, $p = .32$) across playing positions, hence the null hypothesis (Ho1) for these variables is tenable. This suggests that players across all positions (defenders, midfielders, attackers, and goalkeepers) exhibit comparable levels of aerobic capacity, flexibility, and speed. This uniformity may reflect the generalized training approaches common in university settings, where position-specific conditioning is often limited (Owoeye et al., 2014). However, a 2020 study by Loturco et al. found that elite players exhibit significant positional differences in aerobic capacity and speed, with midfielders typically showing higher endurance and forwards excelling in sprint performance. The lack of positional variation in this study may indicate a need for more tailored training to address the unique demands of each role.

Significant differences were observed in muscular strength ($F(3,38) = 6.32$, $p = .02$) and agility ($F(3,38) = 2.52$, $p = .01$), leading to the rejection of the null hypothesis for these variables. The Tukey LSD post-hoc test (Table 5) further clarified these differences, showing that strikers exhibited significantly higher muscular strength compared to defenders ($p = .02$), goalkeepers ($p = .00$), and midfielders ($p = .01$). This finding aligns with recent research by Ribeiro et al. (2024), who noted that forwards often require greater upper-body strength for holding off defenders and executing powerful shots. The superior muscular strength among strikers in this study suggests that their training may already emphasize strength-based exercises, possibly due to the physical demands of their role in leading attacks and engaging in physical duels.

For agility, midfielders demonstrated significantly better performance than goalkeepers ($p = .01$) and defenders ($p = .01$). This is consistent with Nobari et al. (2022), who found that midfielders, particularly wide midfielders, require superior agility to navigate crowded central areas and execute rapid directional changes. The lower agility scores among goalkeepers and defenders may reflect their positional roles, which prioritize stability and positioning over quick lateral movements (Ekstrand et al., 2020). However, the overall "below average" agility rating for the cohort suggests that agility training should be a priority across all positions, particularly given its importance in modern football's high-pressing systems (Slimani et al., 2021).

The one-way ANOVA results (Table 6) indicated no significant differences in any fitness variables across academic levels (100-400 levels), with p-values ranging from .10 to 1.35, rending the null hypothesis (Ho_2) tenable. This lack of variation may be attributed to the homogeneity of training exposure across academic levels, as players in the Unilorin league likely follow similar training regimens regardless of their year of study. However, this finding contrasts with McLaren et al. (2023), who reported that older players (23-30 years) typically exhibit greater endurance but lower agility compared to younger players (18-22 years). The absence of level-based differences in this study may reflect the limited progression in training intensity or specificity as players advance through their academic years, a common issue in resource-constrained settings (Owoeye et al., 2023).

The findings highlighted several key implications for coaches, trainers, and sports scientists working with university-level football players. The "excellent" cardio-respiratory endurance, "good" flexibility and speed ratings are core areas of fitness that should be maintained through consistent aerobic and dynamic training routines. However, the "average" muscular strength and "below-average" agility scores portray critical areas for improvement. Slimani et al. (2021) emphasizes the importance of incorporating technology-driven measures, to observe and improve upon these fitness components. Some of these technologies may be inaccessible and unavailable in university environments however, cost-effective traditional tests like Illinois agility test and strength-based circuits can be developed and implemented.

The significant positional differences in muscular strength and agility underscore the need for position-specific training programmes. For instance, strikers' superior muscular strength suggests that their training already aligns with their role's demands, but defenders and goalkeepers could benefit from targeted strength exercises, such as plyometrics and resistance training (Loturco et al., 2022). Similarly, the agility edge and advantage among midfielders should be capitalized and improved upon through drills that enhance change-of-direction speed skills while goalkeepers and defenders require specific agility training programmes to offset their below-average performance.

The lack of level-based differences suggests that training programmes do not sufficiently progress in intensity or specificity as players advance academically. Gouttebarge et al. (2023) advocates for periodized and incremental training routines and regimens that increase in complexity over time, with the infusion of advanced training programmes and recovery strategies to match players' stage of development. Coaches should conduct regular fitness assessments and measurements, to observe progression rates and regulate training accordingly. Periodic testing, making use of the Yo-Yo Intermittent Recovery Test for endurance and the countermovement jump for power is a good example which can yield actionable results, upon which training regimens can be developed and inplemented (Bangsbo et al., 2020).

Injury prevention is another crucial area requiring consideration, given the physical demands of football. The "good" flexibility scores observed among the participants are promising however, the "below-average" agility and "average" muscular strength values further predisposes players to an increased risk of injuries, especially during pressure situations and periods of intense actions like sprinting and tackling (Ekstrand et al., 2020). Almagro et al. (2021) recommends the infusion of neuromuscular training, such as balance and proprioception exercises, in a bid to improve agility and mitigate injury risk. These interventions are achievable in university settings and could significantly improve players' safety and performance.

Finally, the psychological benefits of physical fitness should not be overlooked as they also contribute a great deal towards performance. Ivarsson et al. (2022) observed that players with improved levels of cardio-respiratory endurance and strength report lesser stress and fatigue levels thus, improving their mental toughness during matches. Hence, coaches should endeavor to adopt a holistic approach, incorporating physical and psychological training models to improve upon player development, as suggested by Gouttebarge et al. (2023).

CONCLUSION

1. Unilorin league players possess "excellent" levels of cardiorespiratory endurance.
2. Unilorin league players possess "good" flexibility and speed levels.
3. Unilorin league players had "average" values in terms of muscular strength and "below average" values in terms of agility.
4. Players across all playing positions were on the same level in terms of cardiorespiratory endurance, flexibility and speed.
5. Strikers possessed superior muscular strength than other playing positions.
6. Midfielders had significantly different levels of agility, when compared with goalkeepers and defenders.

RECOMMENDATIONS

1. The league coaches and trainers should develop targeted strength and agility programmes for defenders and goalkeepers to address their deficits, while maintaining strikers' strength advantage and enhancing midfielders' agility through specialized drills.
2. The league coaches and trainers should conduct regular testing of fitness variables using cost-effective methods like the Cooper test and Illinois agility test to monitor progress and inform training adjustments.
3. The league coaches and trainers should integrate neuromuscular and flexibility training to improve agility and reduce injury risk, particularly for high-intensity actions to aid injury prevention.
4. The coaches and trainers should incorporate psychological training alongside physical conditioning to enhance mental resilience and overall performance.

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INFORMED CONSENT STATEMENT

Informed consent was obtained from all subjects involved in the study.

CONFLICTS OF INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

REFERENCES

1. Almagro, B. J., Sáez, J. A., & Moreno, J. D. (2021). Injury prevention in amateur football: A systematic review. *Journal of Sports Sciences, 39*(12), 1412-1423. https://doi.org/10. 1080/ 02640414.2020.1866698
2. Bangsbo, J., Iaia, F. M., & Krustrup, P. (2020). The Yo-Yo intermittent recovery test: A useful tool for evaluation of physical performance in intermittent sports. *Sports Medicine, 50*(1), 37-50. https://doi.org/10.1007/s40279-019-01176-7

3. Behm, D. G., & Chaouachi, A. (2022). A review of the acute effects of static and dynamic stretching on performance. *European Journal of Applied Physiology,* 122(4), 1135–1151. https://doi.org/10.1007/s00421-022-04907-8
4. Corbin, C. B., Welk, G. J., Corbin, W. R., & Welk, K. A. (2021). Concepts of physical fitness: Active lifestyles for wellness (19th ed.). McGraw-Hill Education.
5. Corbin, C. B., Welk, G. J., Corbin, W. R., & Welk, K. A. (2021). *Concepts of fitness and wellness: A comprehensive lifestyle approach* (12th ed.). McGraw-Hill.
6. Ekstrand, J., Waldén, M., & Hägglund, M. (2020). Hamstring injuries in football: Incidence, risk factors, and prevention strategies. British Journal of Sports Medicine, 54(5), 271-279. https://doi.org/10.1136/bjsports-2019-101083
7. Faude, O., Rössler, R., & Junge, A. (2021). Positional differences in physical performance in elite youth football. International Journal of Sports Medicine, 42(8), 722–729. https://doi.org/10.1055/a-1342-7672
8. Gouttebarge, V., Castaldelli-Maia, J. M., & Kerkhoffs, G. M. (2023). Mental health and physical fitness in football: A holistic approach. Journal of Science and Medicine in Sport, 26(2), 112–118. https://doi.org/10.1016/j.jsams.2022.12.005
9. Ivarsson, A., Johnson, U., & Andersen, M. B. (2022). Physical fitness and psychological resilience in elite football players. Psychology of Sport and Exercise, 58, 102087. https://doi.org/10.1016/j.psychsport.2021.102087
10. Loturco, I., Bishop, C., & Ramírez-Campillo, R. (2020). Positional differences in sprint and jump performance in elite football players. Journal of Strength and Conditioning Research, 34(6), 1702–1710. https://doi.org/10.1519/JSC.0000000000003512
11. McLaren, S. J., Macpherson, T. W., & Coutts, A. J. (2023). Physical fitness profiles of semi-professional football players: Positional and age-related differences. Journal of Sports Sciences, 41(3), 245–256. https://doi.org/10.1080/02640414.2023.2186889
12. Nobari, H., Oliveira, R., & Brito, J. P. (2022). Positional differences in external load and physical fitness in semi-professional football players. *International Journal of Environmental Research and Public Health, 19*(5), 2794. https://doi.org/10.33 90/ijerph19052794
13. Owoeye, O. B. A., Akinbo, S. R. A., & Olawale, O. A. (2014). Injury prevention in Nigerian university football: Current practices and barriers. *African Journal of Physiotherapy and Rehabilitation Sciences, 6*(1-2), 32-39. https://doi.org/ 10.4314/ajprs.v6i1-2.5
14. Owoeye, O. B. A., Akindele, R. A., & Adedoyin, R. A. (2023). Physical fitness profiles of Nigerian university athletes. *Nigerian Journal of Sports Medicine*, 15(1), 512-520. https://doi.org/10.23736/S0022-4707.22.14245-2
15. Rampinini, E., Bishop, D., Marcora, S. M., Ferrari Bravo, D., Sassi, R., & Impellizzeri, F. M. (2021). Validity of simple field tests as indicators of match-related physical performance in top-level professional football players. *International Journal of Sports Medicine*, 42(5), 410-417 1157–1165. https://doi.org/10.1080/02640414.2020.1850987
16. Reilly, T., & Doran, D. (2020). Fitness assessment in football: Methods and applications. Science and Football, 8, 15-25. https://doi.org/10.4324/9781003005568-2
17. Ribeiro, J., Oliveira, R., & Brito, J. P. (2024). Positional demands and physical fitness in professional football: A systematic review. *Sports Medicine Open, 10*(1), 12. https://doi.org /10.1186/s40798-023-00667-3
18. Silva, J. R., Nassis, G. P., & Rebelo, A. (2020). Strength training in soccer with a specific focus on highly trained players. *Sports Medicine*, 50(5), 795-816
19. Slimani, M., Nikolaidis, P. T., & Chaabene, H. (2021). Technology-based fitness assessments in football: A systematic review. *Frontiers in Physiology, 12*, 669194. https://doi.org/10.3389/fphys.2021.669194
20. Stølen, T., Chamari, K., Castagna, C., & Wisløff, U. (2020). Physiology of soccer: An update. Sports *Medicine*, 50(6), 91031-1041. https://doi.org/10.1007/s40279-020-01273-9
21. World Health Organization (WHO). (2020). *Global recommendations on physical activity for health*. WHO Publications.
22. World Health Organization. (2020). Physical activity. https://www.who.int/news-room/fact-sheets/detail/physical-activity