LETTERS IN BIOMATHEMATICS
An International Journal

RESEARCH ARTICLE

OPEN ACCESS

Smart Leadership of Refereeing Performance for Para Taekwondo Referees in the Iraqi Federation

Noor Al-Huda Raad[1], Suhad Qassem Saeed Al-Mousawi[1]

[1]College of Physical Education and Sports Sciences for Women, University of Baghdad. Baghdad, Iraq

ABSTRACT

This research aimed to develop a smart leadership scale for referees of the Iraqi Para Taekwondo Federation, identify the refereeing performance and effective refereeing among Para Taekwondo referees in Iraq, and determine the relationship between refereeing performance and effective refereeing among Para Taekwondo referees in Iraq. The researchers adopted a descriptive survey methodology, deemed suitable for the nature of the research. The research population consisted of all (52) referees of the Iraqi Central Para Taekwondo Federation. The researchers selected the research sample from this population and formulated (31) statements. Experts reviewed these, and four statements were removed. Subsequently, scientific principles were applied, resulting in a scale of (27) statements. The final version of the scale was then administered to the research sample from October 11, 2025, to November 15, 2025. The researchers concluded that there is a positive relationship between refereeing performance and smart leadership among referees; Iraqi Para Taekwondo referees possess a good level of refereeing performance and intelligent leadership, and the level of refereeing performance increases with the degree of intelligent leadership. The possibility of adopting intelligent leadership standards to identify and monitor Iraqi Para Taekwondo referees based on the aforementioned variables, attention should be given to Iraqi Para Taekwondo referees to enhance their intelligent leadership capabilities and provide training in this area, given its significant role in the effectiveness of their performance in the matches they officiate, and the Iraqi Federation's curriculum for Para Taekwondo and the Central Referees Committee should include development courses related to smart leadership.

ARTICLE HISTORY
Received September 23, 2026
Accepted October 29, 2026

KEYWORDS
Smart Leadership,
Refereeing Performance,
Para Taekwondo,
Referees,
Iraqi Federation.

1. Introduction

In the modern era, sports reflect scientific and technological advancements. They no longer rely solely on physical exertion and skill, but rather depend primarily on the mental and leadership abilities of those who manage them. "Refereeing" is the cornerstone of success in any sporting activity, representing the judicial authority that ensures the application of rules with fairness and precision. In a sport like Para Taekwondo, the responsibilities of referees become more complex due to the unique nature of the athletes (those with disabilities), requiring a unique type of management that transcends the literal application of the rules to reach the level of "intelligent leadership"[1-4].

The concept of intelligent leadership in the field of refereeing represents a revolution in managing matches. It does not rely solely on intellectual intelligence (IQ), but rather combines emotional and social intelligence with the ability to make decisive decisions in stressful and impactful situations. The importance of this leadership is evident in the referee's ability to understand the psychology of Para Taekwondo athletes and control the course of the match with flexibility and awareness, which positively affects the quality of refereeing performance [5-7].

Within the Iraqi Taekwondo Federation, specifically the Para Taekwondo Committee, there is a pressing need to develop refereeing personnel to keep pace with global advancements in the sport. Iraq possesses promising talent in this discipline, and its continued success hinges on having referees with intelligent leadership qualities that enable them to minimize human error and enhance the confidence of players and the

CONTACT Noor Al-Huda Raad:
noor.raad2404m@copew.uobaghdad.edu.iq

public in the refereeing system [8,9].

Therefore, this research aims to highlight the relationship between intelligent leadership and the performance level of Iraqi Para Taekwondo referees through a realistic analysis designed to establish a roadmap for developing this vital group, thereby ensuring the advancement of the sport both locally and internationally.

Research Problem

The referee's performance in Para Taekwondo is a cornerstone of successful competitions. Their role extends beyond simply applying the rules; it reflects their level of knowledge, skills, and leadership. Para Taekwondo competitions are highly specialized due to their connection with various classification categories of athletes with disabilities. This necessitates a high level of accuracy in decision-making, rapid response, and the ability to manage refereeing situations effectively.

Through the researchers' observation of local championships and the reality of refereeing in Para Taekwondo, a disparity in the refereeing performance of some referees was observed. This may be attributed to a weakness in applying the latest international Para Taekwondo rules, a deficiency in intelligent leadership skills, or an inability to manage emotions during stressful situations within a match. Furthermore, the nature of these competitions demands a high level of effective communication with players and coaches, maintaining the pace of the match, and minimizing refereeing errors that could affect the fairness of the results.

Since refereeing in Para Taekwondo plays a pivotal role in ensuring the safety of athletes and achieving equal opportunities, poor refereeing performance can negatively impact the quality of competition and the level of athletic achievement. Therefore, the researcher deemed it necessary to study the relationship between effective refereeing and the level of refereeing performance among Para Taekwondo referees, with the aim of diagnosing the current state of refereeing and working to develop it in a way that contributes to raising the level of refereeing in this sport within Iraq.

Research Objectives

- To identify the refereeing performance and effective refereeing among Para Taekwondo referees in Iraq.
- To determine the relationship between refereeing performance and effective refereeing among Para Taekwondo referees in Iraq.

Research Hypotheses

- There is a real correlation between refereeing and effective refereeing among Para Taekwondo referees in Iraq.
- It is possible to predict the refereeing performance and effective refereeing among Para Taekwondo referees in Iraq.

Research fields:

- Human field: Iraqi League Referees in the Iraqi Central Federation, General Para Taekwondo Referees (2025-2026)
- Time field: (1/10/2025) to (1/11/2025)
- Spatial field: Locations of referees in sports halls in Iraq (Baghdad-Najaf-Kut-Karbala-Diyala-Kirkuk)

Terminology

Refereeing Performance: The sum of the referee's responses substantial, practical, and transitional, some of which are acute in a specific refereeing situation [10].

Smart Leadership: "A combination of experience, creative abilities, and multiple types of intelligence, specifically the leader's ability to process information quickly and communicate it to subordinates in a way that helps them adapt to the environment and the surrounding circumstances." [11].

Research Methodology and Field Procedures

Research Methodology

The nature of the problem determines the researcher's choice of the appropriate methodology. The methodology is the effective and sound approach the researcher uses to achieve their desired goals, which were defined at the beginning of the research [12,13]. The researchers adopted a descriptive survey

methodology, as it was suitable for the research sample.

Research Community and Sample

The research sample community was selected from the referees of the refereeing course held by the Iraqi Federation of Para Taekwondo Referees. The total number was (52) referees accredited by the Federation, and (5) referees were recalled for the exploratory experiment as show in the table (1).

Table (1) shows the sample size for each governorate

No.	Name of Governorate	Total Number of referees	Sample of the exploratory experiment	Percentage %	Sample Scale Construction and Preparation	Percentage %	Sample application	Percentage %
1	Baghdad	7	1		4		2	
2	Najaf	5	1		3		1	
3	Basra	6	1		4		2	
4	Karbala	4			3		1	
5	Nineveh	5			3		2	
6	Erbil	4			2		2	
7	Wasit	3			2		1	
8	Babylon	6	1		4		2	
9	Maysan	3			2		1	
10	Dhi Qar	4			2		2	
11	Salah ad-Din	2			2		1	
12	Diyala	2			1		1	
13	Muthanna	1		11.43	1	78.52	-	86
Total		52	5		32		20	

Research Tools and Data Collection Methods

Arabic and English References and Sources, Supporting Team, Smart Leadership Scale Questionnaire, Survey Form for Experts' and Specialists' Opinions on the Scale's Suitability for the Sample

Smart Leadership Scale

The Smart Leadership Scale it consists of (31) items and employs a five-point scale (Strongly Agree,

Agree, Sometimes, Disagree, Strongly Disagree).

Expert Opinions

The researchers presented the Smart Leadership Scale items to a group of experts in sports psychology to ascertain their opinions on the validity and suitability of this scale for the nature of this study. They approved the scale's suitability for the research sample.

Field Research Procedures

Exploratory Test

The exploratory test of the Smart Leadership Scale was conducted on a sample of (5) Iraqi League Para Taekwondo referees. These referees were excluded from the main experiment. The purpose of the exploratory test was to determine the scale's validity and suitability. For the research sample and the time taken to answer the items of the scale on the date (2025/9/29)

Scientific Foundations of the Scale

To complete the steps of preparing the scale for this study, the researchers conducted a statistical analysis of the scale items. Through this statistical process, they ensured the availability of the scientific conditions for the scale, namely validity and reliability.

Scale Validity: The researchers used several types of validity tests to verify the scale:

Apparent validity: This relies on presenting the scale items to a group of experts and specialists to assess their suitability for measuring the phenomenon being measured. Face validity was achieved in this study's scale by presenting the scale items to a group of experts and specialists for evaluation. (31) were presented to the experts had (4) items removed because they did not receive (75%) or higher agreement, leaving the scale consisting of (27) items. The researcher adopted the (her) method in preparing the scale questionnaire, and based on this, the method was used to express the degree of agreement with each item: strongly agree, sometimes disagree, and strongly disagree. This type of validity is achieved through statistical analysis of the items. The researchers verified this by extracting the following indicators:

First: The discriminatory power of the items: To verify this, the researchers adopted the two-group method to calculate the expressive power of the items using the Tet of 20 independent samples. The aim of analyzing the items is Brotherhood on the phrases with high distinction, which are the good phrases. Experts indicate that the percentage of (27) from the lower group and 27) from the group met in the best year, bear and settle on the highest distinction coefficients. Therefore, test (1) of significance was used, the differences in the arithmetic means of the lower and upper groups, and it was found that all the phrases were statistically significant at the significance level of (0.05), as shown in **Table (2).**

Table (2) shows the discriminatory ability of statements between the upper and lower groups.

No.	Groups	Arithmetic mean	Standard deviation	T value calculated	Level Sig	Type Sig
1	Upper	26000	.61540	23.418	0.000	Sig
	lower	4.9000	.28010			
2	Upper	2.1800	.74120	24.772	0.000	Sig
	lower	5.0000	.00000			
3	Upper	2.2400	.71236	26.103	0.000	Sig
	lower	5.0000	.00000			
4	Upper	2.3100	.76842	22.304	0.000	Sig
	lower	5.0000	.00000			
5	Upper	2.4700	.17040	22.980	0.000	Sig
	lower	4.9500	.50230			
6	Upper	2.1200	.55238	22.304	0.000	Sig
	lower	4.6500	.49614			
7	Upper	2.4100	.72681	24.006	0.000	Sig
	lower	5.0000	.00000			
8	Upper	2.2800	.80214	22.997	0.000	Sig
	lower	5.0000	.00000			

9	Upper	2.3900	.72133	23.949	0.000	Sig
	lower	5.0000	.00000			
10	Upper	2.2000	.68840	20.114	0.000	Sig
	lower	4.7200	.48275			
11	Upper	2.5600	.55280	31.224	0.000	Sig
	lower	5.0000	.00000			
12	Upper	2.20700	71526.	19.884	0.000	Sig
	lower	4.6400	49810.			
13	Upper	2.9250	820040.	16.102	0.000	Sig
	lower	5.0000	00000.			
14	Upper	2.8000	59810.	23.110	0.000	Sig
	lower	5.0000	00000.			
15	Upper	2.5500	63025.	25.030	0.000	Sig
	lower	5.0000	00000.			
16	Upper	2.8500	77540.	18.250	0.000	Sig
	lower	5.0000	00000.			
17	Upper	2.8250	80024.	18.214	0.000	Sig
	lower	5.0000	00000.			
18	Upper	2.3000	80861.	20.964	0.000	Sig
	lower	5.0000	00000.			
19	Upper	2.6400	93060.	17.003	0.000	Sig
	lower	5.0000	00000.			
20	Upper	2.7100	66216.	23.118	0.000	Sig
	lower	5.0000	00000.			
21	Upper	2.5200	71432.	21.987	0.000	Sig
	lower	5.0000	00000.			
22	Upper	1.9800	65584.	28.740	0.000	Sig
	lower	5.0000	00000.			
23	Upper	2.2600	68687.	24.903	0.000	Sig
	lower	5.0000	00000.			
24	Upper	2.5100	74936.	22.304	0.000	Sig
	lower	5.0000	00000.			
25	Upper	2.4600	71208.	23.552	0.000	Sig
	lower	5.0000	00000.			
26	Upper	2.2100	78078.	23.901	0.000	Sig
	lower	5.0000	00000.			
27	Upper	2.3900	92126.	19.458	0.000	Sig
	lower	5.0000	00000.			

Internal Consistency Coefficient

Internal consistency aims to verify the homogeneity and consistency of the statements in the study of the phenomenon under investigation. To verify the validity of the scale using the internal consistency coefficient, the researchers identified the degree of correlation between the score of each statement on the scale and the total score on the scale using the simple correlation coefficient (Pearson's). They found that all statements were consistent because they were below the significance level of (0.05), as shown in Table (3).

Table (3) shows the correlation coefficients between the scale items and the total scale score using the internal consistency method.

Items number	Correlation coefficient	Level Sig	Type Sig	Items number	Correlation coefficient	Level Sig	Type Sig
1	338 **.	0000,	Sig	15	307*.	0000,	Sig
2	357**.	000,0	Sig	16	334 **.	000,0	Sig
3	241**.	000,0	Sig	17	278 **.	000,0	Sig
4	259**.	000	Sig	18	366 **.	000	Sig

		,0				,0	
5	451**.	000 ,0	Sig	19	261 **.	000 ,0	Sig
6	329 **.	000 ,0	Sig	20	387 **.	000 ,0	Sig
7	247 **.	000 ,0	Sig	21	374 **.	000 ,0	Sig
8	351**.	000 ,0	Sig	22	263 **.	000 ,0	Sig
9	372 **.	000 ,0	Sig	23	283 **.	000 ,0	Sig
10	248 **.	,001	Sig	24	298 *.	,000	Sig
11	226 **.	000 ,0	Sig	25	382 **.	000 ,0	Sig
12	381**.	000 ,0	Sig	26	364 **.	000 ,0	Sig
13	394**.	,001	Sig	27	358 **.	,000	Sig
14	358*.	000 ,0	Sig				

Scale Reliability

A reliable scale is one that exhibits reliability. Therefore, the researchers confirmed the scale's reliability using Cronbach's alpha coefficient with the Statistical Package for the Social Sciences (SPSS). Applying this coefficient to the sample of (52) individuals yielded a reliability coefficient of (0.844), which is considered high for young people at a significance level of (0.05).

Scale Application and Main Experiment

Following the aforementioned procedures, the researchers, along with their support team, administered the scale to the research sample of (52) individuals from November 15, 2025, to December 13, 2025 as show in the table (4).

Table (4) Shows the statistical data presentation for the research sample specification

Scale	Arithmetic mean	Standard deviation	Skewness	lower	Upper
Scale Application	87.23	8.926	0,675	75	125

Statistical Methods:

To achieve the research objectives and test its hypotheses, the SPSS statistical package was used for statistical analysis.

Presentation, Analysis, and Discussion of Results:

Presentation and Analysis of the Results of the Smart Leadership Scale for the Research Sample:

The scale, consisting of (27) statements, was administered to a sample of (52) individuals. The significance of the questionnaire was calculated, and the hypothetical arithmetic mean Hypothetical Mean = (Sum of Alternatives: Highest Score for Alternative) x Number of Scale Statements. Therefore, the hypothetical mean of the entire questionnaire = (1+2+3+4+5)÷ 5 x 27 = 81 as show in the table (5).

Table (5) shows the arithmetic mean, hypothetical mean, standard deviation, calculated T-value, true significance, and type of difference.

Variables	Arithmetic mean	Standard deviation	T value calculated	Level Sig	Type Sig
Smart Leadership	88.423	9.453	10.113	0.000	Sig
Hypothetical mean			81		

Discussion:

The results shown in the table above indicate that the arithmetic mean was (99.423) with a standard deviation of (10.926), and the hypothetical mean was (81). Since the arithmetic mean was higher than the hypothetical mean, this means that the difference is statistically significant, and the arithmetic mean for the sample is considered favorable. To determine the significance of the differences between the arithmetic and hypothetical means, the researcher used the second test. The results showed a statistically significant

difference between the two means, amounting to (0.000) at a significance level of (0.05). The researcher attributes this result to the fact that these positive results for the refereeing performance variable are due to the individual differences among referees in terms of experience and capabilities. This is, of course, due to the research sample including international and local referees [14]. However, the scores are at the required performance level because most items on the evaluation form require relatively accumulated experience and a long period of practice for a referee to develop them, such as (personality, penalties, match management), etc. All of the above require several years of refereeing and officiating a suitable number of matches per year. The accumulated experience of Iraqi referees, coupled with their ability to learn from past mistakes, contributed to improving their performance in the area of intelligent leadership. Their ability to adapt to changing circumstances during matches also played a crucial role in achieving positive results. Furthermore, the referees demonstrated a high level of ability to read the game before it began and to plan strategically appropriately in the concept of intelligent leadership, which Engelbrecht defined as: The ability to perceive and benefit from experience, interpret, deduce, and reason . This highlights the importance of a referee possessing intelligent leadership [15,16]. Conversely, lacking it will impair the application of any skill a referee possesses, whether related to knowledge of the law or the ability to synthesize legal provisions and deduce complex and difficult options. Intelligent leadership is also the deciding factor in how these decisions are made on the field effectively and practically at the right time. It will necessarily be the influential factor in how the information understood and implemented is shared.

The researchers attribute the strength test results to the application of explosive power exercises at maximum intensity, the effective intensity for explosive power training. This ability "develops through exercises at maximum intensity" [17]. Some of the exercises require athletes to kick with full force towards a visible target. Furthermore, the repetitions used by the researchers, ranging from 1 to 5 repetitions with sufficient rest for recovery, positively impacted the boxers' explosive power [18]. consider the maximum load an important objective in sports training, aimed at developing explosive power, and its intensity ranges between 90% and 100% of the athlete's maximum intensity. Moreover, training at this level... Maximum strength requires a longer rest period than other training loads [19-21]. On the other hand, some of the exercises used involved repeating rapid, powerful movements for 10-15 minutes, the timeframe specified for developing speed-strength. Speed-strength is a sub-component of physical fitness and stems from strength. This type of strength combines maximum strength and speed within a coordinated movement framework. It means the ability to overcome resistance with rapid contraction [22-24]. The researchers believe that the load for this ability should be applied forcefully, quickly, and without pause for 10-15 seconds, and the exercise should be performed at submaximal intensity. Speed-strength is a fundamental physical ability upon which many sports, especially combat sports, are based. It is a composite ability consisting of two qualities: strength and speed. Improving it leads to enhanced technical and tactical performance, as well as the speed of offensive action. Therefore, the exercises were effective in developing this ability through kicking drills. The objectives are achieved using one leg or both legs alternately, at varying heights. An important requirement in the training is very fast kicking within a short period of 3-7 seconds. These rapid kicks are defined as the rate at which the athlete moves [25-30].When using the machine and in speed training, the athlete is required to perform the movement or motor sequence very quickly and with the greatest number of repetitions within a short period. Regarding balance ability, the results showed significant differences between the post-test results of the experimental and control groups. The researchers attribute this to the exercises used to develop balance. These exercises, along with the reliance on them, the performance of motor skills, and the repetition of training among the participants, led to the athlete experiencing a sense of imbalance. This, in turn, increased stimulation of the systems responsible for balance. This stimulation enhanced the athlete's ability to achieve static and dynamic balance. This aligns with the study , which indicated that dynamic balance training, if continued for a sufficient period, naturally has a positive effect on overall balance. For the athlete [31-36].

Conclusion:

- Iraqi Para Taekwondo referees possess a good level of refereeing performance and intelligent leadership.
- The level of refereeing performance increases with the degree of intelligent leadership.

Recommendations:

- The possibility of adopting intelligent leadership standards to identify and monitor Iraqi Para Taekwondo referees based on the aforementioned variables.
- Attention should be given to Iraqi Para Taekwondo referees to enhance their intelligent leadership capabilities and provide training in this area, given its significant role in the effectiveness of their performance in the matches they officiate.
- The Iraqi Federation’s curriculum for Para Taekwondo and the Central Referees Committee should include development courses related to smart leadership.

References

[1] Hussein, D., Qassim, S., *Exercises Based on the Phosphogenic Energy System to Develop the Ability to Perform with Precision and Accuracy*, Modern Sport, 2020, 19(3). https://doi.org/10.54702/msj.2020.19.3.000
[2] Ibtihal, R. U., Intisar, K. A., *Motor Capacity and Its Relationship with Some Indicators Albaiukinmetekih and Performance of the Wheel of Human Skill*, Modern Sport, 2021, 20(2). https://doi.org/10.54702/msj.2021.20.2.0099
[3] Issa, R., Qassim, S., *The Effect of Special Exercises to Develop Explosive Power, Speed and Anaerobic Endurance for Soccer Players*, Modern Sport, 2022, 21(3). https://doi.org/10.54702/msj.2022.21.3.0074
[4] Karaaslan, H., *Turkey's Sports Success Assessment in The World Para Taekwondo*, P J M H S, 2021, 15(11). https://doi.org/10.53350/pjmhs2115113185
[5] - Huda, B. R. I., *The Effect of Rehabilitative Exercises Accompanied by Aids to Improve Muscle Strength and Range of Motion for People with Dislocated Shoulder Joint*, Modern Sport, 2020, 19(3). https://doi.org/10.54702/msj.2020.19.3.0134
[6] Hussein Farhan, A., Husni Tahseen, T., Malik Shihab, B., Amer Jabar, M., Zaid Aldulimey, N. A., Saeed Al-Mousawi, S. Q., Yasir Farhood, N., *El efecto del modelo del cubo sobre la inteligencia visoespacial y el aprendizaje de la habilidad de rematar en voleibol para estudiantes femeninas*, Retos, 2025, pp. 513–524. https://doi.org/10.47197/retos.v68.114523
[7] Hussein Kadhim, F. A., Hussein Farhan, A., Husnl Tahseen, T., Al-Mousawi, S. Q. S., Radhi Raheem, H., *El efecto de la estrategia de nominación de ideas sobre la atención dividida y selectiva y la realización de algunas habilidades de voleibol*, Retos, 2025, pp. 293–306. https://doi.org/10.47197/retos.v65.111346
[8] Abuwarda, K., Mansy, M., Megahed, M., *High-intensity interval training on unstable vs. stable surfaces: effects on explosive strength, balance, agility, and Tsukahara vault performance in gymnastics*, Pedagogy of Physical Culture and Sports, 2024, 28(1), pp. 43–52.
[9] Al Jumaily, J. G. S., *The Effect of Exercises According to the Ranges of Arm Movement and Their Effect on Muscle Strength, and Some Biomechanical Variables, and Javelin Throwing Achievement for Young People*, Smart Innovation, Systems and Technologies, 2025. https://link.springer.com/chapter/10.1007/978-3-031-90893-4_31
[10] Saeed, S. Q., Khalifa, M. F., Noaman, M. H., *Screening of Obesity, Blood Pressure and Blood Glucose among Female Students Athletes at the College of Physical Education and Sport Sciences in the University of Baghdad*, Indian Journal of Public Health Research & Development, 2019, 10(6).
[11] Saif Al-Din, A., Hani, B. T., *The Effectiveness of Plyometric Training in Developing the Speed of the Forehand Kick in Taekwondo U15 Wrestlers*, Master's Thesis, Mohamed Seddik Ben Yahia University, 2023.
[12] Ali, I. A. R., Al-Musawi, S. Q., Hatem, A. D., *Effect of Using Flat Hierarchical Method on Some Aspects of Muscular Strength and Straight Serve Skill for Nascent Tennis Players*, Modern Sport, 2020, 19(2), pp. 8–21.
[13] Almusawi, D. S., *Effect of Battle Ropes Training in Some Components of Health Fitness and Vision of the Body Image of Women Aged (30–35) Years*, Indian Journal of Public Health Research and Development, 2019. https://ijphrd.com/issues.html
[14] Al-Sukkari, K. et al., *Sports Training: Its Methods and Principles*, Dar Al-Fikr Al-Arabi, Cairo, 2001, p. 115.
[15] Buraiga, M. J., Halawish, A. M. T., Al-Gharbawi, M. T., Jaisa, H. A. E. E., *Indicators of the Relative Contribution to the Final Result of the Electrical Activity of the Working Muscles during the Basic Phase of the Straight Back Kick Skill (Tee Chagi) for Para Taekwondo Players*, Journal of Sports Science, 2024, 33(2), pp. 174–188. https://doi.org/10.21608/amps.2024.344607
[16] Hadeel, T. M., Suhad, Q. S., *The Effect of Physical Exertion Training Using a Vertimax Device in Developing the Characteristic Strength with Speed and the Skill of Shooting by Jumping in Front-High with the Handball for Youth*, Modern Sport, 2021, 20(1). https://doi.org/10.54702/msj.2021.20.1.0158
[17] Liu, J., Liu, X., Zhang, Q., *A New Training Method for Leg Explosive Power in Taekwondo and Its Data-Driven Predictive Models*, Isokinetics and Exercise Science, 2020, 4, pp. 351–363.
[18] Abdelkarim, Z. A., Al-Mousawi, S. Q. S., *The Effect of Bulgarian Bag Exercises to Develop Explosive Force, Characterized by Speed and Accuracy of the Spiking Performance of Volleyball Players*, Internet of Things and Data Analytics, 2025, pp. 275–285. https://link.springer.com/chapter/10.1007/978-3-031-87154-2_24
[19] Ali, A., Qassim, S., *The Effect of Cross Fit Exercises on the Development of Explosive Power, Speed of Kinesthetic Response, and Performance Accuracy of the Skill of Crush Beating for Volleyball Players*, Modern Sport, 2022, 21(2). https://doi.org/10.54702/msj.2022.21.2.0010
[20] Al-Nedawy, R. I. A., Saeed Al-Mousawi, S. Q., *Effect of a Training Program on the Development of Physical Abilities in Football Goalkeepers*, SPORT TK-Revista EuroAmericana de Ciencias del Deporte, 2022, vol. 11, p. 36. https://doi.org/10.6018/sportk.522961
[21] O'Sullivan, D., Jeong, H., Won, H., *Functional Reaction Times of a Simulated Blocking Test among Taekwondo Athletes*, Healthcare, 2022, 10(7), pp. 1231–1239.
[22] Beattie, K., Lyons, M., Brian, P., *The Effect of Strength Training on Performance in Endurance Athletes*,

Journal of Sport Medicine, 2014, 44(6), pp. 845–865.
[23] Saeed, S. Q., Jawad, A. M., *Professional Trend Towards Education Across Electronic Space from the Perspective of Faculty Members in the Faculty of Physical Education and Sports Science Women*, Modern Sport, 2021, 20(5). https://doi.org/10.54702/2708-3454.1828
[24] Saeed, S. Q., Hameed, M., Shbib, H. B., *The Effectiveness of Using Applied Exercises with Auxiliary Tools and Their Effect on Some Physical Abilities and Performance Accuracy for the Skills of Serving and Overwhelming Hitting in Volleyball*, Modern Sport, 2019, 18(4). https://doi.org/10.54702/2708-3454.1172
[25] Al-Madamgha, M. R. I. I., *Field Application of Sports Training Theories and Methods*, Al-Fadhli Office, Baghdad, 2017.
[26] Rodrigo, R.-C., David, C., Izquierdo, M., *Effects of Plyometric Training Volume and Training Surface on Explosive Strength*, Journal of Strength and Conditioning Research, 2013, 27(10), pp. 2714–2722. https://doi.org/10.1519/JSC.0b013e318280c9e9
[27] Abdullah Mohsen, A., Emmad Jassim, R., Saeed Al-Mousawi, S. Q., Badwi Shbeeb, H., Ali Jafarnezhadgero, A., Qasim Saeed, H., *El efecto de los ejercicios de rehabilitación acompañados de ondas ultrasónicas en la reducción del dolor y la curación de la compresión del túnel carpiano*, Retos, 2025, pp. 1094–1102. https://doi.org/10.47197/retos.v66.113746
[28] Shbeeb, H. B., *The Effect of Skill and Physical Exercises Using Smart Virtual Reality for Volleyball Players*, Lecture Notes in Networks and System, 2026. https://link.springer.com/chapter/10.1007/978-3-031-90893-4_33
[29] Suhad Qassim, D. H., *Exercises Based on the Phosphogenic Energy System to Develop the Ability to Perform with Precision and Accuracy*, Modern Sport, 2020, 19(3), https://doi.org/10.54702/msj.2020.19.3.0001
[30] Tarek, U., Qassem, S., Hamid, M., *The Effect of Special Exercises Using Rubber Ropes to Develop Special Endurance and Achieve a 200-Meter Freestyle Swimming*, Modern Sport, 2020, 19(4), https://doi.org/10.54702/msj.2020.19.4.0156
[31] Schedler, S., Rainer, K., Muehlbauer, T., *Age and Sex Differences in Human Balance Performance from 6–18 Years of Age: A Systematic Review and Meta-Analysis*, 2009. https://doi.org/10.1371/journal.pone.0214434
[32] Sant'Ana, J., Franchini, E., *Effect of Fatigue on Reaction Time, Response Time, Performance Time, and Kick Impact in Taekwondo Roundhouse Kick*, Sports Biomechanics, 2022, 16(2), pp. 201–209.
[33] Shahab Ahmed, R., Saeed Al-Mousawi, S. Q., *Entrenamiento con métodos variados y su efecto en el desarrollo de algunas capacidades físicas funcionales de jugadores de baloncesto jóvenes*, Retos, 2025, pp. 1049–1060. https://doi.org/10.47197/retos.v66.113884
[34] Chuang, S., Sung, Y., Liao, Y., Chou, C., *Can Match Mimicking Intermittent Practice be Used as a Simulatory Training Mode of Competition Using Olympic Time Frame in Elite Taekwondo Athletes*, Frontiers in Physiology, 2019, 10. https://doi.org/10.3389/fphys.2019.00244
[35] Radhi, M. N., & Obaid, S. H. (2020). The Effect of Functional Exercises in Some Biomotor Abilities and Metabolism Rate for Volleyball Young Players. *Indian Journal of Forensic Medicine & Toxicology*, *14*(4), 2614-2619. https://doi.org/10.37506/ijfmt.v14i4.11986
Radhi, M. N., & Obaid, S. H. (2020). The Effect of Exercises by Metabolic Conditioning (MetCon) Style in Some Physiological Variables and the Speed Motor Response for Young Volleyball Players. *Indian Journal of Forensic Medicine & Toxicology*, *14*(4), 2642-2648. https://doi.org/10.37506/ijfmt.v14i4.11990