Journal of Physical Education
Volume 38 – Issue (1) – 2026 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

Analytical Study of Touch Areas and Preparatory Movements Leading to The Touch in Epee Fencing in The Men's Team Final at The Paris 2024 Paralympics

Ali Fouad Majeed [1], Yassar Sabeeh Ali [2], Muhanad Yaseen Abdulghani [3] , Moneer Fadel Ali Hassan [4], Omar Waleed Abdulkareem [5] , Alaa Abdullha Falah [6]

[1] Al-Rusafa First Education Directorate
[2,4,5,6] University of Baghdad, College of Physical Education and Sport Sciences.
[3] Ministry of Education, Baghdad alkarkh 3.

DOI:
https://doi.org/10.37359/JOPE.V38(1)2026.2407

Article history: Received 10/ January/2026 Accepted 26/ January/2026 Available online 28/ March/2026

Abstract

In sports where technical performance is crucial, quantitative analysis methods have evolved to track skill performance using modern training methods and technology. This helps trainers evaluate training methods and detect performance issues. Coaches and athletes know that preliminary movements improve attack accuracy, but the association between motions (strikes, presses, crushes) and target regions (torso, armed arm, head) has not been thoroughly investigated. Lack of studies on Paralympic fencing's targeted contact regions and ambiguity around the most common preliminary actions highlight the research problem. The study examined epee fencers' successful movement sequences in the Paris 2024 Paralympic Games' final bouts and touch success rates by touch area (torso, head, armed arm). It also examined the use and success rates of anticipatory assault movements (strikes, pressures, crushes) by touch regions (torso, head, armed arm). To follow study procedures, researchers used descriptive and survey methods. Twelve epee fencers from Iraq, China, England, and Poland competed in the Paris 2024 Paralympics' final

[1] Al-Rusafa First Education Directorate.
Alifmaa1993@gmail.com.
[2] University of Baghdad, College of Physical Education and Sport Sciences.
yassar.ali@cope.uobaghdad.edu.iq.
[3] Ministry of Education, Baghdad alkarkh 3.
mohannad.yassin1104a@cope.uobaghdad.edu.iq.
[4] University of Baghdad, College of Physical Education and Sport Sciences.
Moneer.Fadel1104A@cope.uobaghdad.edu.iq.
[5] University of Baghdad, College of Physical Education and Sport Sciences.
omar.w@cope.uobaghdad.edu.iq.
[6] University of Baghdad, College of Physical Education and Sport Sciences.
alaa.falaah@cope.uobaghdad.edu.iq.

Journal of Physical Education
Volume 38 – Issue (1) – 2026 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

round. Technical and tactical performance focuses on touches from the armed arm as a near target, indicating competitive criteria, skill specificity, and players' knowledge in selecting locations that increase attack success, according to the study. The skillful performance of anticipatory assault movements depends heavily on strikes, moderately on pushes, and very weakly on crushes. Team tactics affect touch strategy diversity. Technically sophisticated teams focus on armed arm touches for tactical efficiency, while others use the torso to avoid counterattacks.

Keywords: Paralympic fencing, touch target areas, preparatory offensive movements, performance analysis.

Introduction

The Paralympic sport of wheelchair fencing is an expression of physical exercise; it has its own athletics, social goals and purposes in education and psychotherapy. It has developed from fencing in the past through various stages and ways, to what it is today that it is played with the respect of special laws determined by organizations that have assumed responsibility for competing among opponents without any aid form outside while playing excepting the etiquette expected by this outset noble game which sustained its heritage. The basic theory is that of touching your opponent before they can touch you: three classes in the sport. This requires the fencer to perform offensive and defensive actions of movement that increase mobility, and preparations that help make openings. This requires a great deal of fine motor control and aim to point the weapon at the final target, in order to score a valid touch. "The world now A aspires to what is useful, effective and achiever expedient and tries to save time, effort and money" (Fouad & Hamid 2022). Perhaps the most outstanding illustration of these points is in Paralympic fencing, for two reasons, proximity between opponents and the complexity of motor skills: the short distance separating them and the highly sophisticated characteristics of those measured make it requisite that athletes must continuously improve their physical-motor attributes to increase their performance. Moreover, they have to develop the Game strategy that can optimally have offense and defense technique with rapid and correct motor response which are primarily important in this sport. Moreover, “the overarching goal of Paralympic fencing is to execute a legally prescribed target number of hits using the most suitable methods in terms of skill performance means, through extension of the armed arm or advancing it” (Hussein, 2021, p. 23).

Extensive development in analytical methods in sport, using the most current training methodologies and technological instruments to monitor the movement path of skill performance, particularly applicable to sports that has technical performance as a major part of its task while training aid coaches in evaluating the quality of their assistance programs and identifying gaps that need filling. Research on performance analysis has provided numerous valuable insights and

Journal of Physical Education
Volume 38 – Issue (1) – 2026 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

contributed to the development of important strategies for enhancing athletic performance. Such research presents various realistic findings that open avenues for diverse and related topics of study, especially in Paralympic fencing, encompassing all aspects related to the development of this sport globally, while also benefiting from all previous experiences in various directions.

"Analyzing artistic and creative production is one of the means of evaluating behavioral situations and athletic performance; it is a productive, artistic, and creative process" (Mousa, 2000). Several studies have addressed the topic of analysis in Paralympic fencing and other sports, including a study by Hussein (2021) aimed at understanding the values of kinematic variables in the performance of the thrust skill across the three weapons in fencing, as well as identifying the differences in kinematic variable results in the performance of the thrust skill among the three weapons in fencing, in addition to determining the contribution ratio of certain kinematic variables in the stages of performing the thrust skill for the three weapons in fencing. The researcher employed a descriptive methodology to achieve the study's objectives, and the sample included the best six players from each of the three weapons, totaling 18 players, representing 100% of the research population. The sample was intentionally selected as they are considered the elite among the candidates for the national fencing team due to their high technical performance level. Another Ali (2013) study was conducted to determine the performances of offensive team skills in the women's volleyball league in 2013 and their relationship with competitive ranks. The researcher also used descriptive approach for its relevance to the problem, and the sample was taken from the best four clubs in Iraqi club's league to represent the highest sporting category) professionalism (of the Iraqi clubs. Furthermore, the goal of the study conducted by Mohammed (2012:190) was to determine factors influencing game performance among male wheelchair basketball teams who took part in Beijing 2008 Para-Olympic games and assess player's skills levels at research site. The author used an appropriate methodology with respect to a description, and samples contained Iranian, Canadian and German teams.

Relevance The present study provides accurate data concerning the epee, including information on the region being targeted most often-torso (red), head (blue), and arm holding weapon (green)-and preparatory actions that precede attacks such as blade-work actions: hits, pressure points and crushing actions. This information will assist coaches in developing appropriate plans or lessons tailored to the weapon's requirements through analysis or comparison. "This collection of information will aid fencing coaches and instructors in creating a systematic and organized instructional lesson for individuals and groups aimed at achieving successful and efficient performance on the fencing strip" (Vincent H. Bradford, 2003). Furthermore, to the best of the researchers' knowledge, there are no studies addressing the topic of technical analysis of touch areas and preparatory movements in this manner for Olympic matches in the epee weapon.

Journal of Physical Education
Volume 38 – Issue (1) – 2026 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

There is also a similar study that indicates the effectiveness and outcomes of attacks using weapon movements by epee fencers in the current qualification competitions aimed at developing fencing. The study analyzed 30 local and foreign players with high technical skills. It confirmed that attacks using weapon movements ranked foremost among the types of attacks in high-level fencers' performance, while the proportion of attacks using arm movements constituted 21.5% of the total attacks, with a success rate of 27.6%. Consequently, the importance of this research is summarized in its provision of a database for coaches regarding the most frequently targeted areas in the legal target with the epee in Paralympic fencing, as well as assisting coaches and players in developing more effective offensive and defensive strategies. Additionally, it contributes to the preparation of training programs focused on improving touch accuracy and the speed of preparatory movements, providing a scientific foundation for studying complex tactics in Paralympic fencing.

The analysis of successful movement sequences of epee fencers during the final matches of the Paris 2024 Paralympic Games aims to identify the proportion of successful touches concerning the touch areas (torso, head, armed arm). It also seeks to determine the proportion of preparatory movements used for attacks (strikes, pressure, crushing) by epee fencers during the final matches of the Paris 2024 Paralympic Games, as well as the proportion of preparatory movements used for attacks (strikes, pressure, crushing) according to touch areas (torso, head, armed arm) by epee fencers during the final matches of the Paris 2024 Paralympic Games.

Methodology

Researchers also intended to choose the best method fit in order to solve the problem. In this framework, the researchers used a descriptive survey approach that is similar to the method in which study was conducted. The study sample included epee fencers competing at the Paris 2024 Paralympic Games, a total of 36 athletes. The research sample was purposive and reached the finalists (12 players) of the epee team event in Paris 2024 Paralympic Games teams for Iraq, China, England and Poland.

This consisted of 18 team bouts, with the third-place play-off between England and Poland (9 bouts) and final between Iraq and China (9 bouts). Methods The research approach consisted of a process with several stages: Paralympic fencing is one of the modalities foreseen in the program of the Paralympic Games and its practice has been characterized as competitive, since fencers strive over a period of quadrennium to achieve the highest number of points, which allows them to participate in an official competition at the Paralympics according their ranking. So a fencer

Journal of Physical Education
Volume 38 – Issue (1) – 2026 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

competing at the Paralympic Games is most definitely elite and that just shows how strong the field is. The researchers chose the finalists because they are the cream of the crop.

Movements sequences of the research were defined since Paralympic fencing is a sport which can only be practiced in individual form and consists of various movements and fencing actions that are essential in its matches. The opposing fencers engage in a series of individual actions (sequences) as they try to score, or work at scoring touches. These series may end with a légal touch, an illegal one or no touch at all. The successful fencing sequences were studied, and for the attacker we started from the preparation movements performed by the fencer before starting to reach a legitimate touch, and in particular knock, press and crush. For this study, the data were obtained through observation and collection of information by analyzing video recordings of official matches made at normal speed and the successful actions extracted from these situations after repeated visual analysis, using Kinovea analysis software. Total number of recorded touches across all team encounters was 154, representing the analysis of 154 successful fencing attacks.

Research Community and Samples

The term "community" refers to "all the elements of the phenomenon that the researcher studies, or all individuals, persons, or objects that constitute the subject of the research problem" (Al-Saadawi & Al-Janabi, 2013, p. 30). Therefore, the research community is intentionally defined as the administrators and coaches of the sports clubs under the Ministry of Interior of Iraq, totaling (235) individuals, who are distributed across (6) clubs, representing a percentage of (100%). The research samples are divided as follows: 1. Pilot Test Sample for the Scale: The researcher selected a pilot test sample from Al-Hudood Sports Club through a random draw, consisting of (8) individuals, which represents (3.4%) of the research community, specifically the personnel (administrators and coaches) of the Ministry of Interior's sports clubs. 2. Scale Construction Sample: The sample for scale construction was chosen randomly by the researcher, comprising (86) individuals, representing (36.5%) of the total community of the sports clubs under the Ministry of Interior, which consists of (6) clubs. 3. Final Application Sample for the Scale: The sample for the application of the study scales included personnel, specifically the administrators and coaches of the sports clubs under the Ministry of Interior, totaling (98) individuals, which accounts for (41.7%) distributed across (6) clubs.

Research tools

1. Computer device of type (Dell)

2. Kinematic analysis software (Kinova)

Journal of Physical Education
Volume 38 – Issue (1) – 2026 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

3. A form for recording preliminary attack movements and touch areas

Statistical Methods

1. Percentage = part ÷ whole × 100

Results

Table 1. *Distribution of Total Touches and Percentage Values According to Touch Areas (Trunk, Head, Armed Arm)*

Variables	Total Touches	Percentage
Trunk	62	40.259%
Head	0	0%
Armed arm	92	59.740%
Total touches	154	100%

Table 2. *Percentage Distribution of Preparatory Offensive Movements (Beat, Press, Crush)*

Variables	Total Touches	Percentage
Beat	49	58.333%
Press	32	38.095%
Crush	3	3.571%
Total touches	84	100%

Table 3. *Percentage Distribution of Preparatory Offensive Movements (Beat, Press, Crush) According to Touch Areas (Trunk, Head, Armed Arm)*

Variables	Total Touches	Percentage
Beat + trunk touch	21	25%
Press + trunk touch	14	16.666%
Crush + trunk touch	3	3.571%
Beat + armed arm touch	28	33.333%
Press + armed arm touch	18	21.428%
Crush + armed arm touch	0	0%
Total touches using preparatory movements and touch areas	84	100%

Journal of Physical Education
Volume 38 – Issue (1) – 2026 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

Table 4. *Percentage of Successful Touches According to Touch Areas (Trunk, Head, Armed Arm) for Epee Fencers (Iraq, China, England, Poland)*

Teams	Total Touches	Trunk Touches	Armed Arm Touches	% Trunk Touches	% Armed Arm Touches
China	45	18	27	40%	60%
Iraq	36	25	11	69.444%	30.555%
England	45	8	37	17.777%	82.222%
Poland	28	11	17	39.285%	60.714%

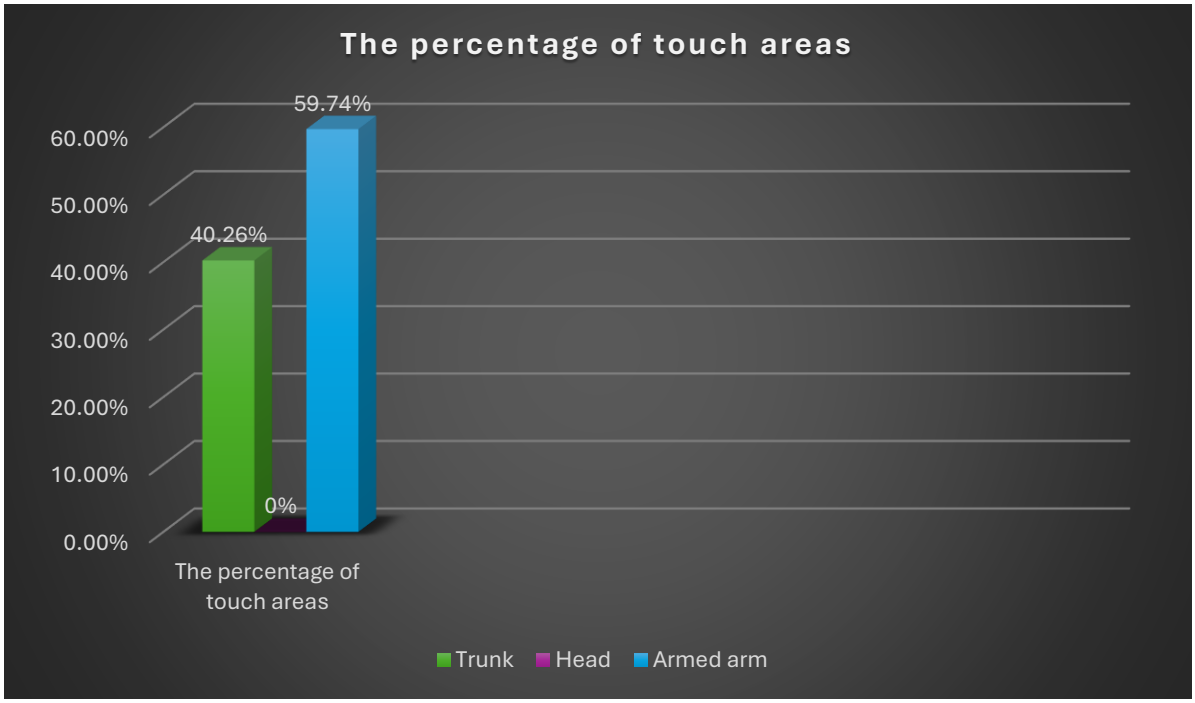

Figure 1. *illustrates the percentage of touch areas*

Journal of Physical Education
Volume 38 – Issue (1) – 2026 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

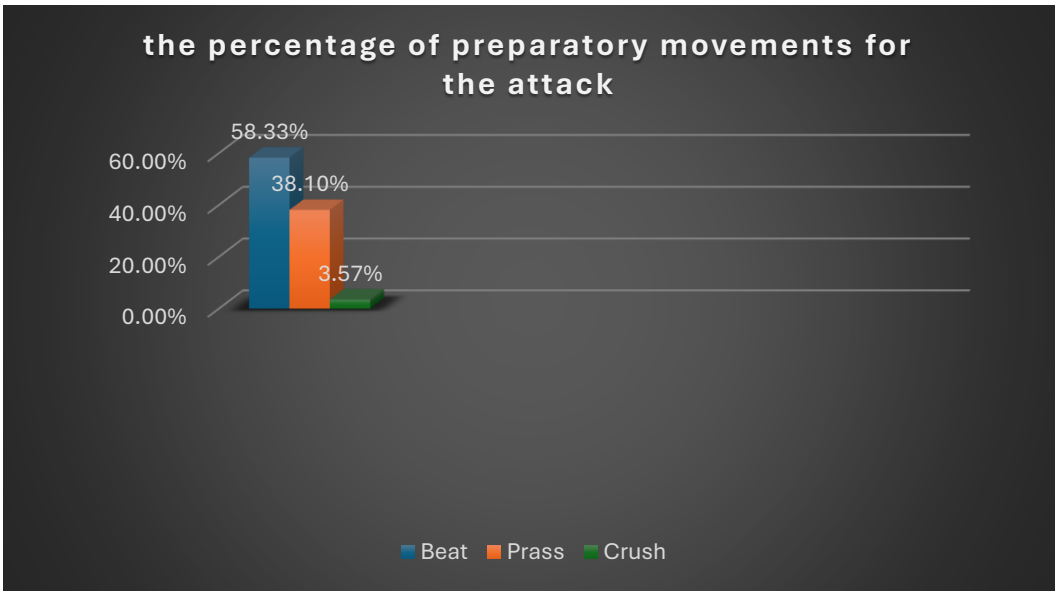

Figure 2. *illustrates the percentage of preparatory movements for the attack*

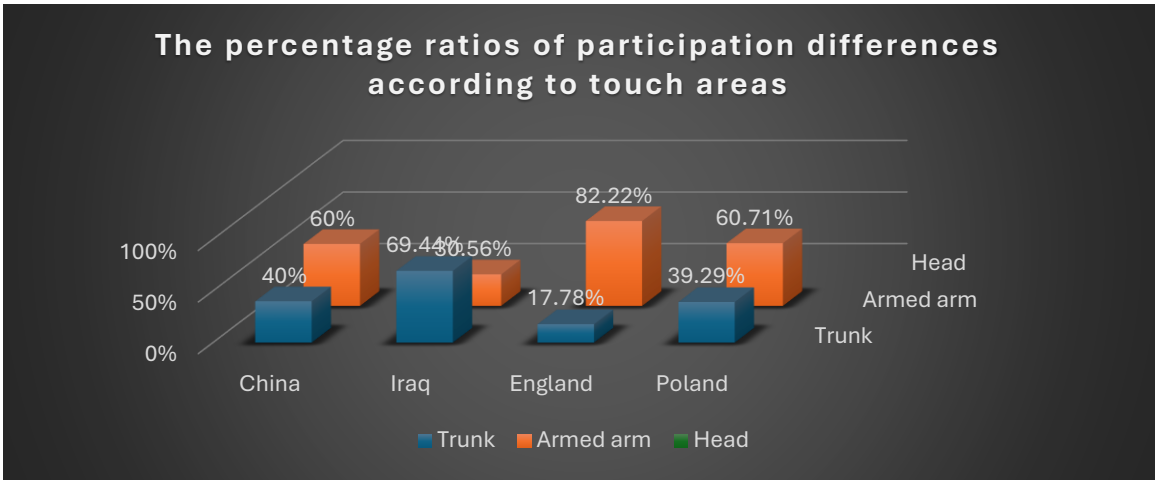

Figure 3. *illustrates the percentage of successful touches in relation to the target area (trunk, head, armed arm) for epee fencers from Iraq, China, England, and Poland*

Discussion

The striking has been shown to be clearly superior with (58.333%) as noticed in Table (2). This finding suggests that the user group of our study primarily preferred one-step direct and rapid taps, known to have high effectiveness in minimizing task time and ensuring accuracy. This is

Journal of Physical Education
Volume 38 – Issue (1) – 2026 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

supported by Schmidt and Lee (2019) who suggest that "quick movements with minimal motor requirements are more often used in competitive situations being their high effectiveness and low error cost." Pressure touches ranked also second but only made up (38.095%) due to their application in contexts where better control of the performance is required, even if had smaller percentage than striking cones actions derive from their increased time of execution. This is supported by Williams (2018) who suggested that "strategies that depend on control and stability are applied less often in the course of rapid competitive performance even though they may provide solutions for certain conditions". Conversely, crushing touches contributed with the lowest probability (3.571%), as evidence of their small influence. Majid (2022, p. 96) confirms that "skills with high complexity and significant physical demands see a reduced frequency of use unless they achieve direct effectiveness commensurate with their difficulty." Furthermore, Abbas and Mahdi (2012, p. 122) state that "modern training theories in fencing do not permit much execution of the crushing movement due to the rapid reactions of experienced players in executing touch registrations, as evidenced in recent championships, in contrast to striking, which is performed quickly with highly reactive and direct responses." Majid (2022, p. 96) also mentions that "when executing the crushing skill, it must be performed at high speed without fragmentation of the movement, paralleling the speed of executing the striking skill to make it difficult for the defending player to change direction and disengage."

Table (1) illustrates the distribution of touches between the armed arm and the torso, with a clear superiority of the armed arm at a percentage of (59.740%). This result indicates that the armed arm represents the most effective target during performance, due to its proximity to the opponent's weapon tip, as well as being the closest target for the opponent. This corresponds to Schmidt and Lee (2019), who found that players attack locations where precision is necessary or that are more likely if you are successful in competitive performance situations. Percent (%)The vast with a proportion of (40.259%), representing it as source an alternative effective in the event that access to the armed arm is difficult, especially if attack on armed arm has failed and continued the attack of torso. This outcome is in line with that of Williams (2018) who stated that larger target areas are often targeted when trying to gain a touch even though they require immense physical exertion to bring the opponent's sword tip to the legal touch area.

Conclusions

1- The technical and tactical performance clearly tends to focus on obtaining touches from the armed arm as the closest target to the opponent, which reflects the nature of competitive requirements and the specificity of skill in this type of performance, in addition to the players' awareness in selecting areas that enhance the chances of a successful attack.

Journal of Physical Education
Volume 38 – Issue (1) – 2026 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

2- The skillful performance of the preparatory movements for the attack largely depends on the cutting attack (strike), with a moderate use of the cutting attack (for pressure), and a very weak application of the cutting attack (for crushing).

3- The diversity of touch strategies is related to the tactical aspect of the team, as teams that are advanced in technical skills tend to focus on obtaining touches from the armed arm due to their tactical effectiveness, while some teams rely on the torso as a safer option to avoid counterattacks.

Recommendations

1- The implementation of specialized training utilizing modern devices and tools aims to enhance the accuracy of touch in the armed arm.

2- The adoption of specialized training employing modern devices and tools seeks to develop preliminary movements for a more effective attack.

3- The design of defensive plans targets the protection of areas most susceptible to touch (the armed arm).

4- The use of video recording in accordance with motion analysis and analytical programs is conducted periodically to monitor player development.

5- The integration of practical tests to measure touch accuracy within training programs, particularly those that simulate the game and encompass all legal touch areas, is essential.

Journal of Physical Education
Volume 38 – Issue (1) – 2026 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

References

Abbas, A. A. F., & Mahdi, A. H. (2012). The ABC of wheelchair fencing. Al-Kalima Al-Tayyiba.

Abdulghani, L. Y., Abdulghani, M. Y., & Abdulkareem, O. W. (2025). Designing a palm pressure measurement device to improve motor coordination in freestyle swimming among female students. Journal of Physical Education and Sport, 25(7), 1506–1513. https://doi.org/10.7752/jpes.2025.07168

Abdulkareem, O. W., & Sattar Jabbar, H. (2025). Comparative Biomechanical Analysis of Three-Point Shooting Between Elite Iraqi Basketball Players and International Counterparts. Journal of Sport Biomechanics. https://doi.org/10.61186/JSportBiomech.11.3.326

AlFadly, Y. S., & Mohsen, A. T. (2023). Influence Technique Training Data sensor (Triton Wear) To improve biomechanical variables for some stages Performance and achievement 50m freestyle youth. Journal of Physical Education, 35(2), 585-592.

Ali, H. M. (2013). Analytical study of offensive skills performance and their relationship to team ranking in women's volleyball. Journal of Physical Education, University of Baghdad.

Fouad, A., & Hamid, A. A. (2022). The effect of special exercises on developing the motor speed of the weapon arm in wheelchair épée for youth under 20 years. Physical Education Journal, 210–216.

Ghanim, M. R. (2025). The Neurocognitive Effect Of Augmented Visual Feedback On Learning The Back Handspring Skill In Gymnastics Among College Students Diverse Learning Methods. Indonesian Journal of Physical Education and Sport Science, 5(3), 397-407.

Hadi, A. A., & Naser, A. J. J. (2021). The Effect of Electronic Apparatus on Developing Balance in National Center for Gifted in Boxing and Basketball. Journal of Physical Education, 33(2), 98-107.

Hassan, M. F. A., & Abdulkareem, O. W. (2026). Effects of an Integrated Balance and Muscle Tension Control Training Program on Kinematic Variables and Defensive Accuracy in Volleyball Players. Journal of Sport Biomechanics, 11(4), 438-464.

Hawash, D., & Halil, M. (2022). The Effect of Using Teaching Aid on the Development of Straight Forehand and Backhand Shot Performance in Lawn Tennis. Journal of Physical Education, 34(3), 296-304.

Hussein, M. A. A. (2021). Comparison of selected kinematic variables and their contribution ratio to the performance of the lunge skill in the three fencing weapons among national team players (Master's thesis). College of Physical Education and Sport Sciences.

Jawad, M., & Jabbar Shinen, I. (2016). Prediction by the maximum oxygen consumption in terms of the concentration of lactic acid after the maximum physical effort for football players (18-25 years). Journal of Physical Education, 28(3), 99-115.

Journal of Physical Education
Volume 38 – Issue (1) – 2026 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

Magid, A. F. (2022). The effect of training programs for developing selected preparatory movements for attack and their relationship with accuracy, motor speed of the weapon arm, and competition results among young wheelchair épée players (Master's thesis). University of Baghdad, College of Physical Education and Sport Sciences.

Mohammed, A. A. (2012). Analytical study of the skill performance level of selected national teams participating in the Beijing 2008 Paralympic Games in wheelchair basketball. Journal of the College of Physical Education, University of Baghdad.

Mohsen, M., & Sabieh, Y. (2021). A Historical Study of Iraqi Paralympic Participations in IPC World Championships Athletics from 1990 till 2017. Journal of Physical Education, 33(2), 62-70.

Mousa, Q. S. (2000). Evaluation of selected offensive variables of the Egyptian national team during the 16th Men's World Handball Championship. Scientific Journal of Physical Education and Sport Sciences, 286.

Schmidt, R. A., & Lee, T. D. (2019). Motor learning and performance: From principles to application (6th ed.). Human Kinetics.

Volodchenko, V. S. (2011). Features of motor training in student athletes. Physical Education of Students, 2, 3–5. https://doi.org/10.6084/m9.figshare.97030

Williams, A. M., & Hodges, N. J. (2018). Skill acquisition in sport: Research, theory and practice (2nd ed.). Routledge.