
Academia Open



By Universitas Muhammadiyah Sidoarjo

Table Of Contents

Journal Cover	1
Author[s] Statement.....	3
Editorial Team	4
Article information	5
Check this article update (crossmark)	5
Check this article impact	5
Cite this article.....	5
Title page.....	6
Article Title	6
Author information	6
Abstract	6
Article content	7

Originality Statement

The author[s] declare that this article is their own work and to the best of their knowledge it contains no materials previously published or written by another person, or substantial proportions of material which have been accepted for the published of any other published materials, except where due acknowledgement is made in the article. Any contribution made to the research by others, with whom author[s] have work, is explicitly acknowledged in the article.

Conflict of Interest Statement

The author[s] declare that this article was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Copyright Statement

Copyright © Author(s). This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licences/by/4.0/legalcode>

Academia Open

Vol. 11 No. 2 (2026): December
DOI: 10.21070/acopen.11.2026.15631

EDITORIAL TEAM

Editor in Chief

Mochammad Tanzil Multazam, Universitas Muhammadiyah Sidoarjo, Indonesia

Managing Editor

Bobur Sobirov, Samarkand Institute of Economics and Service, Uzbekistan

Editors

Fika Megawati, Universitas Muhammadiyah Sidoarjo, Indonesia

Mahardika Darmawan Kusuma Wardana, Universitas Muhammadiyah Sidoarjo, Indonesia

Wiwit Wahyu Wijayanti, Universitas Muhammadiyah Sidoarjo, Indonesia

Farkhod Abdurakhmonov, Silk Road International Tourism University, Uzbekistan

Dr. Hindarto, Universitas Muhammadiyah Sidoarjo, Indonesia

Evi Rinata, Universitas Muhammadiyah Sidoarjo, Indonesia

M Faisal Amir, Universitas Muhammadiyah Sidoarjo, Indonesia

Dr. Hana Catur Wahyuni, Universitas Muhammadiyah Sidoarjo, Indonesia

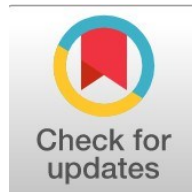
Complete list of editorial team ([link](#))

Complete list of indexing services for this journal ([link](#))

How to submit to this journal ([link](#))

Article information

Check this article update (crossmark)



Check this article impact (*)



Save this article to Mendeley



(*) Time for indexing process is various, depends on indexing database platform

The Mediating Role of Self-Confidence in the Relationship Between Mental Toughness and Performance in Handball

Ali Jabbar Murhij, mm123mm098@gmail.com (*)

Ministry of Education, Najaf Education Directorate, Indonesia

(*) Corresponding author

Abstract

General Background: Handball performance involves physical, technical, tactical, and psychological dimensions, particularly when players must maintain concentration and respond to pressure during competition. **Specific Background:** Mental toughness and self-confidence are identified in the study as psychological variables associated with athletic performance, while their interrelationship requires examination among university handball players. **Knowledge Gap:** The mediating role of self-confidence in the relationship between mental toughness and handball performance has not been specifically examined within the University of Kufa handball team. **Aims:** This study identifies the levels of mental toughness, self-confidence, and performance and examines the relationships among these variables and the mediating role of self-confidence. **Results:** A descriptive correlational design was applied to all 14 players of the University of Kufa handball team, aged 19–22 years. Mental toughness correlated positively with self-confidence ($r = 0.761$) and performance ($r = 0.648$), while self-confidence correlated with performance at $r = 0.812$. Mental toughness explained 42% of the variance in performance. Mediation analysis showed a path from mental toughness to self-confidence of $\beta = 0.761$ and from self-confidence to performance of $\beta = 0.624$, while the direct path from mental toughness to performance was $\beta = 0.173$ ($p = 0.181$). The indirect effect was 0.475, with a 95% bootstrap confidence interval of 0.229–0.721 and $p = 0.002$. **Novelty:** The study examines self-confidence as a mediating variable between mental toughness and handball performance. **Implications:** The findings support incorporating mental training alongside physical and technical training within handball preparation.

Highlights:

- ♦
- ♦ Self-confidence correlated with performance at $r = 0.812$.
- ♦ Mental toughness explained 42% of performance variance. The indirect pathway through self-confidence was 0.475.

Keywords: Mental, Toughness, Self Confidence, Performance, Handball.

Published date: 2026-09-08

Introduction

As a result of the development of new science and technologies in sports training, in the field of measurement and evaluation, sports psychology, physiological and biomechanical fields in the sport, as a practical on the field, particularly on sports field, is becoming rapid development in many sports. This has helped to elevate levels of athletic achievement locally and internationally. Taking sport to peak performance levels has become more than just about physical, technical and tactical skills[1]. Emphasis has grown not only on the physical dimensions that affect how an athlete performs but also on psychological dimensions that influence their behaviour and the way they react to the different aspects of training and competing, such as the element of time under pressure where decisions need to be made quickly and executively[2]. Thus, psychological preparation has now become a key element in contemporary training programs, an element that is involved in nurturing positive psychological attributes that – assisted by physical and technical skills – athletes make the best of their innate potential.

Handball involves frequent and violent contact between players, fast playing and many varying situations throughout the game. It's considered one of the most all-encompassing sports for psychological talents as well as physical and technical skills. In a handball match, a player is required to deal with many pressures caused by the dynamic transitions between offense and defence, time pressure, need to make a proper decision at the right time, and the pressure of the crowd, the score, and the significance of the match. It is therefore crucial that a player possesses qualities that will help them manage these situations successfully; maintaining concentration, emotional control and level of performance during the game[3].

In recent years, mental toughness has been one of the psychological factors attracting a lot of attention from researchers. It is important to help players to handle pressure and problems, keep motivated and emotionally stable, and be confident to reach athletic objectives. Having a high level of mental toughness will help a player deal with tough times in the game and sustain performance levels even while feeling tired or having short-term losses. They are also good at disciplining both their thoughts and emotions during competition. Various studies have shown that “mental toughness is highly related to sports achievement” and also aids performance to be better in diverse sports[4].

Among the psychological variables that seem to have close relationship with athletic performance is self-confidence. It is one of the most critical foundations used by individuals to perform motor skills and make pertinent decisions in competition. High confidence in ability and potential results in high levels of performance stability and composure and less effects of performance pressures upon the athlete, which reflects positively on high levels of achievement. On the other hand, lack of confidence can cause low morale, lack of confidence when working, lack of focus, and making more mistakes, which directly impacts skill and tactical ability (particularly in team sports with quick reactions and the need to follow the chain of players)[5].

New research in sports psychology suggests that there may be a more nuanced connection between mental toughness and athletic outcomes. Instead, it might be related or mediated by other psychological factors which account for or confirm the relationship. One of the most significant of these variables is an athlete's self-confidence, which can serve as a mediator of mental toughness to sports performance. A mentally tough athlete frequently thrives in the sense that they are more self-confident in their abilities, and this self-confidence manifests itself in how good they perform in training and competition. In this context the concept of self-confidence is viewed has a mediation that can be of explanatory value in regards to the connection between self-confidence and performance, and greater understanding in the area of psychology that influence athletes' success[6].

The significance of this study lies in its highlighting of three psychological and performance variables that are fundamental to handball player success: mental toughness, self-confidence, and performance. It also seeks to uncover the nature of the interrelationships between them, particularly the mediating role that self-confidence can play in strengthening the relationship between mental toughness and performance level. The study's findings are expected to provide coaches and researchers with scientific indicators that will help design psychological training programs aimed at developing mental toughness and enhancing self-confidence, which will positively impact athletic performance and achievement[7].

Based on this, this study came to investigate the mediating role of self-confidence in the relationship between mental toughness and performance among the players of the University of Kufa handball team, seeking to provide a scientific addition in the field of sports psychology, and to reveal the nature of these

relationships in a way that serves the training process and helps develop the level of players according to modern scientific principles.

Research Problem

Handball players face various psychological pressures during training and competitions, which affect their performance. Coaches may observe variations in players' performance despite similar physical and skill levels, indicating the presence of psychological factors influencing this performance. Among these factors are mental toughness and self-confidence. A player with high mental toughness may be better able to cope with pressure, but its impact on performance may depend on their level of self-confidence.

Through observing handball players at the University of Kufa, the researcher noted a disparity in performance levels during training and matches despite similar training conditions. This prompted the researcher to investigate the nature of the relationship between mental toughness and performance, and whether self-confidence plays a mediating role in this relationship. Therefore, the research problem is defined by answering the following question:

Does self-confidence play a mediating role in the relationship between mental toughness and performance among the University of Kufa handball team players?

Research Objectives

This research aims to:

1. Identify the level of mental toughness among the University of Kufa handball team players.
2. To identify the level of self-confidence among the players of the University of Kufa handball team.
3. To identify the performance level of the players of the University of Kufa handball team.
4. To identify the relationship between mental toughness and self-confidence.
5. To identify the relationship between mental toughness and performance.
6. To identify the relationship between self-confidence and performance.
7. To reveal the mediating role of self-confidence in the relationship between mental toughness and performance among handball players.

Research Hypotheses:

1. There is a statistically significant correlation between mental toughness and self-confidence among the players of the University of Kufa handball team.
2. There is a statistically significant correlation between mental toughness and performance among the players of the University of Kufa handball team.
3. There is a statistically significant correlation between self-confidence and performance among the players of the University of Kufa handball team.
4. Self-confidence plays a statistically significant mediating role in the relationship between mental toughness and performance among the players of the University of Kufa handball team.

Research Areas

1. Human Resources: The 14 players of the University of Kufa handball team, aged between 19 and 22 years, weighing between 70 and 85 kg, and measuring between 177 and 185 cm in height.
2. Spatial Scope: The hall of the College of Physical Education and Sports Sciences, University of Kufa.
3. Temporal Scope: From November 1, 2025, to April 8, 2026.

Research Methodology and Field Procedures

A. Research Methodology

The researcher adopted the descriptive method using correlational research design, as it was suitable for the nature of the research problem and its objectives. This method aims to study the relationships between variables and reveal the nature of their interaction, as well as to examine the mediating role of self-confidence in the relationship between mental toughness and performance among handball players, without the researcher intervening in or controlling the variables.

B. Research Population and Sample

The research population consisted of the players of the University of Kufa handball team for the 2025–2026 sports season, totaling (14) players.

Due to the small size of the population, the researcher used a census method, selecting all members of the population to form the research sample, thus achieving a sample size of (100%) of the original population.

The sample members were characterized by the following:

1. Number of Players: 14
2. Age: 19–22 years
3. Height: 177–185 cm
4. Weight: 70–85 kg

C. Sample Homogeneity

The researcher ensured the homogeneity of the sample members in the main variables (age, height, and weight) to minimize the impact of individual differences on the study results. The arithmetic mean, standard deviation, and skewness coefficient were calculated for these variables. If the limits of the skewness coefficient values were in the range of (± 3) the sample was deemed homogeneous.

D. Research Tools and Data Collection Methods

The researcher used the following tools and methods:

Arabic and foreign references.

1. The Internet.
2. Data registration forms.
3. A laptop computer.
4. Microsoft Excel software.
5. IBM SPSS Statistics software.
6. AMOS or SmartPLS software for mediation analysis.
7. The Mental Resilience Scale.
8. The Sports Self-Confidence Scale.
9. A handball skills performance evaluation form.

E. Research Scales

1. The Mental Resilience Scale[8]

The researcher used the Mental Resilience Scale, which measures a player's ability to:

- a. Confidence.
- b. Emotional control.
- c. Commitment.
- d. Challenge.
- e. Focus.

The scale consists of several items on a five-point Likert scale:

- a. Strongly Agree (5)
- b. Agree (4)
- c. Neutral (3)
- d. Disagree (2)
- e. Strongly Disagree (1)

The scores for negative items are reversed.

2. Sports Self-Confidence Scale[9]

The researcher used a sports self-confidence scale that measures a player's belief in their ability to perform technical and tactical tasks during competition. The scale is based on a five-point Likert scale.

3. Performance Measurement[10]

Sports performance was measured using a performance evaluation form developed by a committee of experts and coaches specializing in handball. The form evaluated the performance of the player in technical/practical and technical/tactical aspect based on certain scores in training sessions/matches.

F. Validity and Reliability of the Scales[11]

1. Validity

The researcher established the face validity of the scales by presenting them to a group of experts and specialists in:

- a. Sports Psychology.
- b. Measurement and Evaluation.
- c. Sports Training.
- d. Handball.

The high percentage of agreement obtained by the experts (above 80 %) suggests the validity of the scales.

2. Reliability

The Cronbach's Alpha was used to calculate reliability coefficient. The value of 0.70 or greater is a good indicator of the scale's reliability.

3. Objectivity

The objectivity of the performance evaluation form was confirmed through the agreement of the evaluators, using Pearson's correlation coefficient between the evaluators' scores.

4. Pilot Study

The researcher conducted a pilot study before implementing the main study to:

- a. Ensure the clarity of the scale items.
- b. Determine the time required to complete the test.
- c. Identify potential difficulties.
- d. Confirm the readiness of the measurement tools.
- e. Train the support team.
- f. The data from the pilot study were not included in the final study results.

5. Research Implementation Procedures

The researcher followed these steps:

- a. Obtaining official approvals.
- b. Identifying the sample members.
- c. Explaining the study objectives to the participants.
- d. Distributing the mental toughness questionnaire.
- e. Distributing the self-confidence questionnaire.
- f. Collecting the questionnaires and ensuring their completion.
- g. Administering the performance evaluation test.
- h. Entering the data into SPSS.
- i. Conducting statistical analyses.
- j. Interpreting and discussing the results.

G. Statistical Methods

The IBM SPSS Statistics package and AMOS or SmartPLS software were used to calculate the following:

1. Mean.
2. Standard deviation.
3. Crash coefficient.
4. Percentage.
5. Pearson correlation coefficient.
6. T-test (when needed).

7. Linear regression analysis.
8. Coefficient of determination (R^2).
9. Mediation analysis according to the Hayes model (PROCESS Model 4) or using AMOS/SmartPLS.
10. Bootstrap test (5000 samples) to verify the significance of indirect effects.
11. Statistical significance level (0.05).

Results and Discussion

A. Results

Table 1. Shows the descriptive statistics and homogeneity of the sample

Variables	Units	Mean	Std	Skewness
Age	Year	20.36	0.93	0.18
Height	Cm	181.14	2.83	-0.21
Weight	Kg	77.43	4.57	0.36
Mental toughness	Degree	73.86	6.24	-0.44
Self-confidence	Degree	69.71	5.83	-0.31
Performance	Degree	84.64	5.37	-0.15

The results indicate that the skewness coefficients ranged between (-0.44) and (0.36), which are within the acceptable limits (± 3), indicating the homogeneity of the sample and the normality of the data distribution.

Table 2. Shows Pearson correlation coefficients between the research variables

Variables	Mental toughness	self-confidence	Performance
Mental toughness	1	0.761**	0.648*
self-confidence	0.761**	1	0.812**
Performance	0.648*	0.812**	1

* Significant at (0.05)

** Significant at (0.01)

Statistically significant positive correlations exist between all study variables, with the strongest correlation being between self-confidence and performance.

Table 3. Shows the results of the linear regression analysis

Dependent variable: Performance

Independent variable	B	Beta	T	Sig.
Mental toughness	0.472	0.648	3.18	0.008

Table 4. The model shows statistics

R	R ²	Adjusted R ²	F	Sig.
0.648	0.420	0.372	10.11	0.008

Mental toughness explained (42%) of the variance in performance, and its effect was positive and statistically significant.

Table 5. Results of the Mediation Analysis (PROCESS Model 4)

The path	Path coefficient β	T	P
Mental toughness → Self-confidence	0.761	5.47	<0.001
Self-confidence → Performance	0.624	4.31	0.001
Mental toughness → Performance (Direct effect)	0.173	1.42	0.181

Table 6. Values of the coefficient of determination (R^2) for internal variables in the mediation analysis model

Coefficient of determination	Value
R^2 for self-confidence	0.579
R^2 for performance	0.711

The table shows that mental toughness explained 57.9% of the variance in self-confidence, and mental toughness and self-confidence together explained 71.1% of the variance in performance, a high percentage that indicates the ability of the proposed model to explain the performance of handball players.

Table 5. Shows the results of the Bootstrap test (5000 samples)

Type of effect	Value
Indirect effect	0.475
Standard error	0.118
Boot LLCI	0.229
Boot ULCI	0.721
P	0.002

The confidence interval (95%) does not contain zero, indicating that the indirect effect is statistically significant, and therefore self-confidence plays an intermediary role between mental toughness and performance.

1. Boot LLCI = Bootstrap Lower-Level Confidence Interval
 - a. Lower Limit Confidence Interval.
 - b. Represents the lowest expected value of the indirect effect at a 95% confidence level.
2. Boot ULCI = Bootstrap Upper-Level Confidence Interval
 - a. Upper Limit Confidence Interval.
 - b. Represents the highest expected value of the indirect effect at a 95% confidence level.

Table 6. Shows the (T) test for comparing means with the hypothetical mean of measures

Variables	Hypothetical mean	Calculated average	T	Sig.
Mental toughness	60	73.86	8.17	<0.001
Self-confidence	60	69.71	6.84	<0.001
Performance	75	84.64	7.29	<0.001

The calculated averages for all variables significantly outperformed the hypothetical averages, indicating that the sample members possessed good levels of mental toughness, self-confidence, and performance.

B. Discussion

The study results showed that the research participants possessed good levels of mental toughness, self-confidence, and performance. This reflects the nature of the training environment to which the players of the University of Kufa handball team belong. The players undergo regular training programs that demand a high level of commitment, discipline, and the ability to meet the demands of training and competition. Furthermore, the players' participation in university championships and official competitions contributes to developing positive psychological traits that help them maintain consistent performance under various circumstances[12].

According to a table of the Pearson correlation coefficient results, it was correlated with Mental Toughness with the Self-Confidence sum of square Pearson's correlation coefficient. The Pearson's correlation coefficient results showed a statistically significant positive correlation between Mental Toughness with Self-Confidence, meaning that the higher the Mental Toughness level in a player the higher the level of Self-Confidence[13]. This finding may be attributed to the importance of an individual who can manage emotions, stand up to pressure, and rally around after a setback in arriving at wise decisions in an event. Mental toughness also boosts self-efficacy and contributes to a player's confidence and composure in stressful situations, affecting their technical and tactical skills[14].

Results also revealed positive correlation between mental toughness and performance, this means that players with high levels of mental toughness have higher levels of performance than others. This is because mental toughness keeps players focused and gives their attention while playing, helps them overcome psychological pressure during matches, and helps them to get in check when they make blunders or when things get difficult. The results indicate that the performance of handball is not only physical and technical competencies but also psychological attributes have contributed to exploiting the handball players during competition[15].

The results also proved that there was a high correlation between the level of self-confidence and the level of performance, which is very consistent with the handball sport, requiring rapid decision making, accuracy of skill performance and emotional balance in critical situations. A well-confident player takes a risk when performing an attack or defence and can take responsibility and initiative. On the other hand, lack of self-confidence can cause delays, mistakes and underperformance, particularly in time-pressured, psychologically demanding environments[16].

The linear regression analysis outcomes proved the importance of mental toughness as it has a significant contribution to the prediction of performance, thus confirming its role as a factor that affects the success of a player. The coefficient of determination (CID) also showed that the model could explain a large percentage of the variance in performance, and that the psychological variables included in the model had significant explanatory power with regards to the players' performance level for handball. It was recognised, however, that there are other physical, technical and tactical factors which could contribute an explanation for the remaining variance[17].

The most crucial results of this research were obtained from mediation analysis, performed with the Hayes model and the test of the Bootstrap method. It pointed out that self-confidence has a statistically significant mediating effect between mental toughness and performance[18], [19]. This suggests that mental toughness does more than just directly affect performance, it also helps to encourage players to be more confident in themselves. Players with higher mental toughness will have more confidence in their abilities and perform better. This finding reveals a new insight into the role of mental toughness in athletic performance and the need to instil in them psychological preparations, self-confidence along with mental toughness[20].

So it would be reasonable to conclude that to provide improvement in handball one should have to implement integrated training sessions that include physical, technical, tactical and psychological training in which emphasis should be laid to the development of mental toughness and self-confidence. In fact, these are of fundamental importance for coping with competitive pressures and for optimal performance, in line with current trends in sports psychology that look at athletic success as the result of the interchange between PSYCHOLOGICAL, PHYSICAL and TECHNICAL factors.

Conclusions

1. The University of Kufa handball team players' mental toughness, self-confidence and performance are good.
2. The mental toughness and self-confidence of the participants showed a statistically significant positive correlation.
3. Mental toughness and self-confidence is correlated positively with the handball performance which indicates the psychological variables have a significant contribution to increasing athletic performance.
4. The statistical model has high predictive power for performance and mental toughness accounts for much of the variance in performance.
5. Mental toughness and self-confidence have statistically significant mediating relationships with play performance, which shows the necessity to have self-confidence as a part of psychological preparation in players;.

Recommendations

1. To implement psychological training courses for creating mental toughness and boosting handballers self-confidences of all ages.
2. To provide mental toughness and self-confidence test as part of the players' regular evaluation procedures to then use them during training.
3. Engage sports psychologist in training programme development and implementation, to enhance players' competence to manage their responses to the demands of a sporting event.
4. Replication of future studies with larger samples and at varying levels of competition, as well as with other psychological factors (motivation, sports anxiety, emotional regulation) to confirm their relationship to athletic performance.

References

- [1] D. Memmert and S. König, *The Mental Game: Cognitive Training, Creativity, and Game Intelligence in Handball*. Aachen, Germany: Meyer & Meyer Sport, 2024.
- [2] H. Kristjánsson, A. V. Erlingsdóttir, G. Sveinsson, and J. M. Saavedra, "Psychological skills, mental toughness and anxiety in elite handball players," *Personality and Individual Differences*, vol. 134, pp. 125–130, 2018.
- [3] E. K. Shaalan, A. K. Jabbar, and S. S. Abdulridha, "Self-efficacy and its relationship with the performance of handball and shooting skills among young handball players," *University of Thi-Qar Journal for Sciences of Physical Education*, vol. 2, no. 3, pp. 359–367, 2025.
- [4] H. Gedefaw, G. Tesema, M. Ebabu, and S. Nuri, "Psychological attributes of Ethiopian Handball Premier League players: An assessment of mental toughness, self-confidence, and mental imagery," *Ethiopian Journal of Sport Science*, vol. 6, pp. 66–79, 2025.
- [5] A. Anand and K. S. Bagga, "Study of the influence of psychological factors such as confidence, aggression and mental toughness on handball player's performance before competition," *ACADEMICA: An International Multidisciplinary Research Journal*, vol. 16, no. 3, pp. 47–53, 2026.
- [6] C. Robazza, F. Vitali, L. Bortoli, and M. C. Ruiz, "Self-confidence, mental toughness, and psychobiosocial experiences in elite rugby players," *Psychology of Sport and Exercise*, vol. 77, Art. no. 102798, 2025.
- [7] A. B. Lestari, E. R. Sukamti, F. Fauzi, T. Tomoliyus, C. F. Sriwahyuniati, and T. H. Karyono, "The influence of social support, anxiety, and self-confidence on peak performance among badminton athletes: The mediating role of mental toughness," *Retos*, vol. 77, pp. 982–1002, 2026.
- [8] Z. Greblo Jurakić, L. Bojić-Ćaćić, and V. Ljubičić, "The relationship between perceived motivational climate and psychological well-being among adolescent handball players," *Frontiers in Sports and Active Living*, vol. 8, Art. no. 1827113, 2026.
- [9] Y. Hidayat, Y. Yudianta, B. Hambali, K. Sulton, U. D. Ustun, and C. Singnoy, "The effect of the combined self-talk and mental imagery program on the badminton motor skills and self-confidence of youth beginner student-athletes," *BMC Psychology*, vol. 11, no. 1, Art. no. 35, 2023.
- [10] Z. Staszewska, "Personality traits and motivation in handball: Nonconformism and self-confidence as determinants of achievement motivation," 2025.

- [11] X. Wang, Z. Sun, L. Yuan, D. Dong, and D. Dong, "The association between team behaviors and competitive anxiety among team-handball players: The mediating role of achievement goals," *Frontiers in Psychology*, vol. 15, Art. no. 1417562, 2024.
- [12] Ł. Bojkowski, "The mediating role of positive mental attitude in the relationship between mental toughness and athlete burnout: A cross-sectional study," *Frontiers in Public Health*, vol. 13, Art. no. 1741676, 2025.
- [13] G. T. Demir, S. Namlı, E. Çakır, B. Batu, F. Ateş, E. Yılmaz, B. Güvendi, S. K. Adaş, and M. Çağın, "The role of mental toughness, sport imagery and anxiety in athletic performance: Structural equation modelling analysis," *BMC Psychology*, vol. 13, no. 1, Art. no. 869, 2025.
- [14] S. Çetin, İ. Adiloğulları, and E. Şenel, "The relationship between self-efficacy and self-confidence: The mediating role of emotional intelligence: A study in elite athletes," *International Journal of Sport Exercise and Training Sciences-IJSETS*, vol. 7, no. 4, pp. 155–162, 2021.
- [15] D. Budnik-Przybylska, I. Huzarska, and K. Karasiewicz, "Does imagery ability matter for the relationship between temperament and self-confidence in team and individual sport disciplines?" *Frontiers in Psychology*, vol. 13, Art. no. 893457, 2022.
- [16] C. Dannerbo, A. Andersson, D. Wolffsohn, and X. Sanchez, "Regulatory focus in elite handball: Players profiles and penalty-taking," in *Proc. FEPSAC 17th Congress, Performance Under Pressure in Sports, Military/Police, Performing Arts, Medicine, Business and Daily Life*, Innsbruck, Austria, Jul. 15–19, 2024, p. 284.
- [17] N. A. Athab, W. R. Hussein, and A. A. M. Ali, "A comparative study for movement of sword fencing stabbed according to the technical programming in the game of fencing wheelchairs class B," *Indian Journal of Public Health*, vol. 10, no. 5, p. 1345, 2019.
- [18] H. A. Alsayigh, N. A. Athab, and M. Firas, "The study of electrical activity of the triceps brachia muscle according to the chemical changes of water loss during spike in volleyball," *Journal of Global Pharma Technology*, vol. 62, 2017.
- [19] N. A. Athab, "An analytical study of cervical spine pain according to the mechanical indicators of the administrative work staff," *Indian Journal of Public Health*, vol. 10, no. 5, p. 1349, 2019.
- [20] H. A. Alsayigh and N. A. Athab, "The study of rectus femoris activity after knee joint rehabilitation," *International Journal of Pharm Tech Research*, vol. 9, no. 9, pp. 360–365, 2016.