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ORIGINAL STUDY

The Relationship Between Functional Etiology of Ancle Injuries and Return-to-Play Efficiency Among Tennis Players

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Abstract

The present study seeks to determine the role of etiology in rehabilitating injured players and the efficiency of return-to-play. The researcher hypothesizes that there are statistically significant differences in the functional efficiency of the ankle joint between injured and non-injured players. Additionally, it is hypothesized that there is a statistically significant relationship between the functional etiology of ankle joint injury and return to play efficiency among tennis players. The research population and sample include tennis players who are registered in the Middle Euphrates sports clubs and who have suffered an injury in the ankle joint, whether during the current sports season or previous seasons. The number of injured players was found to be 70. The researcher randomly selected 30 players to participate in functional tests, 30 players to participate in answering a questionnaire containing questions regarding etiology and their level of interest in this vital issue, and 10 players to participate in a pilot study. The research variables and tests were identified and determined based on scientific research. Pre-tests were conducted on the research groups regarding functional variables, followed by preparing a form regarding etiology. The researcher conducted the main experiment on the research groups for a period not exceeding 8 weeks regarding exercises and an equal period regarding sessions for each group. The post-tests were conducted on the research sample, and the results were analyzed and discussed to reach conclusions and recommendations. The researcher concludes that etiology significantly contributes to enhancing the players' knowledge about injury etiology mechanisms.

Keywords: Etiology, Functional efficiency, Tennis

1. Introduction

Human thinking has developed over the ages to address the needs of human beings. It is in the current era that the highest levels of creativity and cognitive thinking have been observed in developed nations, which have achieved immense milestones in all scientific and humanitarian activities. The sports sector is not untouched by these developments. Sports were earlier reserved for a select class of people for the purpose of sheer pleasure and recreation. However, sports have developed into a new paradigm of "playing to win." The level of competition was directly proportional to the association of winning outcomes with economic, social, or political factors (Jalal Al-Din, 2007). In this regard, sports activities have developed a new form to achieve the objective of progress and achievement, which led to the integration of applied sciences into the training process. This is a major burden for tennis players.

Ankle joint injuries have been regarded as the most common injury for tennis players due to the technical performance requirements of the game, which involve rapid changes in direction, lateral movements, and jumps, in addition to the high levels of stress on the joint during training and competition (Hunaidi, 2015). The ankle joint is considered a major fixation point for the transmission of power and the maintenance of balance and motor stability. Hence, any form of functional impairment in the ankle joint is a

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direct contributor to impacting the efficiency of the performance.

Recent studies suggest that an understanding of the functional etiology of ankle injuries, which includes muscular insufficiency, weakness of the neuromuscular balance, lack of range of motion, and motor coordination disorders, has significantly contributed to the improvement of rehabilitation and prevention methods. The researcher concurs with (Adil, 2004) that one of the major reasons for the recurrence of injuries, as well as the deterioration of the physical and technical levels of players, is the quick and dangerous return to play without the attainment of full functional efficiency.

Moreover, one of the most important bases upon which a tennis player depends is the functional performance of the body systems. For instance, the muscles of the lower extremities, especially those surrounding the ankle joint, are considered very important. Muscular strength is one of the factors that prevent injuries during the game. Besides, the wide range of motion of this joint allows for high fluidity during motor performance, whether at the competitive or training level (Othman, 2018). Therefore, special attention needs to be given to these functional systems to avoid injury, especially of the ankle joint, which is considered one of the most critical joints for a tennis player because of the movement involved during the game. Accordingly, the player and the coach should be fully aware of the injury prevention methods, which would make the player a captive of treatment and rehabilitation centers, besides being absent from the game for a long time depending on the injury.

Tennis has remained a sport that maintains its uniqueness as a sport of enjoyment, excitement, and suspense. It demands a very high level of physical, motor, and mental capabilities, and any weakness in one of these areas influences the others, resulting in injury. As a sport, the researcher perceives it to be one that demands a very high level of physical fitness, as its character is defined by the rapid and sudden movements of the player and the muscular strength of the leg muscles required by the player (Abdulhassan, 2010). It is a sport where a lot of injuries are recorded. There is no distinction between upper and lower extremity injuries, as the sport demands the use of both extremities during all the movements required by the playing situations.

Therefore, the significance of the present study may be highlighted when analyzing the relationship between the functional etiology of ankle joint injuries and the efficiency of the return to play among tennis players, helping to develop the most effective rehabilitation programs with exact scientific bases.

Despite improvements being made to sports rehabilitation techniques, there is an increased number of tennis players who experience recurring ankle joint injuries during and after play. Some even resume playing with low functional levels, which affect their performance as well as their chances of relapsing. The cause of this is mainly because of insufficient attention being given to analyzing the functional etiology of the injury, which is focused on relieving pain without addressing the full functional efficiency of the joint.

The research problem is encapsulated by the following question:

What is the role of the functional etiology of ankle joint injuries in the efficiency of the return to play among tennis players?

As for the research objectives

1. To identify the most common ankle joint injuries that affect tennis players.
2. To identify the functional etiology of ankle joint injuries that affect tennis players.
3. To analyze the level of functional efficiency of the ankle joint of the player who has an injury.
4. To identify the relationship between the functional etiology of ankle joint injuries and the efficiency of the return to play among tennis players.

While the research hypotheses

1. There is a statistically significant difference in the functional efficiency of the ankle joint between injured and non-injured players.
2. There is a statistically significant relationship between the functional etiology of ankle joint injuries and the efficiency of the return to play among tennis players.

In the definition of key terms

Etiology

Etiology is the branch of medicine that deals with the science of studying diseases and injuries. It is mainly focused on studying the factors that contribute to a particular disease or injury. It is also used to refer to factors that contribute to an injury, such as sports injuries. For instance, etiology of sports injuries, such as ankle joint injuries that affect tennis players, refers to factors that contribute to an injury, such as improper movements, muscle weakness, and environmental factors (McCance & Huether, 2019).

2. Research methodology and field procedures

2.1. The research methodology

The researcher chose to employ the descriptive analytical approach using correlational studies, as it is appropriate to the research. This method aims to

explore the role of functional etiology of ankle joint injuries in the efficiency of Return to Play (RTP) for tennis players. This includes describing and analyzing the functional variables related to the injury, as well as the relationship between these variables and the degree of functional efficiency in relation to RTP.

2.2. The research population and sample

The research population includes tennis players registered in sports clubs and federations in the Middle Euphrates region, provided they had suffered an ankle joint injury during the previous or current sports season.

The researcher identified the research sample through a thorough census of injured players, reaching a total of 70 players. The researcher employed random sampling to classify the research sample as follows:

- 30 players participated in muscular strength and Range of Motion (ROM) tests.
- 30 players participated in answering a questionnaire with a series of questions about etiology and the extent of their interest in this vital issue.
- 10 players participated in the pilot study.

The reasons for selecting this research sample, in line with the research problem, are as follows:

1. The research sample had to suffer at least one previous ankle joint injury during the previous or current sports season.
2. The research sample should have completed a medical or physical rehabilitation program.
3. The research sample should have received clearance to Return to Play (RTP).
4. The research sample should not have had any other significant injury in the lower extremities during the measurement period.

The research sample can also be divided into a group of injured players and a group of non-injured players, as illustrated in Table 1.

Table 1. Distribution of the Research Sample.

Group	Total Count	Pilot Study	Main Sample
First	35	5	30
Second	35	5	30
Total	70	10	60

2.3. The research instruments and tools

The researcher employed the following methods to collect the data regarding the research sample:

1. Data Collection Form: This includes the personal details of the subject, history of injuries, type of injuries, duration of rehabilitation, and functional tests related to the ankle joint.
2. Scientific Sources and Literature.
3. Data Collection Surveys.
4. The Internet.

2.4. Devices and equipment used

Goniometer.
HP Laptop.
Resistance bands (Elastic bands).
Benches (Exercise platforms).
Cones.

2.5. Determination of the research variables

After an extensive study and analysis of the relevant literature and the results obtained from the relevant studies conducted on the subject matter of the research study, including (Herzog et al., 2019; Kaiser, 2021; Layouni et al., 2025), the researcher determined the variables to include muscular strength, range of motion (ROM), and balance.

The researcher selected the tests to be conducted on the research sample as follows:

1. Standing Long Jump Test (Broad Jump) (Bompa & Buzzichelli, 2019).

Purpose: To determine the muscular power of the lower extremities in the horizontal direction.

Tools: Measuring tape, non-slip level surface.

Procedure: The subject stands behind the starting line with the feet parallel to the starting line and then makes a jump forward with the utmost power.

Scoring: The subject is given two attempts, and the performance is recorded.

2. Range of Motion (ROM) Test (Norkin et al., 2016).

Purpose: To measure the range of motion for the ankle joint (Flexion-Adduction).

Measurement Tool: Goniometer.

Procedure: The participant is placed in a sitting position with the knee flexed slightly to reduce the tension in the gastrocnemius muscle.

Measurement Points: Fulcrum: Ankle joint (Lateral Malleolus).

Stationary Arm: In line with the midline of the fibula.

Moving Arm: In line with the lateral side of the fifth metatarsal.

Scoring: The goniometer is placed on the bony prominence of the joint. The participant is asked to move the foot through the maximum possible range of motion without pain.

3. Star Excursion Balance Test (SEBT) (Gribble et al., 2012).

One of the most modern balance tests used in sports and rehabilitation is the Star Excursion Balance Test. This test is used to measure balance ability, neuromuscular control, and ankle joint stability after sports injury.

Purpose: To test balance ability, ankle joint stability, neuromuscular control, injury risk factors, and the effectiveness of the rehabilitation programs.

Procedure: The participant is asked to stand on one leg (injured leg) on the center of the 8-directional star pattern. The participant is then asked to reach the furthest point in the three designated directions using the other leg.

Clinical Significance: This test is widely used for athletes to diagnose functional ankle instability. It is a strong predictor for future injury.

2.6. Functional competency and return-to-play scale (Ankle Functional Performance Scale)

The researcher designed a number of questions regarding ankle injuries, the effect of such injuries on tennis players, and prevention strategies. The responses are recorded as (Yes/No) and later transformed into statistical data. The "Etiology" part is designed to assess the level of knowledge regarding the causes of injuries among the players, making it easier to compare the results and obtain the research objectives.

2.7. The pilot study

The researcher conducted a pilot study on the 2nd of April, 2025. The sample size comprised 5 participants for the functional tests and other 5 participants for the Ankle Functional Performance Scale.

2.8. Pre-tests

The pre-tests were conducted on the 8th of April, 2025. The researcher made sure the tests were conducted step by step, with strict time control, and the second group had 10–15 minutes to fill out the questionnaires.

2.9. Main experiment

The researcher conducted the main experiment by using targeted exercises to improve the strength of the muscles, ligaments, and tendons around the ankle joint.

Exercise Protocol: 24 exercises using different tools to improve the muscles.

Progression: Exercises followed a principle of gradual progression (easy to difficult), which managed intensity, volume, and recovery to avoid boredom and target the injury area.

Duration: 8 weeks, 3 days a week (Sunday, Tuesday, Thursday), with each session lasting 60 minutes.

Educational Component (Group 2): 24 sessions were designed to provide etiology and scientific knowledge of ankle injuries and their effects on the tennis player's performance and career. These educational components were presented through posters and videos via Data Show.

Duration of each session: 45 minutes, 3 days a week (Saturday, Monday, Wednesday).

Timeline: The experiment was carried out on injured players from Middle Euphrates clubs on their respective courts from March 28, 2025, to July 22, 2025.

2.10. Statistical methods

The researcher used SPSS (Statistical Package for the Social Sciences) to process the results of the experiment. The statistical methods used were as follows:

1. Arithmetic Mean.
2. Median.
3. Standard Deviation.
4. T-test.

Pearson Correlation Coefficient.

3. Results and discussion of the results

3.1. Discussion of the results

It is noted from Table 2 that there is a marked difference in the pre-tests and post-tests for the members of the first group. This development is attributed to the exercises developed for the study. These exercises were tailored to fit the research sample and

Table 2. Means, Standard Deviations, and Calculated T-values for Functional Tests.

no	Variables		Unit	Pre-Test		Post-Test		DiffMean	Calcul Ated T	Signific ance Level (P)	Signific ance
				X	SD	X	SD				
1	Range of Motion:	Flexion	Degree	17.33	2.89	20.11	1.58	2.78	3.42	0.002	Significant
		Adduction	Degree	9.19	2.79	13.58	1.82	4.39	2.85	0.001	Significant
2	Strength		cm	2.12	1.59	2.68	1.27	0.56	2.23	0.001	Significant
3	Balance		cm	1.12	1.13	1.19	1.02	0.07	2.47	0.000	Significant

the nature of the injury under study. Additionally, the tools used for the exercises helped in the development of the muscles. The implementation of the exercises according to a well-studied schedule ensures the muscles act in a coordinated manner for the performance of the exercises. The action of the stabilizer and the prime movers was emphasized in the exercises, including the muscles surrounding the ankle joint. The researcher ensured the supporting muscles developed the necessary strength to prevent the recurrence of the injury.

It is noted that the exercises were developed using the Theory of Moments and the Angle of Pull. This approach is useful in determining the distance of the muscle's line of tension from the origin to the point of rotation. This approach should be followed for the development of exercises for the rehabilitation of ligament and muscle injuries associated with the ankle joint. This depends on the efficiency of the player's physical fitness components, as well as their mastery of the skills related to the type of activity. (Farhan & Al-Mumen, 2025) argues that the use of diverse auxiliary means in rehabilitation, such as elastic cords, dumbbells, and other resistance tools, helps improve the muscular strength of the injured muscles in various directions.

Concerning the Range of Motion (ROM), these exercises helped in increasing the range of the ankle joint and restoring it to normal levels after the injury. These exercises concentrated on the muscular parts controlling the ankle joint, particularly the medial side. This led the muscular parts to attain strength and flexibility, the key components on which the integrity of the joint is dependent. This was achieved by using resistance bands of different levels of intensity. Mufti Ibrahim (2010) asserts that joints require continuous movement and must move through wide ranges to maintain their natural range of motion.

The researcher attributes the positive developments to the role played by the resistance bands in the process of performing the exercises. These bands greatly helped in increasing the strength of the tendons controlling the medial ankle muscles. The addition of weights to the elastic bands and the performance of the "Deadlift" movement helped the medial ankle tendons and muscles attain the required strength and flexibility necessary for the game of tennis.

These exercises enhanced the recruitment of motor units as well as neural adaptations in the alternating pattern of muscle fiber recruitment, as seen in the enhanced strength of the injured joint. These exercises also enhanced the degree of flexibility and elasticity of the ankle joint. Regular and continuous training of stretching and flexibility exercises for the muscles and ligaments surrounding the joint increases the degree of flexibility. Moreover, flexibility, along with other components of motor fitness such as strength and endurance, are the pillars upon which the acquisition and mastery of motor performance are established (Ali Farhan & Ali Farhan, 2025).

The intensity and load of training correspond to an increase in the operational capacity of the working systems, thus ensuring their growth and development. Finally, the balance variable was given much attention through exercises involving tools that improve muscular strength to improve the player's balance during complex movements.

4. Presentation, analysis, and discussion of etiology results

4.1. Presentation and analysis of the results

Table 3. Correlation Coefficient of Etiology.

Variables	Correlation Coefficient Value (r)	T-Value for Correlation Significance	Tabulated T-Value	Significance
Etiology	0.364	7.856	1.89	Significant

4.2. Discussion of the results

Table 3 shows the relevance of the correlation coefficient for the second group. These factors emphasize that the etiology of injuries is related to muscular unbalances, balance, and motor coordination, which is in accordance with recent findings in biomechanical studies. As for the correlation between the etiology of injuries and the efficiency of the Return to Play (RTP), the findings revealed a correlation between the efficiency of the athlete's ankle joint after rehabilitation and the safe RTP. The athletes who succeeded in recovering their muscular strength and balance during the rehabilitation period were more efficient in their RTP and in their performance during training and competition. The athletes who did not complete the rehabilitation period were more prone to injuries and suffered from ankle instability symptoms during competition. This shows the importance of rehabilitation based on the etiology of injuries, which does not only aim at relieving the athlete's pain but also at recovering the full joint functions. The etiology of injuries was the main concern of the researcher because it is the study of the causes that lead to injuries. The etiology of injuries includes the analysis of the factors that cause injuries. These factors may interact with each other and affect the athlete's motor

functions. The etiology of injuries includes many causes, whether they are related to the athlete or to the training and competition environment. The factors related to the athlete who suffered from injuries include muscle weakness, balance, and inflexibility.

The researcher established sessions using this phenomenon to educate the players about injury etiology and how to identify the factors to prevent such injuries, specifically ankle injuries. This helps in the construction of rehabilitation and training programs. The researcher credits the success of the research to the sessions, as they enhanced the cognitive understanding of the players about injury etiology. In addition, the sessions educated the players about the rehabilitation techniques in case of injury occurrence. Therefore, the researcher's findings are in line with other studies such as (Magee, 2014; McArdle et al., 2015; Tortora & Derrickson, 2021).

5. Conclusions and recommendations

5.1. Conclusions

5.1.1. General conclusion

The research findings have established that the functional etiology of ankle joint injury among tennis players contributes to the efficiency of RTP. The rehabilitation programs, including muscular strength, balance, range of motion, and dynamic balance, are critical factors in injury recurrence. Therefore, they are significant in enhancing athletic performance among tennis players. Thus, the researcher concludes that:

1. Etiology significantly contributes to enhancing the players' knowledge about injury etiology mechanisms.
2. The players' extensive understanding of injury etiology mechanisms related to motor function helps in determining RTP efficiency.
3. The exercises significantly enhanced the studied functional variables of ankle joint injury among tennis players.
4. The enhanced players' awareness about the etiology phenomenon reduces the injury occurrence rate among tennis players.

5.2. Recommendations

1. Developing rehabilitation programs using the principles of functional etiology.
2. Applying the concept of functional etiology in different sports disciplines.
3. Conducting further research on different types of injury in athletic games.

Conflicts of interest

None.

Ethical clearance

This manuscript approved by Mustafa mohammed Ali on (14/2/2026).

Author's contributions

All contributions of this study were done by the researchers Mustafa mohammed Ali who get the main idea and work on writing and concluding also with number of experts, Prof. Dr. Mazen Hassan Jassim in Statistics.

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Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

References

Abdulhassan, M. (2010). *Science of sports training* (1st ed.). Al-Ibtikar Office.

Ali Farhan, M. M., & Ali Farhan, H. M. (2025). The effectiveness of specific exercises accompanied by the dietary supplement (Extend BCAA) in rehabilitating carpal tunnel syndrome in advanced football goalkeepers. *Journal of Sports Education Studies and Research*, *35*(2), 577–594. https://doi.org/10.55998/jsrse.v35i2.1022.

Bompa, T. O., & Buzzichelli, C. (2019). Periodization: Theory and methodology of training. *Human Kinetics*.

Farhan, H. M. A., & Al-Mumen, A. D. H. S. (2025). The effect of an e-learning program supported by expert systems on cognitive flexibility and learning some basic football skills for students. *Wasit Journal of Sports Sciences*, *23*(1), 775–789. https://doi.org/10.31185/wjoss.846.

Fu, M. C., *et al.* (2018). Epidemiology of injuries in tennis players. *Journal of Orthopaedic and Sports Physical Therapy*.

Gribble, P. A., Hertel, J., & Plisky, P. (2012). Using the Star Excursion Balance Test to assess dynamic postural-control deficits and outcomes in lower extremity injury: A literature and systematic review. *Journal of Athletic Training*, *47*(3), 339–357.

Hall, S. J. (1995). *Basic biomechanics* (2nd ed.). Mosby.

Hunaidi, M. F. (2015). *Medical anatomy*. Nas Printing Company..

Herzog, M. M., *et al.* (2019). Epidemiology of ankle sprains and chronic ankle instability. PMCID.

Ibrahim, M. H. (2010). *Physical fitness for health and sports* (1st ed.). Dar Al-Kutub Al-Hadith.

Ismail, M. S. (2016). Effectiveness of neuromuscular training program in young athletes suffering from lower lateral ankle ligament injury. *Malaysian Journal of Movement, Health & Exercise*, *5*(1), 37–47.

Jalal Al-Din, A. (2007). *Additions in sports injuries* (3rd ed.). Dar Al-Kitab for Publishing..

Kaiser, P. (2021). *Acute tennis injuries in the recreational tennis player*. SAGE Journals.

Layouni, S., *et al.* (2025). Epidemiology of tennis-related injuries among players. MDPI Healthcare.
Magee, D. J. (2014). *Orthopedic physical assessment*. Elsevier.
McArdle, W. D., Katch, F. I., & Katch, V. L. (2015). *Exercise physiology: Nutrition, energy, and human performance*. Lippincott Williams and Wilkins.
McCance, K. L., & Huether, S. E. (2019). *Pathophysiology: The biologic basis for disease in adults and children* (8th ed.). Elsevier.
Muhammad, A. A. R. (2019). The effect of exercises and ultrasound in the rehabilitation of thumb tendon tears in terms of strength and range of motion for injured athletes, An Unpublished MA Thesis, University of Al-Muthanna, Faculty of Physical Education and Sports Sciences.
Norkin, C. C., & White, D. J. (2016). *Measurement of joint motion: A guide to goniometry*. F.A. Davis Company.
Othman, M. (2018). *Training and sports medicine* (Vol. 1). Kitab Publishing Center..
Rushdie, M. A. (2004). *The science of sports injuries*. Mansha'at al-Ma'aref.
Tortora, G. J., & Derrickson, B. H. (2021). *Principles of anatomy and physiology*. Wiley.

الاثيولوجيا الوظيفية لإصابات الكاحل ودورها في كفاءة العودة الى الملاعب لدى لاعبي التنس الارضي

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الخلاصة

يهدف البحث للتعرف على دور الاثيولوجيا في تأهيل المصابين وكفاءة العودة الى الملاعب. ويفترض الباحث بوجود فروق ذات دلالة إحصائية في الكفاءة الوظيفية لمفصل الكاحل بين المصابين وغير المصابين. وكذلك توجد علاقة ذات دلالة إحصائية بين الإتيولوجيا الوظيفية لإصابات مفصل الكاحل وكفاءة العودة إلى الملاعب لدى لاعبي التنس الأرضي. وتم استخدم المنهج الوصفي التحليلي بأسلوب الدراسات الارتباطية، لملاءمته طبيعة البحث. اما مجتمع وعينة البحث فقد تحدد بلاعبي التنس الأرضي المسجلين في أندية الفرات الاوسط الرياضية والذين تعرضوا سابقًا لإصابة في مفصل الكاحل، خلال الموسم الرياضي الحالي أو المواسم السابقة. ومن خلال الحصر الشامل تم حصر عدد اللاعبين المصابين والبالغ عددهم (70) لاعب، وبالطريقة العشوائية تم اختيار (30) لاعب يخضعون للاختبارات الوظيفية، و(30) لاعب تعرض عليهم استبانة تتكون من مجموع الاسئلة تتمثل بالاثيولوجيا ومدى اهتمامهم بهذا الجانب الحيوي و(10) للعينة الاستطلاعية. وتحددت متغيرات البحث واختباراته عن طريق الابحاث العلمية. ومن ثم تم تطبيق الاختبارات القبلية للمتغيرات الوظيفية، وبعدها اعُدت استمارة تتعلق بالاثيولوجيا. ثم اجرى الباحث التجربة الرئيسة على مجموعتي البحث لمدة لا تزيد عن (8) اسابيع للتمرينات ومثلها للجلسات ولكل مجموعة، ومن ثم تطبيق الاختبارات البعدية على عينة البحث. وتسجيل النتائج وتحليلها ومناقشتها، لغرض وضع الاستنتاجات والتوصيات, وهذا ما يحقق احد اهداف التنمية المستدامة للامم المتحدة في العراق (الصحة الجيدة).

الكلمات المفتاحية: (الاثيولوجيا – الكفاءة الوظيفية – التنس)