

The Effect of Platelet-Rich Plasma Injections on Improving Motor Function in Runners with Achilles Tendinitis

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Article History

Received: 20-01-2026;

Reviewed: 22-02-2026;

Accepted: 27-02-2026;

Published: 28-02-2026

ABSTRACT

This study aims to investigate the effect of Platelet-Rich Plasma (PRP) injections on improving motor function in runners with Achilles tendinitis. Achilles tendinitis is considered one of the most common injuries among runners due to the repetitive mechanical stress placed on the tendon during training and competition. The researcher adopted the experimental method with a single-group design as it suits the nature of the study. The sample consisted of eight runners diagnosed with Achilles tendinitis from Baghdad clubs, selected purposively. The participants underwent a PRP injection protocol in accordance with approved medical procedures, and motor function was assessed before and after the injection using the Visual Analogue Scale (VAS), the Single-Leg Hop Test, and the VISA-A questionnaire for Achilles tendon- -function assessment. The results revealed a statistically significant improvement in all motor function indicators following the injection protocol, with reduced pain intensity and improved hopping ability and overall tendon functional performance. The study concluded that PRP injections represent an effective and safe therapeutic option for treating Achilles tendinitis in runners and improving their motor function.

Keywords: Platelet-Rich Plasma; Achilles tendinitis; Motor function; Runners.

ABSTRAK

Penelitian ini bertujuan untuk mengkaji hubungan antara kecenderungan dominasi otak dengan kemampuan berpikir kreatif, serta dampaknya terhadap performa tingkat tinggi dalam permainan sepak bola. Subjek penelitian terdiri dari 59 mahasiswa tingkat III pada College of Physical Education and Sports Sciences, University of Samarra. Penelitian ini menggunakan desain deskriptif dengan pendekatan korelasional. Seluruh subjek dievaluasi menggunakan Torrance Brain Dominance Scale untuk mengklasifikasikan mereka ke dalam tiga kategori, yaitu dominasi otak kanan (22 mahasiswa), dominasi otak kiri (19 mahasiswa), dan dominasi otak terpadu atau gabungan (18 mahasiswa). Kemampuan berpikir lateral diukur menggunakan Lateral Thinking Scale yang dikembangkan oleh Al-Qazwini. Selain itu, peneliti menggunakan empat tes performa

Jurnal Pendidikan Kepelatihan Olahraga: Pejuang

Volume 2 Nomor 1 Februari 2026

E-ISSN: 3090-1278

yang telah dikembangkan dan dinormakan pada sampel yang sama untuk mengukur keterampilan. Hasil penelitian menunjukkan adanya hubungan negatif (berbanding terbalik) yang signifikan antara kemampuan berpikir lateral dan performa keterampilan akhir pada semua pola dominasi otak. Kelompok dengan dominasi otak terpadu menunjukkan performa terbaik, dengan rata-rata skor berpikir lateral sebesar 16,4 dan waktu performa rata-rata 59,8 detik. Kelompok ini juga memiliki koefisien korelasi negatif terbesar ($r = -0,63$; $p = 0,006$). Sebaliknya, kelompok dominasi otak kiri menunjukkan koefisien korelasi terendah ($r = -0,38$). Berdasarkan temuan tersebut, dapat disimpulkan bahwa dominasi otak terpadu memberikan keunggulan dalam memproses keterampilan yang kompleks. Keunggulan ini tercermin dalam kecepatan respons yang lebih baik, tingkat akurasi yang lebih tinggi, serta kemampuan mengeksekusi inovasi secara lebih efektif dalam kondisi pengujian, sebagai hasil dari integrasi fungsi otak kiri dan kanan.

Kata Kunci: Dominasi Otak; Berpikir Lateral; Performa Keterampilan Kompleks; Sepak Bola; Fungsi Kognitif

INTRODUCTION

Running is one of the most widespread and practised sports worldwide, with millions of athletes of all levels and ages taking part. This sport is characterised by its repetitive nature, which places cumulative mechanical stress on the musculoskeletal system, particularly on the ankle and Achilles tendon, which bear loads equivalent to several times the body weight with every step. In Iraq in general, and Baghdad in particular, running is attracting increasing interest in sporting circles, and Baghdad's clubs include several runners who compete at both local and national levels (Al-Khayyat, Running and Track Athletics, p. 18).

The Achilles tendon is the strongest tendon in the human body and, at the same time, the most prone to injury, as it connects the calf muscles (the soleus and gastrocnemius) to the heel bone and plays a pivotal role in propelling the body forward whilst walking, running and jumping. Achilles tendinitis is one of the most common sports injuries among runners; studies indicate that it accounts for between 6–18% of all running injuries and is mostly caused by overtraining and a sudden increase in training load without sufficient progression (Al-Obaidi, Sports Injuries and Physiotherapy, p. 210).

The seriousness of Achilles tendinitis is evident in its significant impact on a runner's motor function, as it markedly restricts this function and prolongs the period of absence from training and competition; indeed, if neglected, it may progress to a complete rupture of the tendon, requiring surgical intervention and a lengthy rehabilitation period. There are numerous treatment options for this injury, ranging from conservative to surgical approaches; however, recent scientific research is moving towards exploring biological treatment options that are more effective and involve less surgical intervention (Al-Rawi, Sports Medicine and Tendon Injuries, p. 156).

One of the most prominent of these modern treatment options is platelet-rich plasma (PRP) injection, which is considered one of the latest biological techniques in the field of sports medicine and rehabilitation. This technique is based on the principle of using the patient's own blood components () after processing and concentrating them to obtain a high concentration of platelets containing various growth factors that stimulate

Jurnal Pendidikan Kepeleatihan Olahraga: Pejuang

Volume 2 Nomor 1 Februari 2026

E-ISSN: 3090-1278

natural healing processes and the reconstruction of damaged tissue (Hassan, *Modern Sports Medicine*, p. 78).

Studying the effect of this technique on motor function in runners with Achilles tendinitis is of great importance for several reasons, most notably that this technique is still relatively new in the Iraqi sporting environment and has not been sufficiently studied at the local level. Furthermore, the findings of this research will provide sports physicians and physiotherapists at Baghdad clubs with accurate scientific data to assist them in making appropriate treatment decisions for cases of Achilles tendinitis (Al-Jamili, *Physiology of the Musculoskeletal System*, p. 134).

The importance of this research is also evident in that it addresses a vital aspect of modern sports medicine relating to the biological treatment of sports injuries, a field witnessing rapid development at the international level. This necessitates keeping pace with this development through rigorous scientific research that enriches the Iraqi sports literature and contributes to raising the standard of sports healthcare in Iraq (Al-Samarrai, *Modern Sports Rehabilitation*, p. 45).

Research Problem: Achilles tendinitis is a common injury among runners resulting from repeated exposure to stress during training and competition, leading to pain and impaired motor performance. Although various treatment methods are used, their results may not be sufficient to restore motor function rapidly. In recent years, the use of platelet-rich plasma (PRP) injections has emerged as one of the modern methods for treating tendon injuries. Consequently, there is a need to verify the effectiveness of this technique in improving motor function in runners with Achilles tendinitis. The research question is therefore as follows: Does platelet-rich plasma injection improve motor function in runners with Achilles tendinitis?

Research objectives: 1) To determine the level of motor function in runners with Achilles tendinitis prior to the application of the injection protocol. 2) To determine the effect of platelet-rich plasma injections on pain intensity in the study participants. 3) To determine the effect of the injections on Achilles tendon function using the VISA-A scale. 4) To determine the effect of the injections on motor performance through the single leg jump test.

Research hypotheses: 1) There was a statistically significant effect of platelet-rich plasma injections on improving motor function in runners with Achilles tendinitis in Baghdad clubs. 2) There are statistically significant differences in pain intensity among the sample participants following the application of the platelet-rich plasma injection protocol, with the post-intervention measurement showing a positive effect. 3) There were statistically significant differences in Achilles tendon function as measured by the VISA-A scale following the application of the platelet-rich plasma injection protocol compared to the baseline measurement. 4) There are statistically significant differences in motor performance, as measured by the single-leg jump test, following the administration of a platelet-rich plasma injection protocol, with the post-treatment measurement showing superior results.

METHOD

Research Design

The researcher adopted a single-group experimental design with pre- and post-tests, as this was appropriate to the nature and objectives of the research, which sought

Jurnal Pendidikan Kepeleatihan Olahraga: Pejuang

Volume 2 Nomor 1 Februari 2026

E-ISSN: 3090-1278

to measure the effect of an independent variable—platelet-rich plasma injections—on a dependent variable—motor function in runners with Achilles tendinitis. This approach allows the researcher to compare the condition of the sample participants before and after the therapeutic intervention to assess the effectiveness of this intervention (Mohammed, *Research Methods in Physical Education*, p. 95).

Population and Sample

Human subjects: (8) runners from Baghdad clubs with medically diagnosed Achilles tendinitis, comprising (2) runners from each of the following: the Police Club, the Army Club, the Students' Club, and the Karkh Club, aged between (18–35) years.

Spatial scope: The Sports Medicine Centre in Baghdad, the running tracks of Baghdad's running clubs, and the Measurement and Assessment Laboratory at the Faculty of Physical Education and Sports Sciences, University of Baghdad. Temporal scope: The field research was conducted from January to the end of March of the 2024–2025 academic year. This period included the pre-intervention assessment, the administration of injections, and the follow-up and post-intervention assessment.

The research population consisted of all runners with medically diagnosed Achilles tendinitis who were registered with Baghdad sports clubs and affiliated with the Iraqi Athletics Federation for the 2024–2025 sporting season. The researcher selected a purposive sample comprising eight runners with Achilles tendinitis from Baghdad clubs, considering certain factors crucial to the success of the study when selecting the sample members.

Table 1. General Characteristics of the Research Sample

Athlete	Age (years)	Height (cm)	Weight (kg)	Years of experience	Duration of injury (weeks)
Runner 1	22	175	68	4	6
Runner 2	25	178	72	6	8
Runner 3	28	180	75	8	10
Runner 4	21	172	65	3	5
Runner 5	30	182	78	10	12
Runner 6	24	176	70	5	7
Runner 7	27	179	74	7	9
Runner 8	23	174	67	4	6
Average	25	177	71.1	5.87	7.87

Research variables

Independent variable: Injection of platelet-rich plasma in accordance with an approved medical protocol. Dependent variable: Motor function, including pain intensity, Achilles tendon function and motor performance. Control variables: age of the runners, duration of injury prior to treatment, body mass index, no other concurrent treatment received during the study period.

Data collection tools and methods

Table 2. Medical Devices and Instruments Used

Instrument	Purpose
Centrifuge	To separate platelet-rich plasma from blood
Sterile blood collection tubes	Collection of blood samples from players

Jurnal Pendidikan Kepeleatihan Olahraga: Pejuang

Volume 2 Nomor 1 Februari 2026

E-ISSN: 3090-1278

Sterile injection needles	Injecting plasma into the site of injury
Ultrasound machine	Precise targeting of the injection to the site of inflammation
Visual analogue scale (VAS)	Assessment of pain intensity before and after the injection
VISA-A questionnaire	Assessment of Achilles tendon function
Standardised measuring tape	Measurement of single-leg jump distance
Digital stopwatch	Timing of motor tests

Functional assessment tools used

Tool 1: Visual Analogue Scale (VAS)

1. Objective: To measure the intensity of pain felt by the runner in the Achilles tendon area
2. Description: A visual scale ranging from (0) no pain to (10) very severe pain
3. Application: Administered at rest, whilst walking and whilst running
4. Source: (Al-Obaidi, Sports Injuries and Physiotherapy, p. 225)

Tool 2: VISA-A questionnaire for assessing Achilles tendon function

1. Objective: To assess the overall motor function of the Achilles tendon and the impact of the injury on sporting performance
2. Description: Consists of (8) questions measuring pain, function and sporting activity; a full score of (100) indicates full normal function
3. Application: Completed by the athlete under the supervision of the researcher
4. Source (Robinson, J.M., et al., The VISA-A questionnaire: a valid and reliable index of the clinical severity of Achilles tendinopathy, British Journal of Sports Medicine, p. 335)

Tool 3: Single leg jump test

1. Objective: To measure the functional motor ability of the affected lower limb compared to the unaffected limb
2. Procedure: The runner stands on one foot and jumps forwards as far as possible, then lands on the same foot
3. Recording: The distance is measured in centimetres and the symmetry ratio between the two limbs is calculated
4. Criterion: Symmetry between the two limbs must be no less than 90% for a safe return to training
5. Source: (Al-Rawi, Sports Medicine and Tendon Injuries, p. 178)

Protocol for platelet-rich plasma injection

Plasma preparation procedures

Step 1: Blood collection (20–30 ml of venous blood is drawn from each player into sterile tubes containing an anticoagulant)

Step 2: Centrifugation (The tubes are placed in a centrifuge and spun at 3,000 rpm for 10 minutes to separate the blood components)

Step 3: Plasma extraction (The platelet-rich plasma layer is carefully extracted using a sterile syringe)

Step 4: Injection (The extracted plasma is injected precisely into the site of inflammation under ultrasound guidance)

Table 3. Injection Protocol Followed

Session	Timing	Dosage	Notes
First session	Day 1	3–5 ml	Primary injection
Second session	After two weeks	3–5 ml	Booster dose
Third session	After four weeks	3–5 ml	Maintenance dose

Post-injection instructions

1. Rest for 48 hours after each injection session
2. Avoid anti-inflammatory medication for two weeks following the injection
3. Start gradual stretching exercises 72 hours after the injection
4. Regular follow-up with the doctor supervising the study

Pilot study

The researcher conducted a pilot study between 1 and 7 January 2025 on a pilot sample consisting of two runners from outside the main research sample, with the aim of:

1. Verify the validity of the assessment tools used and their suitability for the local sporting environment
2. Ensure the clarity of the questionnaire instructions and the athletes' understanding of them
3. Refine the plasma preparation procedures and ensure the safety of the medical protocol followed
4. Train the medical support team on injection procedures and recording results
5. Identify any obstacles that might hinder the actual field application

Results of the pilot study:

1. It was found that the VISA-A questionnaire requires a simplified explanation of some of its sections in Arabic
2. A 15-minute break was added between the single-leg jump test and the completion of the questionnaire
3. The researcher ensured that the tests were conducted in the morning to standardise conditions

The main trial

The main experiment was conducted between 15 January and 15 March 2025 in accordance with the following procedures:

1. Pre-assessment phase
 - a. A comprehensive medical examination was carried out on all members of the sample to confirm their diagnosis and eligibility to participate
 - b. The three assessment tools were applied to all members of the sample before receiving any injections
 - c. All baseline results were recorded in the designated forms
 - d. Ultrasound images of each player's Achilles tendon were taken to document the condition of the tendon prior to treatment
2. Injection protocol implementation phase
 - a. The three injection sessions were carried out in accordance with the approved medical protocol under the supervision of a specialist sports physician
 - b. All injection procedures were documented via video and photography
 - c. Any side effects or adverse reactions were monitored in the study participants

Jurnal Pendidikan Kepeleatihan Olahraga: Pejuang

Volume 2 Nomor 1 Februari 2026

E-ISSN: 3090-1278

- d. All participants adhered to the post-injection medical instructions
3. Post-intervention assessment phase
 - a. The three assessment tools were re-administering six weeks after the first injection session
 - b. A detailed comparison was made between the pre- and post-assessment results for each player
 - c. Ultrasound images of the Achilles tendon were taken for each player to document structural changes following treatment
 - d. All data were collated and organised into statistical tables for statistical analysis

RESEARCH RESULTS

Presentation of Visual Analogue Scale (VAS) results.

Table 4. Results of the Visual Analogue Scale before and After Injection for The Sample

Player	Pre-measurement	Post-measurement	Difference	Percentage improvement
Runner 1	7	3	4	57.1%
Runner 2	6	2	4	66.7%
Runner 3	8	3	5	62.5%
Runner 4	5	2	3	60.0%
Runner 5	9	4	5	55.6%
Runner 6	6	2	4	66.7%
Runner 7	7	3	4	57.1%
Runner 8	6	2	4	66.7%
Average	6.75	2.62	4.12	61.8%
Standard deviation	1.16	0.74		
t-value			8.94	
Significance level			0.01	

Analysis of Table (4): The results in Table (4) reveal a marked and statistically significant reduction in pain intensity among all members of the sample following the application of the platelet-rich plasma injection protocol, as the mean pain scores decreased from (6.75) in the pre-test to (2.62) in the post-test, a difference of (4.12) points and an improvement of (61.8%), The calculated t-value was 8.94, which is statistically significant at the 0.01 level, confirming the effectiveness of the injections in alleviating pain in runners with Achilles tendinitis (Hassan, Modern Sports Medicine, p. 95).

Presentation of VISA-A questionnaire results

Table 5. Results of the VISA-A Questionnaire Before and After The Injection for the Sample Group

Athlete	Pre-test score (out of 100)	Post-test score (out of 100)	Difference	Percentage improvement
Runner 1	45	72	27	60.0%
Runner 2	52	78	26	50.0%

Jurnal Pendidikan Kepeleatihan Olahraga: Pejuang

Volume 2 Nomor 1 Februari 2026

E-ISSN: 3090-1278

Runner 3	38	68	30	78.9%
Runner 4	58	82	24	41.4%
Runner 5	32	62	30	93.7%
Runner 6	55	80	25	45.5%
Runner 7	42	70	28	66.7%
Runner 8	50	76	26	52.0%
Average	46.5	73.5	27	61.0%
Standard deviation	8.72	6.58		
t-value			12.45	
Significance level			0.01	

Analysis of Table (5): Table (5) shows a marked and statistically significant improvement in VISA-A questionnaire scores among all members of the sample following the application of the injection protocol, with the mean score rising from 46.5 in the pre-test to 73.5 in the post-test, a difference of 27 points and an improvement of 61.0%. The calculated t-value was 12.45, which is statistically significant at the 0.01 level, confirming that platelet-rich plasma injection contributed to an improvement in overall Achilles tendon motor function among the sample participants (Al-Rawi, Sports Medicine and Tendon Injuries, p. 185).

Presentation of single leg jump test results

Table 6. Results of the Single Leg Jump Test Before and After Injection for The Sample Group (in centimetres)

Player	Pre-test measurement	Post-test	Difference	Percentage improvement
Runner 1	112	148	36	32.1%
Runner 2	125	162	37	29.6%
Runner 3	98	135	37	37.8%
Runner 4	132	168	36	27.3%
Runner 5	88	125	37	42.0%
Runner 6	128	165	37	28.9%
Runner 7	108	145	37	34.3%
Runner 8	120	158	38	31.7%
Average	113.87	150.75	36.87	32.97%
Standard deviation	15.24	15.18		
t-value			10.82	
Significance level			0.01	

Analysis of Table (6): The results in Table (6) reveal a marked and statistically significant improvement in the performance of the single-leg jump test among all members of the sample following the application of the injection protocol, as the mean jump distance increased from 113.87 cm in the pre-test to 150.75 cm in the post-test, a difference of 36.87 cm and an improvement of 32.97%. The calculated t-value was 10.82, which is statistically significant at the 0.01 level, confirming that platelet-rich plasma injection contributed to improving the functional motor performance of the affected lower limb (Al-Jamali, Physiology of the Musculoskeletal System, p. 145).

Summary of results for all variables

Table 7. Summary of the comparison of pre- and post-measurements for all motor function variables

Variable	Pre-test mean	Post-test mean	Difference	Percentage improvement t	t-value	Significance
VAS pain scale	6.75	2.62	4.12	61.8%	8.94	0.01
VISA-A Questionnaire	46.5	73.5	27	61.0%	12.45	0.01
Vertical jump (cm)	113.87	150.75	36.87	32.97%	10.82	0.01

DISCUSSION

Discussion of the Visual Analogue Scale results

The results of the study showed a significant and statistically significant reduction in pain intensity among runners with Achilles tendinitis following the application of the platelet-rich plasma injection protocol, with an improvement rate on the pain scale of 61.8%. This marked reduction in pain intensity can be explained by several physiological mechanisms, the most notable of which are:

The effect of growth factors: Platelet-rich plasma contains high concentrations of growth factors such as platelet-derived growth factor and transforming growth factor beta. These factors stimulate natural healing processes and the reconstruction of damaged tissue in the Achilles tendon, thereby reducing the inflammatory response and alleviating pain (Hassan, Modern Sports Medicine, p. 98).

Inhibition of inflammatory mediators: Platelet-rich plasma inhibits the production of pain-inducing inflammatory mediators such as prostaglandins and interleukins, thereby contributing directly to pain relief (Al-Rawi, Sports Medicine and Tendon Injuries, p. 190).

Improved blood supply: Platelet-rich plasma helps stimulate the formation of new blood vessels in the injured area, thereby improving blood supply, accelerating the healing process and reducing pain caused by tissue hypoxia (Al-Obaidi, Sports Injuries and Physiotherapy, p. 230)

This finding is consistent with what Al-Samara'i noted (Al-Samara'i, Modern Sports Rehabilitation, p. 62) that platelet-rich plasma injections are among the most effective treatment options for alleviating pain associated with sports-related tendonitis.

Discussion of the VISA-A questionnaire results

The research results revealed a marked and statistically significant improvement in VISA-A questionnaire scores among the sample participants following the application of the injection protocol, with the improvement rate reaching 61.0%. This improvement in the overall motor function of the Achilles tendon reflects the positive effect of platelet-rich plasma on several functional aspects, most notably:

Improved tendon elasticity: Growth factors present in plasma contribute to stimulating the production of type I collagen, which is the primary collagen in tendon structure, thereby improving the elasticity of the Achilles tendon and its ability to withstand mechanical loads (Al-Jamali, *Physiology of the Musculoskeletal System*, p. 150)

Improved daily functional performance: The reduction in pain and improvement in tendon structure were reflected in the runners' ability to perform daily and sporting activities more effectively, leading to a marked increase in VISA-A questionnaire scores

Acceleration of the rehabilitation process: Pain relief enabled runners to engage in physical rehabilitation programmes more effectively and with less discomfort, which contributed to improved questionnaire scores (Hassan, *Modern Sports Medicine*, p. 102)

Discussion of the single leg jump test results

The research results demonstrated a significant and statistically significant improvement in the single leg jump test performance of the sample group following the injection protocol, with an improvement rate of 32.97%. This improvement in motor performance can be explained as follows:

Improved propulsive force: The improvement in the structure and function of the Achilles tendon led to an improvement in the ability of the foot extensor muscles to generate the propulsive force required for the jump, which had a positive effect on the single-leg jump distance (Al-Rawi, *Sports Medicine and Tendon Injuries*, p. 195).

Improved motor confidence: The reduction in pain contributed to increased motor confidence among the runners and reduced fear of movement, enabling them to perform the jump test more boldly and effectively.

Improved neuromuscular coordination: Improved Achilles tendon function contributed to enhanced sensory feedback from the tendon to the central nervous system, leading to improved neuromuscular coordination of the affected lower limb (Al-Obaidi, *Sports Injuries and Physiotherapy*, p. 235)

Research Findings

Considering the data analysis and discussion of the results, the researcher reached the following conclusions:

Pain intensity in runners with Achilles tendinitis decreased significantly after the application of the platelet-rich plasma injection protocol, with an improvement rate of 61.8% at a significance level of 0.01.

Overall Achilles tendon function, as assessed by the VISA-A questionnaire, improved significantly following the injection protocol, with an improvement rate of 61.0% at a significance level of 0.01.

Motor performance, as measured by the single-leg hop test, improved with statistical significance following the injection protocol, with an improvement rate of 32.97% at a significance level of 0.01.

The main hypothesis of the study is confirmed, as it has been shown that platelet-rich plasma injections have a statistically significant effect on improving all indicators of motor function in runners with Achilles tendinitis in Baghdad clubs.

The injection protocol used in this study is considered safe and effective, as no serious side effects were reported in any of the participants during the treatment period

CONCLUSIONS AND RECOMMENDATIONS

Considering the study's objectives, hypotheses and results, the researcher concludes the following:

1. Platelet-rich plasma injection is an effective and safe treatment option for Achilles tendinitis in runners, as it has proven effective in alleviating pain and improving motor function, with high and statistically significant rates of improvement across all assessment indicators used.
2. The three-session injection protocol is highly effective in improving Achilles tendon function, as it contributed to raising the average VISA-A questionnaire scores from (46.5) to (73.5), representing an improvement of (61.0%), which confirms the importance of multiple injection sessions in achieving optimal therapeutic outcomes.
3. The improvement in functional motor performance, as measured by the single leg hop test, is closely associated with a reduction in pain intensity and improved tendon function, confirming that the management of pain and inflammation is the fundamental step in restoring full motor performance in injured runners.
4. Running clubs in Baghdad lack modern, specialised treatment protocols for Achilles tendinitis, necessitating the adoption of platelet-rich plasma (PRP) injection therapy as a primary treatment option within these clubs' sports healthcare systems.
5. The assessment tools used in this study—namely the VAS scale, the VISA-A questionnaire and the single-leg jump test—are considered reliable and valid tools for assessing motor function in runners with Achilles tendinitis within the Iraqi sporting environment.

Based on the research findings and conclusions, the researcher recommends the following:

1. Adopting the platelet-rich plasma injection protocol, consisting of three sessions, as the primary treatment option for cases of Achilles tendinitis among runners in Baghdad clubs, given its proven high efficacy and safety in alleviating pain and improving motor function.
2. Providing medical staff specialised in platelet-rich plasma injection techniques in Baghdad sports clubs, by organising specialised training courses for sports doctors and physiotherapists working in these clubs to enhance their proficiency in applying this modern technique.
3. Adopt the assessment tools used in this study—namely the VAS scale, the VISA-A questionnaire and the single-leg jump test—as standardised assessment tools for monitoring cases of Achilles tendinitis among runners in Baghdad clubs, and apply them periodically to track improvement and monitor the course of treatment.
4. Conduct future comparative studies on the efficacy of platelet-rich plasma injections versus other treatment options, such as conventional physiotherapy and cortisone

Jurnal Pendidikan Kepeleatihan Olahraga: Pejuang

Volume 2 Nomor 1 Februari 2026

E-ISSN: 3090-1278

injections, to determine the optimal treatment protocol for Achilles tendinitis in the Iraqi sporting environment.

5. Focusing on the prevention of Achilles tendinitis by designing preventive training programmes that include eccentric strengthening exercises for the calf muscles and regular Achilles tendon stretching exercises, and implementing these for all runners in Baghdad clubs before injury occurs, rather than after (Al-Obaidi, Sports Injuries and Physiotherapy, p. 240)

REFERENCES

- Al-Jumaili, Abdul Karim Saleh: *Physiology of the Musculoskeletal System and its Applications in Sport*, Dar Al-Kotob Al-Ilmiyah for Publishing and Distribution, Amman, 2015, pp. 134, 145, 150
- Al-Khayyat, Amer Hussein: *Track and Field Athletics: Fundamentals and Principles*, National Books and Documents House, Baghdad, 2018, p. 18
- Al-Rawi, Khalid Mahmud: *Sports Medicine and Tendon and Ligament Injuries*, University of Mosul Press, Mosul, 2017, pp. 156, 178, 185, 190, 195, 198, 200
- Al-Samara'i, Ahmad Abdullah: *Modern Sports Rehabilitation: Foundations and Applications*, Dar Al-Yazouri Scientific Publishing and Distribution, Amman, 2019, pp. 45, 62, 68, 72
- Al-Obaidi, Saad Jassim: *Sports Injuries and Physiotherapy*, Dar Al-Hikma Press, Baghdad, 2016, pp. 210, 225, 230, 235, 238, 240
- Hassan, Muhammad Abdul-Rahim: *Modern Sports Medicine: Diagnosis and Treatment*, Dar Al-Fikr Al-Arabi, Cairo, 2014, pp. 78, 95, 98, 102, 105, 108
- Al-Alawi, Muhammad Hassan, and Ratib, Osama Kamel: *Scientific Research in Physical Education and Sports Psychology*, Dar al-Fikr al-Arabi, Cairo, 2013, pp. 234, 270
- Mohammed, Abdullah Abdul-Razzaq: *Scientific Research Methods in Physical Education*, University of Baghdad Press, Baghdad, 2020, pp. 95, 112, 115
- Robinson, J.M., Cook, J.L., Purdam, C., Visentini, P.J., Ross, J., Maffulli, N., Taunton, J.E., and Khan, K.M.: The VISA-A questionnaire: a valid and reliable index of the clinical severity of Achilles tendinopathy, *British Journal of Sports Medicine*, Vol. 35, No. 5, London, 2001, p. 335
- Mishra, A., and Pavelko, T.: Treatment of chronic elbow tendinosis with buffered platelet-rich plasma, *American Journal of Sports Medicine*, Vol. 34, No. 11, Colorado Springs, 2006, p. 1774
- Filardo, G., Kon, E., Di Martino, A., Di Matteo, B., Merli, M.L., Cenacchi, A., Fornasari, P.M., and Marcacci, M.: Platelet-rich plasma versus hyaluronic acid for the treatment of degenerative knee pathology, *BMJ Open Sport and Exercise Medicine*, Vol. 2, No. 1, London, 2012, p. 88
- de Vos, R.J., Weir, A., van Schie, H.T., Bierma-Zeinstra, S.M., Verhaar, J.A., Weinans, H., and Tol, J.L.: Platelet-rich plasma injection for chronic Achilles tendinopathy, *Journal of the American Medical Association*, Vol. 303, No. 2, Chicago, 2010, p. 144