

The use of an innovative device to improve the efficiency of the posterior quadriceps muscle of the man after the anterior cruciate ligament injury of advanced soccer players

Mohammed Jawad Kadhim¹, Abdulrahman Mukhlif Mousa²

DOI: [https://doi.org/10.37359/JOPE.V36\(1\)2024.1934](https://doi.org/10.37359/JOPE.V36(1)2024.1934)

<https://creativecommons.org/licenses/by/4.0>

1 University of Baghdad, College of Physical Education and sport Sciences.

2 University of Baghdad, College of Physical Education and sport Sciences.

Article history: Received 10/February/2024 Accepted 15/march/2024 Available online 28/march/2024

Abstract

Objective of the research This study aimed to manufacture an innovative device that enables the player to walk after the operation and improves functional efficiency through improvement in the range of motion as well as improvement in the size of the muscles working on the knee joint Imposing research There are statistically significant differences between the pre and posttests of the experimental and control groups, there are Statistically significant differences between the post-tests between the experimental group and the control group in favor of the experimental group of the research sample. The researchers used the experimental approach by designing the control and experimental groups with a test (pre-post) for the suitability of the approach to the research problem. The study population consisted of players with severed anterior cruciate ligaments for advanced soccer players, and the number of the research sample was (5) injured for the control sample and (5) for the experimental sample. The researchers concluded that the use of the innovative device showed good results in accelerating the rehabilitation process, and the development of body parts was In line with the progress of bending and stretching in the innovative device. There is no delay for one part of the body at the expense of another part, the most important recommendations. The necessity of using partial movement braces in the rehabilitation of the anterior cruciate ligament injury of the knee in advanced soccer players, the use of the number of walking steps and the pressure applied to the ground as a criterion for the progress of rehabilitation and recovery, the researcher recommends using the device early after the operation.

Keywords: cruciate ligament, cruciate ligament tear, range of motion of the knee joint, athletic rehabilitation, thigh muscle circumference, static balance, thigh muscle strength.

¹ University of Baghdad, College of Physical Education and sport Sciences. Dr.muhammed.juad@cope.uobaghdad.edu.iq

² University of Baghdad, College of Physical Education and sport Sciences. abd.alrahman1104b@cope.uobaghdad.edu.iq

Introduction

Football players frequently sustain injuries from collisions with rival players or from overusing their organs. One of the most prevalent ailments among football players worldwide is knee strains.)Agility and Others, 2018

The world has witnessed a scientific theory age in recent decades (Steinberg et al., 2000), and society has been obliged to keep up with the progress of these theories. Sport medicine is a discipline that is vital to all domains and sports (Easa et al., 2022). It is a science that must be applied to the treatment of personal injuries, particularly those sustained by athletes. It is important to understand that each person's recovery process differs in terms of performance (Jawad, M., & Jabbar Shinen, 2016) according to Mahmood et al. (2023), due to the inaccuracy with which therapeutic equipment and exercises are used, the degree of the injury, the mechanical data, the time the injury occurred, and the sports therapist's expertise and intelligence. Consequently, the implementation of pre- and post-sport therapy, particularly gymnast knee surgery performed in a precise scientific manner, results in the quick return of athletes to their pre-injury state (Mondher et al., 2023), and the knee rehabilitation process following front-end crusade surgery for football players for candidates requiring individuals with substantial experience in this field (Jawad Kadhim M, 2018) presumably allows them to carry out their duties as intended (Kadhim, 2012). As one of the most common injuries (Moayed, A., Moayed, G., & Javad, 2019), the researchers chose advanced football players for whom frontal cross-coast surgery was performed with the goal of designing an innovative device that they named the motor support device to speed up the return of athletes to the stadiums as quickly as possible (Kzar & Kadhim, 2020). This helps to advance mathematical reality by developing and rehabilitating athletes and fully recovering from the infection. Among the players for whom the forward cross-coast operation was carried out in Baghdad is the research community.

Method and tools:

To tailor the approach to the research challenge, the researchers created test-tested command-and-experience groups using the pilot approach. The research community determined which ten advanced football players at the Abu Ghraib General Hospital (Physiotherapy Center) and the Yarmouk Educational Hospital (Physiotherapy Section) had front-coast surgery performed for them between April 15, 2022, and May 1, 2023.

The researchers used the injury grounds established by the qualified physician for the rehabilitation of individuals with disabilities in order to attain complete harmony. They shared the same type of person who had participated in the frontal crusade. The novel device was utilized for the experimental group while staying within the pain threshold during the two-week tribal testing following the Crusade operation. Every afflicted person had sustained their injury no more than two weeks ago. Individuals for whom the physician suggests receiving rehabilitation therapy.

Both the researchers' instruments and gadgets, such as camera time, were utilized in addition to research instruments (Arab sources and references, observation and analysis, testing and metering, Internet).

Innovator procedure:

The College of Physical Education and Sports Sciences at Bagdad University provided the researchers with a significant facilitation book that was addressed to the Ministry of Health and Abbey Ghraib General Hospital in 265 and dated 13/4/2022. On March 5, 2023, the Ministry of Health granted approval for it as the recipient of the research by virtue of its book No. 3217. Two days a week, on Saturday and Tuesday, the patients in the physiotherapy department were monitored by the researchers. With Mr. Sheriff's assistance, the researchers created and manufactured the mobile support device as there was no prior gadget that satisfied the search criteria.

The device that the player wears following frontal crusade surgery is designed to improve the knee's kinetic range and functional efficiency. It also speeds up the healing process from injuries by enabling the player to resume normal activities such as walking and exercise immediately following the procedure. The device is made up of multiple parts: an accelerator that holds the injured man from the femoral to the foot area for a length of 70 cm; an accelerator in the femoral and leg area that fixes the accelerator on the injured man; a computer (digital) with a battery size of 7–3 cm; a lock that transfers the body weight from the femoral to the leg and foot beyond the crusade location; an external borbonnet battery that connects the pinnacle to the pinnacle; a memory that counts the steps taken each week; a dick that uses a lock to connect the top to the pulver; links to the knee and a 40 cm foot of the pole; A pole, as well as an external borebite connected to the monitor. per the explanation in an attachment (1). After presenting the device's concept to an electronics specialist, the researchers created specialized software that can read the data stored in the memory, link it to a computer, and extract the results using Excel, which precisely captures each patient's data. Of the information provided (step count, wounded man's body weight). A mechanical engineer was employed by the team to fabricate the device using the kinetic range control method. the shift of weight from the afflicted person's femur to their leg and foot, staying above their knee and within the bounds of their pain. The number of steps connected to the device served as a basis for the researchers. Weekly evaluations were conducted, and individuals with injuries who experienced a decrease in the number of steps they took received feedback and served as models for appropriate device use.

That evaluation happened within the first three days to give the impression that the researchers were continuously monitoring his work. The injured man's development and recovery are not served by any employment retrogression. Each and every member of the sample has promised to do so. In terms of wear and tear, the number of steps has steadily increased. One thousand steps were taken within the first week. The pace was 3000 steps per week in the second and third weeks, 4000 steps per week in the fourth week, and 6000 steps per week in the fifth and sixth weeks. In the seventh and eighth weeks, to 800 steps.

Field search procedures:
Examinations used in research:

In order to create tests related to study variables, the researchers consulted contemporary scientific publications. A number of tests were decided upon following consultation with specialists: Using the injured player sitting comfortably in short shorts, we measure the circumference of the femoral muscles. Next, we use a standard bar to measure the length of the femoral thigh, measuring from the beginning of the knee to the end of the femoral bite.

It is necessary to split the femur area into three equal sections and measure the surrounding area. The kinetic range (also known as the military range) of the wounded man's knee joint is measured using the barometer of the four-headed femoral muscillator of the centimeter. The measuring person will first ask the laboratory player, who is seated on the terrace, to extend the wounded man's tidal range forward while measuring the kinetic range of the man's tidal range in the case of the tidal tidal. The scrubbling and hand carried over tests are used to determine the knee shaft's kinetic range. Second, the lab participant is instructed to bend the injured man as far inside as possible while the measuring person sits next to them on the terrace. This is how the kinetic range is determined in the instance of bending. The stereometer, pivot, and ruler are used to measure the kinetic range of the knee shaft. The kinetic range is expressed in degrees (the angle).

The player measures his or her maximum weight in grams while the player's rear legs (the knee joints) are tested for muscle strength. The injured arm's kinetic range is determined by measuring the inner shoulder joint's angle with the goniometer and the angle with the grades. The injured man's standing is used for the balance test.

stands on the damaged foot while the other man is raised, hands in the chest, eyes closed, and remains motionless for as long as possible. The test is timed starting at the beginning and ending until the person is finished (in seconds).

Reconnaissance experiment:

A week prior to the main experiment, the researchers helped the Assistant Task Force perform a reconnaissance experiment on two samplers at the Abby Ghraib Hospital Rehabilitation Center in order to assess the accuracy of the sample response, the reliability of the support device, the device's control, its software, and the suitability of the subordinate task force.

Tribal tests:

For each of the two groups, the researchers administered tribal search tests. On September 15, 2022, it comprises the measurement of the femur muscle strength, the kinetic range of the knee joint, the muscular ocean, and the constant balance in the gym. In order to identify the same characteristics in the dimensions tests, the researchers considered the factors of the test from place and time, as well as the manner in which the test was conducted.



Dimensional tests:

Soon after the two-month tribal test period, the novel tool was employed by the experimental sample searcher, and the researchers provided support for the aforementioned remote experiments. The dimensional tests were comparable to the particular conditions from time and place in the same manner, which the researchers considered.

Statistical means:

Use of statistical bag (spss) and statistical treatments:

- Standard deviation
- Accountant
- Standard deviation
- Test (t.test) for independent and related samples.

Results:

Presentation, analysis and discussion of the results:

4.1 Results of the muscular perimeter, rear quadripartite strength, and fixed balance indicators are presented. Based on the data collected by the researchers, the following table displays the results of the muscular perimeter, rear quadripartite strength, and fixed balance indicators: (1) A statistical analysis of the tribal sample and the experimental sample's post-test results for muscular perimeter, back quadripartite strength, and fixed balance

Variables	The math center.	Sample size	Standard deviation	Average mistake
Quantification. Quadruple, muscular, and ocean in front of me.	44.4000	5	1.51658	.67823
A gauge. Quadruple, muscle, ocean.	49.6000	5	1.14018	.50990
Scale, range, motion, reach, for two men in front of me.	140.0000	5	1.58114	.70711
Stretch... after me... scale... range... motion... for two legs	169.6000	5	2.96648	1.32665
Range, scale, motion, bend, for two persons in front of me.	143.0000	5	2.12132	.94868
Bend... after me. Scale... range... action... for two legs	13.6000	5	2.07364	.92736
Strength, muscle, quadruple, background	10.5000	5	1.11803	.50000
Strength, muscle, quadruple, background	32.0000	5	2.73861	1.22474
Balance. Steady	14.0000	5	1.41421	.63246
Balance. Steady. After	40.4000	5	2.88097	1.28841

Table 2 displays the sample's computed value (v) for the muscular ocean indices, rear quadratic muscle strength, and constant balancing tests conducted on the tribal and distant samples of the experimental sample.

Variables	The math center.	Standard deviation	Standard error	T-counted.	Level of flexibility	Sig. (2-tailed)
Measurement.Ocean.The muscle.The quad.Before me - measure.Ocean.The muscle.The quad.After me.	5.200	1.78885	.80000	6.500	4	.003
Measurement.Range.Move. For the two men.Before me - measure.Range.Move.For the two me.After me.	29.600	4.15933	1.86011	15.913	4	.000
Measurement.Range.Move. For the two men.Tunnel.Before me - measure.Range.Move.For the two men.Tunnel.After me.	129.400	3.50714	1.56844	82.502	4	.000
Muscle strength.The quad.Background.- Before me. - Power.The muscle.The quad.Background.After me.	21.500	3.35410	1.50000	14.333	4	.000
Steady balance.- before me. - Balance.Steady.After me.	26.400	1.67332	.74833	35.278	4	.000

In terms of the muscular ocean indices, the rear quadratic muscle strength, and the constant balancing tests, Table 2 displays the sample's computed value (v).

Variables	The math center.	Sampl e size	Standard deviation	Standard error
Measurement. Ocean, muscle, quadruple, before me.	44.0000	5	1.22474	.54772
A measure. Ocean, muscle, quadruple. After me.	46.6000	5	1.14018	.50990
Scale... range... motion... for two men... reach... before me.	141.0000	5	2.73861	1.22474
Scale... range... motion... for two men... stretch... after me.	157.6000	5	2.07364	.92736
Scale... range... motion... for two men... bend... before me.	143.4000	5	3.28634	1.46969
Scale... range... motion... for two men... bend... after me.	42.2000	5	2.28035	1.01980
Strength, muscle, quadruple, background, before me.	11.0000	5	1.36931	.61237
Strength, muscle, quadruple, background, after me.	17.0000	5	4.47214	2.00000
Balance. Steady. Before me.	14.2000	5	2.28035	1.01980
Balance. Steady. After me.	24.8000	5	1.92354	.86023

Table 4 displays the calculated value of (v) for the sample used in the tribal and remote tests. The sample was controlled for rear quadratic muscle strength, constant balance, and muscular ocean indices.

Variables	The math center.	Standard deviation	Standard error	T-counted.	Level of flexibility	Sig. (2-tailed)
Measurement.Ocean.The muscle.The quad.Before me - measure.Ocean.The muscle.The quad.After me.	2.60000	.89443	.40000	-6.500-	4	.003
Measurement.Range.Move.F for the two men.⤴.Before me - measure.Range.Move.For the two men.⤴.After me.	16.6000	3.64692	1.63095	-10.178-	4	.001
Measurement.Range.Move.F for the two men.Tunnel.Before me - measure.Range.Move.For the two men.Tunnel.After me.	101.200	3.83406	1.71464	59.021	4	.000
Power.The muscle.The quad.Front.- Before me. - Power.The muscle.The quad.Front.After me.	11.5000	4.54148	2.03101	-5.662-	4	.005
Power.The muscle.The quad.Background.- Before me. - Power.The muscle.The quad.Background.After me.	6.00000	3.79144	1.69558	-3.539-	4	.024
Balance.Steady.Before me-- balance.Steady.A lens.	10.6000	1.34164	.60000	-17.667-	4	.000

Sig < 0.05

The regulation of the muscular perimeter indicators, the rear quadratic muscle force, and the constant balance are all within the statistical description of the sample research presented in Table 5. It also includes the dimensional test of the experimental sample.

Variables	Sample	Sample size	The math center.	Standard deviation	Standard error
A measure. Ocean, muscle, quadruple. After me.	Pilot group	5	49.6000	1.14018	.50990
	The commanding group.	5	46.6000	1.14018	.50990
Scale... range... motion... for two men... stretch... after me.	Pilot group	5	169.6000	2.96648	1.32665
	The commanding group.	5	157.6000	2.07364	.92736
Scale... range... motion... for two men... bend... after me	Pilot group	5	13.6000	2.07364	.92736
	The commanding group.	5	42.2000	2.28035	1.01980
Strength, muscle, quadruple, background, after me.	Pilot group	5	32.0000	2.73861	1.22474
	The commanding group.	5	17.0000	4.47214	2.00000
Balance. Steady. After me.	Pilot group	5	40.4000	2.88097	1.28841
	The commanding group.	5	24.8000	1.92354	.86023

Discussion of the outcome:

The researchers attribute that the equipment contributed to the stabilization of the knee, as it contained an accelerator that prevented the knee movement in any direction other than the anatomy of the joint. This enhanced the failure of the joint to slide in any direction and could affect it and prevent its recovery. This led to greater bone cohesion, better recovery of the strings, less friction

of the bones within the joint, and a case of foot-strength which increased the burden on the muscles surrounding the joint. The device contributed to the player ' s ability to walk without feeling pain. This increased muscle strength and gave the injured person a sense of confidence to the injured, gradually improving the functional efficiency of the joint, depending on the increased kinetic range (tidal and pagan) of the injured man. "The bandages, muscles, and strings of the muscles have the effect of stabilizing the joint by holding the end of the bones together. The bandages and muscles increase the stability of the joint. The researchers attribute that the wear of the device has contributed to the development of the muscle strength of the injured man in terms of pain-free walking and fear of repeating or exacerbating the injury. The device has given confidence to the injured person to move without hesitation or fear of re-infection, and the constant sense of progress in healing and increasing the strength of the constant muscles of the joint (Prof. Dr. Mohammed Javad Kadhim, Prof. Dr. Ghadah Muayad Shihab, 2021, as power is the basis of every movement of the injured, as well as a direct link to the improvement of other physical qualities such as flexibility, grace, speed and organ, has given the patient the possibility of covering all of these qualities, power plays a significant role between physical qualities and shows their importance in sports.(Majid, S., & Jawad, 2023).

Reference is made to the table of tribal and remote tests of the kinetic range of the man affected in the tidal and pagan cases in the preceding tables shows that those injured in the research and research groups who have applied the Centre ' s rehabilitation and experimental exercises that have applied the rehearsals associated with the equipment have positively improved the kinetic range angles measured by the Gnometer system in the remote tests compared to the level of the tribal tests. From the review of the scale of the dimensional tests of these two groups in both these measurements, the patients in the experimental group are found to be superior in their results to those in the commanding group. The researchers attribute the improved and superior range of the patients in the experimental group in these kinetic ranges to the use of the equipment, which enabled the injured to increase the rubber of his muscles and according to the muscular work in each of the rehabilitation exercises, which led to a better extension of the knee separation and better to the machine ' s ability to maintain the detail and not to allow the side movements to intervene (Kesiktas et al., 2021). This gave a greater opportunity to allow the detail of the length and then the fold, and the continuous degree of tidalism and indeterminateness, not to be afraid and to increase confidence in the device. The researchers used this device with the ability to function and to accomplish more than one muscle function in order to allow the main muscles and muscles to help perform their role in a manner that would serve each other ' s independent motor duty and to help the injured to be an effective contributor to the preventive support of the muscle sensor, particularly the muscle spinners responsible for the tide, and to reduce the inhibition of the trench sensors, such as those spread in the muscular strings that tell the brain.

The role of the movement with resistance and the number of repeats of the painless walking route has had a clear impact on the increase in muscle rubber, the ability of the evaporation strings, the

proximity of the joint motion and its natural range. The increase in the angle of the knee particle and the small amount of the bend is indicative of the increase in the muscle pole, its flexibility and the ability of the hypotenuse to withstand this expansion. This positive effect has been caused by the continued natural movement of the arthritis, free from the effects of the operation included in the rehab exercises associated with the device to overcome the resistance of the main muscles, the muscles, the muscles supporting the muscles, which combine their work in an integrated manner, and the detailed prophylaxis of the catalysis phenomenon, which may be sustained by the injury and the effects of continuous kinetic determination (Jawad Kadhim, M., & Salman Ahmed, 2016).

The researchers explain that the increase in the improvement of muscle rubber and ligaments is from the gradual increase in the kinetic range (tidal and pagan). Within the limits of the pain, the functional efficiency of the infected joint has improved in general and the muscles on the knee joint have improved further. Increasing the kinetic range means an improvement in the muscle rubber and the ligaments surrounding the joint, as well as improving the neurological work, moving the joint freely and naturally, as the ligatures, muscles and strings affect the stability of the joint by holding the end of the joint bones together. (Mbala et al., 2021)

With reference to the table of tribal and remote tests of the muscle strength of the injured man in the previous tables, it appears that the injured persons in the research and research groups who applied the rehabilitation exercises in the centres, and the experimental ones who applied the rehabilitation exercises in the centres as well as the use of the equipment, have developed the muscle force towards positive development in the dimensional tests from the tribal tests in both the muscle strength tests of the injured man's femurs, all of which show that those in the experimental group are superior in their results to those in the control group. The researchers attribute the evolution and superiority of the injured in the experimental group to the positive impact of the equipment, which made it easier for the motorized muscle contractions to form easy-to-use resistance in the necessary emphasis of the movement (Rehab.l.tasyon, 2016), since the device has a great ability to determine the intensity of the pressure on the joint and its ability to control the work when the infected person feels a degree of pain that requires it to stop easily.

The strength of the muscles, the strength of the man's structure, the strength of the equipment, the strength of the equipment, the strength of the equipment, the ability of the equipment to use the joints, and the degree of difficulty of the muscles to stabilize the body in the event of an imbalance, which was appropriate and consistent with the elements of the curriculum. After weeks of evolution of the artifact, and the strength of the muscles, the strength of the man's strength will help to alleviate the burden on the other part. The equipment has helped to balance the work of the muscles around the joint, which has been instrumental in increasing the muscle strength of the body in the event of an imbalance, which was appropriate and consistent with the components of the rehabilitation and gradual approach, since weeks after the evolution of the artifact, its peripheric muscles, its high strength and the joint ties have enabled the patient to

use the joints daily and to scale up to the difficulty in the basic and daily life forms (Fadel et al., 2021). (Servant & Tr, 2023)

The researchers attribute the evolution of the muscle force on the injured knee joint through the increase in the number of paces of walking using the equipment, which was gradually increasing with the progress of time. The increase in tidality and dependence on the injured man has evolved considerably and has become an integral part of the daily life of the injured person. Continued wear of the device throughout the day has allowed the injured person freedom of movement and freedom from fear of movement. "The quality of the muscle can be identified by knowing what it can carry and the degree of tolerance on it, as well as how much of the muscle it produces in the operation of the regular rehabilitation exercise, which is an essential component of most sports activities. It also contributes to improving the functioning of the muscle and nervous organs and contributes to coordination between different parts of the body, as well as to reducing pain."Harvey, 2016

Rehabilitation training is one of the most effective forms of physical therapy in the treatment of physical injuries by means of rehabilitation programmes designed on the basis of a well-thought-out science. Rehabilitation exercises aim at the rapid recovery of the body and functional capacities of those affected. Rehabilitation exercises help to speed up the isolation of populations and the accumulation of blood. They also help to speed up the recovery of muscles to their functions.Moayed, 2016

"A good degree of muscle strength contributes to the prevention of injury and gives the body the form of healthy body, and muscle force plays a key role in contributing to the symmetry of most tissue damage to the body." (Gercj, 2013, p. 25). 113)

The factors influencing the production of the muscle force are determined by the number of muscle fibers that are irritated, the side of the muscle or muscle involved in the performance, the composition of the muscle fibres, the angle of the muscle force production, the length and relaxation of the muscle or muscles before the contraction, the length of time spent in the muscle contraction, the degree of compatibility of the muscles involved in the performance, the emotional state of the player before and during the production of the muscle force, age, sex, and protection. (Prof. Dr. Mohammed Javad Kadhim, Prof. Dr. Ghadah Muayad Shihab, 2021

From the review of the table of tribal and remote tests of the fixed body toxoids, it is clear that those injured in the two research groups who applied the Centre ' s rehabilitation and experimental tests, who applied the rehab and equipment, have positively developed their ability to static balance when standing on the injured man ' s dimensional tests above the level of the tribal tests, and attribute the injured researchers in the experimental group to the test results on the injured in the police group to the role of the equipment, which was compatible with the easy-to-hard-to-use step-by-step approach. This was confirmed by the number of steps that were consistently increasing with the progress of time and weeks of rehabilitation. This led to the ability of the injured person

to prolong the time of the infected foot while walking, which raised the man ' s ability to bear the body weight and rely on it more and more time. This was the result of a well-established link of the detail and pain in the length of time, which increased the man ' s muscle force and weeks of the men ' s stress at the bottom of the foot. The evolution in the level of muscle force has helped to support muscle muscles by enabling them to increase the level of muscle synergy to maintain balance, because the development was a muscle to communicate information to the balancer, which in turn enabled the body to balance, i.e., this improvement was directly linked to the evolution of muscle work and the development of muscle neurological control, while at the same time it was a supportive result of muscle strength. The researchers were keen to follow the sensitivity of the number of steps and pressure on the ground from the first days after surgery for the first weeks, because of the inability of the injured person to use the equipment and continuous feedback on how it worked during all stages of the sanatorium. This has led to the ability to avoid pain and to change the position of the organ to enable the injured person to progress in the process. This has had a positive effect on improving their constant balance. (Steinberg et al., 2000)

To preserve balance, the directional direction of neurosyncs from the cerebral cortex is directed towards muscles that increase body control in unnatural balance conditions, and in fact, the muscle intensity continues to clamp in some muscles to preserve balance or people without feeling it unless we concentrate on it or increase it as necessary to ensure balance, and repetition with different conditions helps to increase our ability to accelerate the balance situation if we face unstable conditions of strength. (Cord & Rehabilitation, n.d.)

The muscle balance on both sides of the body is the actual basis for good strength and adjusts the shape of the body from its present state to the ideal condition that it must be able to rehabilitate in order to increase the multiple capabilities of the victim to lead to physically and psychologically significant matters, to support the muscle detail after the loss of muscle strength, to reduce the risk of loss of balance, to a successful return to normal life at the end of the rehabilitation period, and to reduce re-infection. (WE & LT, 1991)

Conclusions:

The researchers concluded as follows:

According to the results of statistical processing of data collected from tribal, inter- and post-tribal measurements and tests, the following conclusions were reached:

1. The muscle strength of the front and back femoral muscles evolves when the joint is installed and the weight pressure is significantly reduced.
- 2... The muscle force of muscles working on the knee joint evolves as the front and back femoral muscles develop.
3. Continuing to move the joint with partial stabilizers has developed from the kinetic range.
4. The strength of the muscles working on the damaged knee joint has had a significant impact on the stability and balance of the injured man on the ground.
5. The use of substamps in the injured knee joint has had a significant impact in reducing pain

during the qualifying period of the search sample members.

6. The designer device had a significant effect on the improvement of the constant balance.
7. The use of the device during the period of rehabilitation has a positive impact on trusting the injured and reducing fear of foot use, mobility and pressure.
8. The use of infected feet has evolved with the development of the rehabilitation curriculum in increasing the number of steps.
9. The use of injured feet has evolved with the development of the rehabilitation curriculum and increased pressure on the ground for the injured man.
10. The innovative foundation has a major role to play in accelerating the rehabilitation of the joint and the muscles working on it and in returning to the natural pre-infection condition.

The following recommendations are made by the researchers:

The use of partial stressors in the rehabilitation of the knee's frontal region in advanced football players is advised in light of the researchers' findings.

2. Measuring recovery and rehabilitation progress using the quantity of footsteps and ground pressure
3. The researchers advise using the device as soon as possible following surgery.
4. The researchers advise conducting comparable studies in order to create a novel device.
5. The researchers suggest further investigations and studies pertaining to the back crusader injury.
6. The researchers suggest doing comparable studies with other age groups and sample sizes.

References

- abass, karrar, & Abd Alsatar, M. (2023). Effect of Special physical exercises on developing power define by speed and agility for football assistant referees. *Journal of Physical Education*, 35(3), 693–680. [https://doi.org/10.37359/JOPE.V35\(3\)2023.1499](https://doi.org/10.37359/JOPE.V35(3)2023.1499)
- Abbas, M., & A. Abdul, H. (2023). The effect of dynamic lactic training according to the target time fo developing special endurance, lactic acid concentration, and achievement for 800m runners under20 years old. *Journal of Physical Education*, 35(3), 728–719. [https://doi.org/10.37359/JOPE.V35\(3\)2023.1517](https://doi.org/10.37359/JOPE.V35(3)2023.1517)
- Abdalah, A. H., & SalehRadhiAmesh, H. S. M. (2024). THE EFFECT OF USING HIGH INTENSITY EXERCISES (HIIT) IN THE LACTIC ACID INDEX IN THE BLOOD AND THE DEVELOPMENT OF SPEED ENDURANCE IN SOCCER REFEREES. *International Development Planning Review*, 23(1), 176–190.
- Abdul Kareem, M., & qasim, S. (2023). The impact of a training curriculum to develop speed endurance in passing the readiness test during the competition period for the arena referees of the. *Journal of Physical Education*, 35(3), 757–770. [https://doi.org/10.37359/JOPE.V35\(3\)2023.1489](https://doi.org/10.37359/JOPE.V35(3)2023.1489)
- Abdulhassan, G. A., Hadi, A. A., & Hussein, H. K. (2020). The effect of special exercises pursuant to strength reserves on maximum strength and top of electric activity of muscles *Emg* Of weightlifters. *International Journal of Psychosocial Rehabilitation*, 24(8), 13697–13705. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85088532635&doi=10.37200%2FIJPR%2FV24I8%2FPR281357&partnerID=40&md5=f784b3a35b7cd348514e94fbe16fdac7>
- Abdulhassan, G. A., Hadi, A. A., & Hussein, H. K. (2020). The effect of special exercises pursuant to strength reserves on maximum strength and top of electric activity of muscles *Emg* Of weightlifters. *International Journal of Psychosocial Rehabilitation*, 24(8), 13697–13705. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85088532635&doi=10.37200%2FIJPR%2FV24I8%2FPR281357&partnerID=40&md5=f784b3a35b7cd348514e94fbe16fdac7>
- Abdulhassan, G. A., Shnawa, T. F., & Qaddoori, Y. W. (2022). the Effect of Katsu Exercises on Some Abilities of Strength and Achievement of Advanced Weight Lifters, Baghdad Clubs. *Revista Iberoamericana de Psicologia Del Ejercicio y El Deporte*, 17(6), 416–418.
- AbdulsalamWaheeb, A., Tawfeeq, M. I., Raheem, B. A., & Dakheel, H. O. (2024). COMPARISON OF THE PERFORMANCE OF THE FOREHANDKICK (STRAIGHT AND ACCOMPANIED BY FORWARD ROTATION) IN TERMS OF ACCURACY AND SPEED AMONG THE PLAYERS OF THE NATIONAL TEAM (ADVANCED CATEGORY) IN TENNIS. *International Development Planning Review*, 23(1), 138–148.

- Afaf Othman. (2010). Recent trends in motor and psychological education. Alexandria: Dar Al-Wafaa for publication and distribution.
- Agility, U., For, E., Some, D., Skills, R., First, O., Assistant, C., & In, R. (2018). Using Agility Exercises For Developing Some Refereeing Skills Of First Class Assistant Referees In Baghdad. *Journal of Physical Education*, 30(1), 287–299.
- Ahmed Khater, and Ali Fahmy Al-Beik. (1978). Measurement in the mathematical field. Cairo: Dar al-Maarif.
- Ahmed Nagy Mahmoud. (1988). Oxygen susceptibility of Iraqi runners in long-distance running. *College of Physical Education - University of Basra*, page 19.
- Ahmed Obaid, M., Hussein Khalifa, A., & Saad Rabeea, M. The Effect of an Electronic Device Designed to Measure the Knee Bending Angle in Developing the Skill of Catch and Clearance the High Ball for Football Goalkeepers. *Annals of Applied Sport Science*, 0-0.
- Ahmed, M. (2020). Special exercises using the strength training balanced rate according to some kinematic variables and their impact in the muscular balance and pull young weightlifters. *International Journal of Psychosocial Rehabilitation*, 24(01), 7612–7617.
- Al-Ali, A., & Abdulzahra, S. (2024). A COMPARATIVE STUDY OF THE AMOUNT OF FORCE EXERTED ON THE GROUND AND THE TIME OF PROPULSION IN THE VERTICAL AND HORIZONTAL JUMPING TESTS FROM STABILITY USING A FOOT SCAN DEVICE. *International Development Planning Review*, 23(1), 163–175.
- Al-Bakri, A. H., & YasirWajeihQaddoori, D. H. (2024). THE EFFECT OF EXERCISES USING A MINI SQUASH COURT ON IMPROVING SOME MOTOR ABILITIES AND LEARNING SOME BASIC SKILLS FOR PLAYERS AGED 10-12 YEARS. *International Development Planning Review*, 23(1), 257–272.
- Al-fatlawi, A. H. A., Al-, P. A. M., & Abd, P. H. (2023). The Effect of Using Adhesive Tapes (Kenzo Tape) in Rehabilitating the Shoulder Muscles of Throwing Players in Paralympic Athletics Events. *Pakistan Heart Journal*, 56(02).
- Ali, A., & Rabih, E. (2023). Designing compound exercises with hardware technology and its impact on some physical and skill abilities of the Airways Club players under (19) years old. *Journal of Physical Education*, 35(3), 654–669.
[https://doi.org/10.37359/JOPE.V35\(3\)2023.1525](https://doi.org/10.37359/JOPE.V35(3)2023.1525)
- Ali, H. H., Hussain, D. Y. N., & Al-Talib, D. T. N. (2020). the Relationship of the Learning Level According To Different Educational Strategies With Some of the Kinematic Variables of Back Swimming for Students. *International Journal of Research in Social Sciences and Humanities*, 10(2), 375–380. <https://doi.org/10.37648/ijrssh.v10i02.037>
- Ali, H., & Qasim, S. (2023). The Effect of Game – Like Exercises on the Development of Some Physical Abilities and Fundamental skills In Futsal. *Journal of Physical Education*, 35(2), 563–575. [https://doi.org/10.37359/JOPE.V35\(2\)2023.1479](https://doi.org/10.37359/JOPE.V35(2)2023.1479)

- Ali, N. K., Amish, S. R., & Kamil, W. S. (2022). an Analytical Study of the Offensive Aspect of the Iraqi National Team Players in the 2015 Arabian Gulf Championships and the 2018 Asian Nations in Football. *Revista Iberoamericana de Psicología Del Ejercicio y El Deporte*, 17(4), 221–223.
- Ali, Y. S., Abdulhussein, A. A., & Jassim, A. H. (2023). EMPLOYMENT OF RESISTANCE EXERCISE IN ACCORDANCE TO VARIABLE BIOMECHANICAL MARKERS TO DEVELOP THE STRENGTH AND THE SPEED OF ARM MUSCLES OF WATER POLO PLAYERS. *International Development Planning Review*, 22(2), 589–605.
- Al-Qaisi, T. D. S. (2020). Statistical methods for calculating the validity and reliability of tests and measures using IBM SPSS Statistics Version24. Dar Amjad for Publishing and Distribution, The Hashemite Kingdom of Jordan.
- Asaad Adnan Aziz. (2018). General human physiology and sports physiology. Diwaniyah: Zero One Press.
- Awwad, K., & Saleh, R. (2023). Detection of genetic diversity aimed to developing short term anaerobic capacity characterized by speed and acetylcholinesterase activity in female 200m runners under the age of 18 years g short term anae. *Journal of Physical Education*, 35(3), 679–670. [https://doi.org/10.37359/JOPE.V35\(3\)2023.1496](https://doi.org/10.37359/JOPE.V35(3)2023.1496)
- Bahauddin Ibrahim Salameh. (1999). Bioenergy representation in the sports field. Cairo: Dar Al-Fikr Al-Arabi.
- Bahauddin Salameh. (2000). Sports physiology and physical performance (blood lactate). Arab Thought House.
- Bdulkarim, D. H. (2024). THE EFFECT OF KI-HARA EXERCISES ON DEVELOPING MUSCLE STRENGTH, FLEXIBILITY OF THE UPPER LIMBS, AND ACCURACY OF PERFORMING THE SMASHING SKILL FOR VOLLEYBALL PLAYERS. *International Development Planning Review*, 23(1), 205–214.
- Bronze. (1991). Sweat. dehydration apraxis oriental approach. *J. sport*.
- Cord, S., & Rehabilitation, I. (n.d.). SPINAL CORD INJURY REHABILITATION. 128.
- Costill. (94). Wilmore. op.city.
- Dhahi, N. M., Hani, A. T., & Khudhair, M. O. (2022). A study of mental perception and sports confidence and their relationship to the motivation of sports achievement for the players of the Iraqi premier league football clubs. *Revista iberoamericana de psicología del ejercicio y el deporte*, 17(6), 391-395.
- Drriskell, IW (2008). Sports nutrition: energy metabolism and exercise. New York: New York, Library of Congress Cataloging.
- Easa, F. A. W., Shihab, G. M., & Kadhim, M. J. (2022). the Effect of Training Network Training in Two Ways, High Interval Training and Repetition To Develop Speed Endurance Adapt

- Heart Rate and Achieve 5000 Meters Youth. *Revista Iberoamericana de Psicología Del Ejercicio y El Deporte*, 17(4), 239–241.
- Edington, D... (1987). *the biology of physical activity*. USA
- Edwards, W. (2004). *Art of Boxing and Science of Self-Defense*. New York: Excelsior Publishing House.
- Elaf Rabie Abbas Al-Tamimi. (2012). *The effect of a proposed curriculum for mental training associated with skill exercises in developing attention focus and diverting it among the Iraqi youth boxing players*. PhD thesis, University of Baghdad, College of Physical Education and Sports Sciences.
- Fadel, G. A., Kadem, M. J., Salman, S. M., Kadhim, M. J., Kzar, F. H., Kadhim, M. J., Mohammed, P., Kadhim, J., Ghadah, P., Shihab, M., Training, E., Using, P., Indicators, P., National, O., Gymnastics, A., & For, L. (2021). *The Effect of Increasing Rehabilitation Program Using Electric Stimulation On Rehabilitating Knee Joint Working Muscles Due to ACL Tear In Athletes*. *Journal of Physical Education*, 32(3), 14–18.
[https://doi.org/10.37359/jope.v32\(3\)2020.1012](https://doi.org/10.37359/jope.v32(3)2020.1012)
- Fadhil, S. A., & Khalaf, S. Q. (2023). *A treatment strategy for recurrent (ankle injuries) in Muay Thai athletes*. *Eximia*, 12(1), 486–495. <https://doi.org/10.47577/eximia.v12i1.394>
- Fadil, A. H., & Mohammed, K. S. (2022). *Constructing and Rationing A Test for the Skill of Receiving the Serve From Above in Volleyball for Third-Year Students in the Faculty of Physical Education and Sports Sciences*. *Revista iberoamericana de psicología del ejercicio y el deporte*, 17(3), 140-142.
- Fahem, L., & Wahid Easa, A. (2021). *The Effect of Lactic Endurance Training on Developing Speed Endurance, Lactic Acid Concentration, and Pulse after Effort and Achievement for 1500m Junior Runners*. *Annals of R.S.C.B.*, 25(6), 10008–10013. <http://annalsofrscb.ro>
- Falah Hassan. (2008). *The effect of anaerobic training on the efficiency of some vital regulators and biochemical variables to develop lactic endurance among basketball players*.
- Fathi, M. K. (2022). *Design and rationing of a test to measure the accuracy of shooting by jumping forward from the goal area line as a result of the quick attack of handball players*. *Revista iberoamericana de psicología del ejercicio y el deporte*, 17(5), 294-298.
- fey, s. K. (2001). *. Exercise physiology (Vol. 4)*. USA: Mc Craw Hill.
- Ghafoor, Q. H. A., Salman, A. D., & Ali, S. A. S. (2022). *Effect of Proposed Exercises Using the Sponge Mat in the Performance of the Skill of Court Defence in Sitting Volleyball*. *Special Education*, 1(43), 2135–2144.
<https://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=159789847&site=ehost-live>
- Gree, R. A. A., & Attiyah, A. A. (2022). *the Effect of the Hiit Training Curriculum on Developing Some of the Kinetic Capabilities and Combat Adequacy of Iraqi Special*

- Forces Fighters. *Revista Iberoamericana de Psicología Del Ejercicio y El Deporte*, 17(4), 224–227.
- Haitham Abdul Rahim Al-Rawi. (1996). Evaluation of training programs according to some chemical and physiological effects of volleyball players in Iraq. (University of Baghdad - College of Physical Education and Sports Sciences, ed.) PhD thesis.
- Haitham Ismail Ali Hashem. (2006). Designing a device for developing muscular strength for straight punches in boxing. Master's thesis, Assiut University, Faculty of Physical Education.
- Hama Najm Al-Jaf, and Safaa Al-Din Taha. (2001). Sports medicine and training. Erbil: University of Erbil.
- Hamed, A., Alethawi, H., Prof, A., Makki, A., & Almayyah, M. (2023). The Role of Strategic Thinking of Administrative Bodies in Enhancing Organizational Loyalty among Coaches of Sports Clubs in Baghdad. *Pakistan Heart Journal*, 56(02), 537–545.
- Hameed, A. S. A., Sabhan, M. H., & Kamil, W. S. (2021). Special Exercises for Offensive Tactical Skills and Their Impact on Developing the Speed and Accuracy of Some Basic Skills in Youth Football. *Revista Iberoamericana de Psicología Del Ejercicio y El Deporte*, 16(4), 69–72.
- Hameed, D. I. R. (2020). Strength Training and its Effect in Some Biochemical Variables in the High Jumping of Advanced Players. *International Journal of Psychosocial Rehabilitation*, 24(5), 6178–6184. <https://doi.org/10.37200/ijpr/v24i5/pr2020595>
- Hamid Nayef Al-Batayneh. (2002). Endocrinology. Amman - Jordan: Yaqoot Printing Services.
- Hamza Muhammad Al-Bahadli, S. A.-Z., & Ali Al-Tamimi, P. D. A. F. (2022). The effect of a rehabilitation program for rhomboid muscles (shoulder) and fibrous strain on young and advanced wrestlers (Free and Roman). *International Journal of Research in Social Sciences & Humanities*, 12(02), 150–176. <https://doi.org/10.37648/ijrssh.v12i02.010>
- Hamza Muhammad Al-Bahadli, S. A.-Z., & Ali Al-Tamimi, P. D. A. F. (2022). The effect of a rehabilitation program for rhomboid muscles (shoulder) and fibrous strain on young and advanced wrestlers (Free and Roman). *International Journal of Research in Social Sciences & Humanities*, 12(02), 150–176. <https://doi.org/10.37648/ijrssh.v12i02.010>
- Hamza, J. S., Zahraa, S. A., & Wahed, A. A. (2020). The history of rhythmic gymnastics for women. *International Journal of Psychosocial Rehabilitation*, 24(03), 6605–6612.
- Hani, A. T., Abdulhameed, A. S., & ... (2020). Psychological pressures and their relationship to the competitive orientation of football players in the Iraqi Premier League for the 2018-2019 season. *International Journal of ...*, 24(02), 6839–6847. https://www.researchgate.net/profile/Ali-Saad-14/publication/350040911_aldghwt_alnfsyt_wlaqtha_baltwjh_altnafsy_llaby_krt_alqdm_f_y_aldwry_alraqy_almmtaz_llmwsn_2018-

2019_Psychological_pressures_and_their_relationship_to_the_competitive_orientation_of_foot

- Hani, A. T., Khudhair, M. O., & Jasim, H. T. (2022). Aggressive Behavior and Its Relationship To the Phenomenon of Bullying Among Young Football Players Aged (17-19) Years. *Revista Iberoamericana de Psicología Del Ejercicio y El Deporte*, 17(6), 399–401.
- Harvey, L. A. (2016). Physiotherapy rehabilitation for people with spinal cord injuries. *Journal of Physiotherapy*, 62(1), 4–11. <https://doi.org/10.1016/j.jphys.2015.11.004>
- Hashem Ahmed Suleiman. (1988). The relationship of focus and attention unit with shooting accuracy in the basketball free throw. Master's thesis, College of Physical Education and Sports Sciences, University of Baghdad.
- Hashem, H., & Qasem, S. (2021). The Effect of Compound Exercises on Added Weights on Some Skill Abilities in Youth Soccer Players Aged 17 – 19 Years Old. *Journal of Physical Education*, 33(3), 111–121. [https://doi.org/10.37359/jope.v33\(3\)2021.1193](https://doi.org/10.37359/jope.v33(3)2021.1193)
- Hazza bin Mohammed Al-Hazza. (no date). Physiology of physical effort Functional foundations and athlete procedures for physiological measurements. Saudi Arabia.
- Hidden Ali Ibrahim Al-Faqih. (2018). The effectiveness of suggested exercises for visual vision on the development of some special coordination abilities and the level of skillful performance of soccer players. *Journal of Sports Science*, 10(36), 6.
- Hilal Abdel Karim. (2010). Sports psychology in learning achievement psychometrics. Baghdad: Sports Library.
[https://doi.org/10.37359/JOPE.V28\(2\)2016.277](https://doi.org/10.37359/JOPE.V28(2)2016.277)
- Hussain, M. A., Almujaay, A. S. A., & khammas, R. khaleel. (2022). Comparison of Some Kinematic Variables of the Triple Jump Between the Two World Championships (Iaaf) (2017) and (2018). *Revista Iberoamericana de Psicología Del Ejercicio y El Deporte*, 17(5), 323–327.
- Idrees, M. T., Yasir, A. M., & Rashied, J. M. (2022). Effect of resistance training on the biomechanics and accuracy of serve receiving skills in volleyball. *Sport TK*, 11, 1–8. <https://doi.org/10.6018/sportk.517131>
- Ismaeil, K. S., Prof, A., Razzaq, B., Hamedd, P., & Kadhim, A. A. (2023). The effect of using electrical stimulation and massage within a suggested device to restore muscle lengthening for athletes with a moderate-intensity muscle tear in some posterior thigh muscles. *Pakistan Heart Journal*, 56(01), 262–267.
- Jaafer, M. T., Luay, P., & Refat, S. (2023). Some Manifestations of Attention According to the HRP System and its Relationship to the Accuracy of the Shooting Performance from the Free Throw in Basketball for Junior Players. *Pakistan Heart Journal*, 56(02), 165–172.

- Jawad Kadhim, M., & ALWEE ZAQIR, A. (2018). The Effect of Sodium Bicarbonate Added To Water On First Class Soccer Players' Pulse After Effort. *Journal of Physical Education*, 30(2), 454–472. [https://doi.org/10.37359/JOPE.V30\(2\)2018.376](https://doi.org/10.37359/JOPE.V30(2)2018.376)
- jawad kadhim, M., & Mahmood, H. (2023). The effect of special exercises for some physical, motor and electrical abilities accompanied by symmetrical electrical stimulation in the rehabilitation of the muscles of the arms of patients with simple hemiplegic cerebral palsy. *Journal of Physical Education*, 35(3), 618–593. [https://doi.org/10.37359/JOPE.V35\(3\)2023.1515](https://doi.org/10.37359/JOPE.V35(3)2023.1515)
- Jawad Kadhim, M., & Salman Ahmed, W. (2016). Evaluating Training Program Using Physiological and Biochemical, and Physical Indicators On National Artistic Gymnastics League For Men. *Journal of Physical Education*, 28(3), 116–129. [https://doi.org/10.37359/JOPE.V28\(3\)2016.1064](https://doi.org/10.37359/JOPE.V28(3)2016.1064)
- Jawad, M., & Jabbar Shinen, I. (2016). Prediction by the maximum oxygen consumption in terms of the concentration of lactic acid after the maximum physical effort for football players (18-25 years). *Journal of Physical Education*, 28(3), 99–115. [https://doi.org/10.37359/JOPE.V28\(3\)2016.1063](https://doi.org/10.37359/JOPE.V28(3)2016.1063)
- Jeklin, A., Bustamante Farías, Ó., Saludables, P., Para, E., Menores, P. D. E., Violencia, V. D. E., Desde, I., Enfoque, E. L., En, C., Que, T., Obtener, P., Maestra, G. D. E., & Desarrollo, E. N. (2016). THE EFFECT OF A SUGGESTED REHABILITATION CURRICULUM IN THE TREATMENT OF PARTIAL RUPTURE OF THE GLUTEAL MUSCLES AND STRENGTHENING THE WORKING MUSCLES OF THE PELVIC JOINT IN FOOTBALL PLAYERS. *Correspondencias & Análisis*, 17(15018), 1–23.
- Jumaah, A. H., & Ameen, B. A. M. (2023). The Effect of the Strategy of Differentiated Education According to the Auditory Learning Style by Using Assistance in Learning the Back Kick (T-Chagi) for the Young *Pakistan Heart Journal*, 56(01), 137–148. <https://www.pkheartjournal.com/index.php/journal/article/view/1198>
- Kadhim, M. J. (2012). The effects of drinking water, magnetized through training on some biochemical variables in blood. *Journal of Physical Education*, 24(1), 453–480.
- Kadhim, M. J., Shihab, G. M., & Zaqair, A. L. A. A. (2021). The Effect of Using Fast And Direct Cooling after Physical Effort on Some Physiological Variables of Advanced Football Players. *Annals of the Romanian Society for Cell Biology*, 25(6), 10020–10020. <https://www.proquest.com/openview/fd995719bc359d2e05fa6fe346bed0f6/1?pq-origsite=gscholar&cbl=2031963>
- Kamil, W. S., & Sabhan, M. H. (2022). the Effect of Special Exercises for Some Physical and Compatibility Abilities and Their Relationship To Some Basic Skills of Female Football Futsal Players. *Revista Iberoamericana de Psicología Del Ejercicio y El Deporte*, 17(5), 307–310.

- Kesiktas, F. N., Kasikcioglu, E., Paker, N., Bayraktar, B., Karan, A., Ketenci, A., & Müslümanoğlu, L. (2021). Comparison of the functional and cardiovascular effects of home-based versus supervised hospital circuit training exercises in male wheelchair users with chronic paraplegia. *Turkish Journal of Physical Medicine and Rehabilitation*, 67(3), 275–282. <https://doi.org/10.5606/tftrd.2021.6533>
- Khudhair, M. O., Jasim, H. T., & Hani, A. T. (2022). Aggressive Behavior And Its Relationship To The Phenomenon Of Bullying Among Young Football Players Aged (17-19) Years. *Revista iberoamericana de psicología del ejercicio y el deporte*, 17(6), 399-401.
- Kzar, F. H., & Kadhim, M. J. (2020). The Effect of Increasing Rehabilitation Program Using Electric Stimulation On Rehabilitating Knee Joint Working Muscles Due to ACL Tear In Athletes. *Journal of Physical Education*, 32(3), 14–18. [https://doi.org/10.37359/jope.v32\(3\)2020.1012](https://doi.org/10.37359/jope.v32(3)2020.1012)
- M. A. Student. Abdullah Jamal Sakran, P. D. G. M. S. (2023). The use of an auxiliary device and its impact in teaching the skill of Russian rotation on the pommel horse device for junior artistic gymnastics. *Wasit Journal Of Sports Sciences*, 14(2), 97–114.
- MACENZIE, BT (97). <https://www.brianmac.co.uk/coni.htm>. Retrieved 3 24, 2023, from brianmac sports 1996-2023: coach- brianmc.uk
- Mahde, M. A., Hamedd, P., Abdul, A., & Prof, A. (2023). The Effect of Dynamic Lactic Training According to the Target Time to Develop the Achievement of 800m Runners Under 20 Years Old. *Pakistan Heart Journal*, 2706(02), 317–323.
- Mahmood, H. A., & Kadhim, M. J. (2023). Special exercises for some physical, kinetic and electrical abilities accompanied by symmetrical electrical stimulation in the rehabilitation of the muscles of the legs for patients with simple hemiplegic cerebral palsy. *Pakistan Heart Journal*, 56(1), 580-595.
- Mahmood, H. A., Mohammed, P., & Kadhim, J. (2023). Special exercises for some physical , kinetic and electrical abilities accompanied by symmetrical electrical stimulation in the rehabilitation of the muscles of the legs for patients with simple hemiplegic cerebral palsy. *Pakistan Heart Journal*, 56(01), 580–595. <http://pkheartjournal.com/index.php/journal/article/view/1291>
- Majid, S., & Jawad, M. (2023). Effect of consuming sodium bicarbonate on the numeric value of the accumulation of lactic acid levels in the blood after maximum physical effort between gymnastics and judo players. *Journal of Physical Education*, 24(4), 30. <https://jcope.uobaghdad.edu.iq/index.php/jcope/article/view/1817>
- MANDOOBMAKKIATI, A., & ABED, Y. (2024). AN ANALYTICAL STUDY OF THE ORGANIZATIONAL CRISES FACING COACHES IN THE IRAQI FOOTBALL LEAGUE. *International Development Planning Review*, 23(1), 226–236.

- Marwan Abdel Majeed Ibrahim. (1999). Testing, measurement and evaluation in physical education. Amman - Jordan: Dar Al-Fikr Al-Arabi for printing and publishing.
- Mbala, G. F. O., Abe, M. T. O., Ntieche, Z., Ejuh, G. W., & Ndjaka, J. M. B. (2021). Jo ur na l P re oo f. Heliyon, e07461. <https://doi.org/10.1016/j.arthro.2023.07.006>
- Moataz Younis Dhanoun, and Najat Saeed Ali. (2008). Measurement of attentional acuity after aerobic and anaerobic exertion and the relationship between them and the return period of soccer players (Volume 8). Baghdad: College of Basic Education Research Journal.
- Moayed, A., Moayed, G., & Jawad, M. (2019). The Effect of Group Investigation Model on Learning overhead and underarm Pass in Volleyball. *Journal of Physical Education*, 31(2), 176–181. [https://doi.org/10.37359/JOPE.V31\(2\)2019.926](https://doi.org/10.37359/JOPE.V31(2)2019.926)
- Moayed, G. (2016). The Effect Of Van Hiele Style According To Cognitive Control Patterns On Learning The Skill Of The Background Rolling Over The Balance Beam In Artistic Gymnastics For Women. *Journal of Physical Education*, 28(2), 183–198.
- Mohamed Rabie Shehata. (2009). Reference in Follicular Psychology (Version 1). Amman: Dar Al Maysara for publication and distribution.
- Mohammed Khalid Awad, Khulood Juma Qasim, & S. H. A. (2024). Using an educational method according to special exercises to perform the skill of bow and develop flexibility for cub wrestlers in Iraq. *Eximia*, 13(1), 38–50. <https://doi.org/10.47577/eximia.v13i1.423>
- Mohammed, K. S., Flayyih, M. S., & Rumeeh, A. F. (2020). Building and codifying a scale of the level of tactical performance of advanced volleyball players. *International Journal of Psychosocial Rehabilitation*, 24(10).
- Mohammed, M. A., Sabhan, M. H., & Abed, E. K. (2021). Special Cross-Sectional Exercises and their Impact on the Development of Some Physical Abilities and Performance of the Basic Skills of Football for Young Players. *Revista Iberoamericana de Psicologia Del Ejercicio y El Deporte*, 16(1), 11–14.
- Moheisen Addai, and Fouad Shamoun Hanna. (1987). *Physiology*. Mosul: Dar al-Kutub.
- Mohsen, A. S., SabreenHamedShehab, A. J., & SakranHamza, J. (2024). DESIGNING AN AUXILIARY DEVICE AND ITS IMPACT ON LEARNING THE SKILLS OF ANGULAR SUPPORT AND OPEN SUPPORT FOR HANDSTAND PUSH-UPS ON THE PARALLEL APPARATUS IN ARTISTIC GYMNASTICS FOR BUDS. *International Development Planning Review*, 23(1), 273–285.
- Mohsen, Y. F., Makttof, A. M., Sami, M. M., Hikmat, T. Z., Hammood, A. H., Abed, N., & Abdulhussein, A. A. (2024). EVALUATING THE EFFECTIVE CREATIVE LEADERSHIP ROLE OF THE DEAN AND HEADS OF SCIENTIFIC DEPARTMENTS IN THE COLLEGE OF PHYSICAL EDUCATION AND SPORTS SCIENCES AL-MUSTANSIRIYAUNIVERSITY. *International Development Planning Review*, 23(1), 321–337.

- Mondher, H. A., & Khalaf, S. Q. (2023). The Effect of Compound Exercises with the Intense Method and the Training Mask on the Development of Some Physical Abilities and the Level of Skillful Performance of Futsal Players. *Pakistan Heart Journal*, 56(01), 310–323.
- Mondil, M. T., Prof, A., & Hussein, L. (2023). The Effect of Using an Innovative Device on Learning the Movement of the Feet and the Speed of Kinetic Response , and Some Badminton Skills for Female Students. *Pakistan Heart Journal*, 56(02), 156–164.
- Mousa, A. M., & Kadhim, M. J. (2023). NMUSING AN INNOVATIVE DEVICE TO IMPROVE THE EFFICIENCY OF THE ANTERIOR QUADRICEPS MUSCLE OF THE INJURED KNEE JOINT AFTER SURGICAL INTERVENTION OF THE ANTERIOR CRUCIATE LIGAMENT IN ADVANCED SOCCER PLAYERS. *Semiconductor Optoelectronics*, 42(1), 1504–1511.
- Mufti Ibrahim Hammad. (2001). *Sports coaching planning, implementation and leadership*. Cairo: Dar Al-Fikr Al-Arabi.
- Muhamed, B., Salam, K., & Kamal, A. (2023). The reality of the heroic graduate students from the College of Physical Education and Sports Sciences - University of Baghdad for the academic year 2022/2023. *Journal of Physical Education*, 35(3), 739–729. [https://doi.org/10.37359/JOPE.V35\(3\)2023.1932](https://doi.org/10.37359/JOPE.V35(3)2023.1932)
- Muhammad Ali the cat. (1999). *Member jobs and training*. Cairo: Dar Al-Fikr Al-Arabi.
- Muhammad Salim Saleh, and Abdul Rahim Ashir. (1982). *Human life science*. Baghdad: Dar Al-Kutub for printing.
- Muhannad Hussein Al-Bashtawi, and Ahmed Ibrahim Al-Khawaja. (2005). *Principles of sports training*. Amman: Dar Wael for publishing.
- Muhsen, A. S. (2020). A study of some special physical characteristics and their relationship in developing rhythmic steps to achieve a javelin throwing activity for beginners. *International Journal of Psychosocial Rehabilitation*, 24(08), 14839–14855.
- Muhsen, A. S. (2020). Relationship of some fitness elements with the performance of lifting the iron ball (weight) by gliding method. *International Journal of Psychosocial Rehabilitation*, 24(10), 1475-7192.
- Munaf, S. M., Ali, A. A., & Dawood, M. S. (2022). Psychological Empowerment and Its Relationship To Organizational Citizenship Behavior for Workers in the Olympic Committee Sports Federations. *Revista Iberoamericana de Psicologia Del Ejercicio y El Deporte*, 17(4), 183–190.
- Muwafaqobayeskhudhair, S. A. (2024). PSYCHOLOGICAL HESITATION AND ITS RELATIONSHIP TO SOME OFFENSIVE SKILLS (TACTICAL ASPECT) AMONG YOUTH PLAYERS UNDER (19) YEARS OF AGE IN FOOTBALL. *International Development Planning Review*, 23(1), 191–204.

- N.K., A., & A.S.A., H. (2020). The effect of attacking tactical skill exercises in the skills of dribbling and shooting for youth football players. *International Journal of Psychosocial Rehabilitation*, 24(9), 4754–4761. <https://www.psychosocial.com/wp-content/uploads/2020/09/PR290505.pdf%0Ahttp://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emca3&NEWS=N&AN=2005014581>
- Naif, A. S., & Hussein al-Maliki, D. M. A. (2020). the Effect Karplus Model in Cognitive Achievement and Learning Passing Skill in Soccer for Secondary School Students. *International Journal of Research in Social Sciences and Humanities*, 10(2), 385–394. <https://doi.org/10.37648/ijrssh.v10i02.039>
- Najy, S. A., & Ali, Y. S. (2021). Motives for physical activity of high school students in Baghdad. *Sciences Journal Of Physical Education*, 14(5).
- NaseemJoudah, G. (2024). CONSTRUCTING AND STANDARDIZING DIMENSIONS OF SUSTAINABLE DEVELOPMENT: A PERSPECTIVE FROM BEARERS OF THE WOODEN BADGE IN IRAQ. *International Development Planning Review*, 23(1), 286–300.
- nbraz, younis, & Lazim, A. (2023). The effect of using aids manufactured to perform the maximum speed of the hands in learning the skill of hitting baseball for ages (under 12 years). *Journal of Physical Education*, 35(3), 628–619. [https://doi.org/10.37359/JOPE.V35\(3\)2023.1526](https://doi.org/10.37359/JOPE.V35(3)2023.1526)
- Pilardeau, H. (1988). Effect of physical training on exercise induced sweating in men. *J, sport med.*
- Rafid Khalil Ismail. (2018). The effect of using a smart training hall in developing some special abilities of junior boxers. PhD thesis, College of Physical Education and Sports Sciences, University of Baghdad.
- Rahim Attia. (2008). A study of knowledge of the intensity of attention and the level of skillful performance of the players of different lines of football. *Maysan Journal of Academic Studies*, 7(13), 173.
- rashed, mohamed, & Ghazi, A. W. (2023). The impact of an educational curriculum using delayed feedback according to different times in learning and retaining the skill of shooting at several goals distributed on the field during (30) for cross-ball players ages (13-15 years). *Journal of Physical Education*, 35(3), 703–694. [https://doi.org/10.37359/JOPE.V35\(3\)2023.1527](https://doi.org/10.37359/JOPE.V35(3)2023.1527)
- Rehabilitasyon, P. H. (2016). REHABILITATION FOR PATIENTS WITH PARAPLEGIA. July, 185–194.
- Rija, T. H. (2023). THE ROLE OF ORGANIZATIONAL DEVELOPMENT IN IMPROVING THE REALITY OF THE WORK OF THE. *Ibero-American Journal of Exercise and Sports Psychology*, 18, 298–304.

- Robert K. Marray. (1997). Harpers Biochemistry. 25th Middle East Edition , UK
- Saad Abdel Hamid. (1989). Muscle chemistry. Baghdad: Higher Education and Scientific Research Press.
- Saad, A., Fadhil, A., Rafid, A.-B., & Qaddoori, M. (2023). Rehabilitation Program For Treatment Tennis Elbow (Lateral Epicondylalgia) Suffered by The Players of Al-Rafidain Sports Club For Tennis League Three Players In Diyala Province. 13(2018).
- Sabbar, O. S., Jawad, A. M., & Jabbar, M. A. (2023). the History of Clubs' Participation in the Iraqi Volleyball Premier League and Its Results for the Period From (1991 To 2022). Revista Iberoamericana de Psicologia Del Ejercicio y El Deporte, 18(3), 288–290.
- Sabhan, M. habeeb, Kamil, W. S., & Hameed, A. S. A. (2021). Special Exercises in the Hierarchical Opposing Training Method and Its Effect on Developing Physical Abilities and Accuracy of Soccer Scoring for Advanced Players. Revista Iberoamericana de Psicologia Del Ejercicio y El Deporte, 16(6), 20–22.
- Saeed, T. A., Yasser, O. K., & Fenjan, F. H. (2020). The effect of various aerobic exercises on the endurance and some physiological variables among fitness training practitioners of at (30-35) years old. International Journal Of Psychosocial Rehabilitation, 24(03), 6083–6086.
- Sakran, M. S. A. J., & Shehab, G. M. (2023). The use of an auxiliary device and its impact in teaching the skill of Russian rotation on the pommel horse device for junior artistic gymnastics. Wasit Journal Of Sports Sciences, 14(2).
- Salih, I. H., Yaseen, A. M., Naseer, K. J., Attieh, A., & Kadhim, M. J. (2024). THE IMPACT OF COMPETITIVE SPEED EXERCISES ON JUNIOR BOXERS' EFFECTIVENESS OF SKILL PERFORMANCE AND COUNTERATTACK SPEED. International Development Planning Review, 23(1), 149–162.
- Salman, S. M., KADHIM, M. J., & SHIHAB, G. M. (2022). The effect of special exercises in the rehabilitation of the shoulder muscle for the youth wrestling category. International Journal of Early Childhood Special Education, 14(5).
- Salman, T. D., & Hameed, G. N. A. (2022). Study of some visual functions and functional variables of the respiratory and nervous systems and their relationship to the level of achievement of air rifle shooting. International Journal of Early Childhood Special Education, 14(3).
- Salmana, T. D., & Hameed, G. N. A. (2022). Effect of a Training Curriculum for the Development of Some Functional Variables and the Level of Achievement in the Effectiveness of Air Rifle Shooting. International Journal of Health Sciences, 6, 13180-13190.

- Salmana, T. D., & Muhsen, A. D. A. S. MOTOR RESPONSE SPEED AND ITS RELATIONSHIP TO THE PERFORMANCE ACCURACY OF A SKILLS OF PASSING FROM THE TOP AND SMASH SERVE IN VOLLEYBALL.
- Samer Youssef Meteb. (2004). There is an educational approach to generalize the motor programs in learning the skills of handling and shooting with handball and the motor behavior of the cubs. PhD thesis, College of Physical Education and Sports Sciences, University of Baghdad, 65.
- Schilaty, N. D., McPherson, A. L., Nagai, T., & Bates, N. A. (2023). Arthrogenic muscle inhibition manifests in thigh musculature motor unit characteristics after anterior cruciate ligament injury. *European Journal of Sport Science*, 23(5), 840–850.
<https://doi.org/10.1080/17461391.2022.2056520>
- Servant, C., & Tr, F. R. C. S. (2023). Knee Pain at Rest Than Hamstring Graft Harvest After. *Arthroscopy, Sports Medicine, and Rehabilitation*, 5(4), 100766.
<https://doi.org/10.1016/j.asmr.2023.100766>
- Shukur, L. H., Jalal, A., & Zighair, R. M. (2022). the Effect of the Learning Model Together Using Auxiliary Tools in Developing the Accuracy of the Forehand Stroke in Table Tennis. *Revista Iberoamericana de Psicología Del Ejercicio y El Deporte*, 17(1), 36–39.
- Steinberg, L. L., Lauro, F. A. A., Sposito, M. M. M., Tufik, S., Mello, M. T., Naffah-Mazzacoratti, M. G., Cavalheiro, E. A., & Silva, A. C. (2000). Catecholamine response to exercise in individuals with different levels of paraplegia. *Brazilian Journal of Medical and Biological Research*, 33(8), 913–918. <https://doi.org/10.1590/S0100-879X2000000800007>
- Suhail, M. T., Hussein, S. A., Abdulhussein, M. N., Abdaulateef, W. Q., & khairallah Aid, M. (2024). Knee Injuries And Rehabilitation: A Comprehensive Review Of The Psychological Landscape. *Migration Letters*, 21(S6), 733-745.
- Wael Mabrouk Ibrahim Mabrouk, Atef Nimr Khalifa, and Osama Salah Fouad. (2007). The effect of weight loss on some aspects of attention among boxing players. Master Thesis, Faculty of Physical Education, Benha University, Egypt.
- Wajih Mahjoub. (2000). Scientific research and its methodology. Baghdad: Ministry of Higher Education and Scientific Research.
- Wani, I. A., Pal, A., Hussein, M. N. A., Suhail, M. T., Sharma, M., & Rawat, B. (2023, September). Sports Event Data Acquisition Method Based on Wireless Sensor Technology and BP Neural Networks. In 2023 6th International Conference on Contemporary Computing and Informatics (IC3I) (Vol. 6, pp. 1354-1360). IEEE.
- WE, P., & LT, T. (1991). The weight-bearing upper extremity in women with long term paraplegia. *Paraplegia*, 29(8), 521–530.

- Weiss, B. M., Beck, J., & Ph, D. (1970). Sport as Part of Therapy and Rehabilitation of Paraplegics. 166–172.
- Wesam Najeeb Asleawa, Naji Kadhim Ali, F. S. Y. (2020). The effect of physical training on the general endurance and fitness of “Beladi” club for advanced football players,. *International Journal of Psychosocial Rehabilitation*, 24(5), 1475–7192.
<https://doi.org/10.37200/IJPR/V24I1/PR202281>
- Yarub Abd al-Hussein Khayoun. (2010). Motor learning between principle and application (version 2). Good Word Press: Baghdad.
- Yasir, A. M. (2020). The Effect of some Coordination Abilities on Developing kinematical Motor behavior and the Accuracy of Jump Spike Serve in volleyball players. *International Journal of Psychosocial Rehabilitation*, 24(04), 9142–9149.
- Yasir, A. M., & Sikhe, H. S. (2020). The Effect of Special Weight Exercises Using Auditory Apparatus According to Kinematic Indicators For Developing Auditory Response and Accuracy of Spiking in Volleyball. *International Journal of Psychosocial Rehabilitation*, 24(04), 9684–9691.
- Yousif, T. A., Almogami, A. H. B., & Khadim, W. I. (2023). ACCURATELY PREDICTING THE PERFORMANCE OF THE BLOCKING SKILL FROM THE CENTERS (2,4) IN TERMS OF SOME KINETIC INDICATORS OF VOLLEYBALL PLAYERS. *REVISTA IBEROAMERICANA DE PSICOLOGÍA DEL EJERCICIO Y EL DEPORTE*, 18(4), 371–374.
- Yousif, T. A., Almogami, A. H. B., & Khadim, W. I. (2023). the Effect of Special Exercises Using the (Rebound Net) Device in Developing the Accuracy of Spike Diagonal Skill in Volleyball. *Revista Iberoamericana de Psicologia Del Ejercicio y El Deporte*, 18(2), 194–195.
- Ziad Mashaqabah, and Ziad Al-Ajlouni. (2011). Computer uses in management. Amman: Al-Yazuri Scientific House for publication and distribution.
- ZidaneHmood, M., Hamza, M. K., & Ahmad, S. A. G. (2024). THE EFFECT OF PLYOMETRIC EXERCISES ACCORDING TO SOME BIOMECHANICAL VARIABLES IN DEVELOPING THE PERFORMANCE AND ACCURACY OF PASSES IN SOCCER FOR YOUTH. *International Development Planning Review*, 23(1), 301–320.

Appendices:

Annex (1) shows the chart and image of the device

