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The effect of motor agility exercises to reduce some of the lower extremity injuries of oil club players forfootball

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ABSTRACT

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Keywords:

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Motor Agility – Lower Limb Injuries – Football.

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The game of football is one of the most popular and widespread games in the world, as it has reached a level of fame that has not been reported by other games, as it has become very important for peoples of different genders and tongues, and with the great development in the intensity of sports competitions for players, this has been accompanied by the increase in the incidence of sports injuries, especially in the muscles of the lower extremities, as it constitutes (30%) of the total injuries in football**.** By reviewing some previous sources and studies and conducting a mini-study on the most important muscle injuries of the lower extremities in the game of football on (1/11/2024) until (15 days) on the rehabilitation centers, which are (4) centers, where (25 injuries) occurred in the muscles of football players, and the number of injuries (5) related to the lower limbs, and the highest three percentages of these injuries were selected, and the percentage of the posterior femoral muscle was (25%) and the muscle. The study aimed to find out the effect of motor agility exercises to reduce some of the lower limb injuries of the players of the oil football club**,** and the researcher used the experimental method with one experimental group as it is the closest approach to solving a research problem. The research population was selected by the deliberate method, represented by the Iraqi Youth League clubs for the sports season (2024-2025), which are (44) teams, and the percentage of the research sample was (3.25%), and the researcher conducted the experiment on (16/11/2024) on a sample of (two) players of the Naft Football Club in the youth category, who were excluded after the completion of the experiment, and the researcher processed his data obtained from the tests used using the statistical package (SPSS**).** The researcher recommends the use of motor agility exercises because of their positive and noticeable effect in reducing some muscle injuries to the muscles of the lower extremities.

1- Definition of the research:

1-1 Introduction and Importance of the Research:

The game of football is one of the most popular andwidespread games in the world, as it reached a level of fame that other games did not report, as it was dominated by the enthusiastic and competitive character, so it became very important for peoples of different genders and tongues, and with the great development in the intensity of sports competitions for players, this was accompanied by the increase in the incidence of injuries. Sports, especially in the muscles of the lower extremities, constitutes (30%) of the total injuries in football, and this is due to the fact that the muscles are considered the main tool that implements the requirements of sports performance as a result of the nature of this sport, which requires the use ofstrength, speed, flexibility, agility, change ofdirection, sudden stops, and jumping.

Theinjury occurs as a result of the lack of attention to the motor aspectand as a result of receiving a direct blow that is greater than the ability of the muscle to absorb the force of the injury, whether during matches or training units, and despite all preventive measures in the sports field to reduce or prevent the occurrence of injuries, we notice asignificant increase in the rate of theseinjuries. It has become necessary and obligatory for specialists in the field of sports medicine to work on reducing the rates of these injuries and to think scientifically about reducing them, as the player has become prone to many injuries due to the frequent friction and interference as a result of the factor of competition and possession of the ball, where the player uses his lower limbs in passing, scoring, cutting the ball, running and friction with the opponent, so the incidence of theinjury has increased compared to the upper extremities (**Amrallah Ahmed Al-Basati, 2016, p. 90**).

Hence the importance of researching theuse of motor agility exercises to reduce some of the lower limb injuries, as these exercises work especially on the muscles of the lower extremities of the body in an attempt to reduce or reduce some of the muscle injuries of the lower limbs.

1.2 Research Problem

By reviewing some previous sources and studies, and conducting interviews with experts and specialists in the field of football, as well as specialists in the field of injury rehabilitation, therapists, as well as football players, and conducting a mini-study on the most important muscular injuries of the lower limbs in the game of football on (1/11/2024) until (15 days) on the rehabilitation centers, which are (4) centers, where (25) were registered. The number of injuries (5A) was specific to the lower limbs, and a was selected over three percentages of theseinjuries, and the percentage of the posterior quadriceps muscle (25%), the anterior quadriceps muscle (21%) and the calf muscle (23%) was selected, hence the research problem in trying to shed light on reducing and reducing theseinjuries. Which has a direct impact on the player's distance from training for quite a few periods, so the researcher has several questions in how to reduce these muscle injuries, so the researcher thought that the use of motor agility

exercises (preventive) will have an effect on improving the muscles of the lower limbs in an attempt to reduce the incidence of theseinjuries in the future by improving the work of these muscles.During training and competitions and thus affect the elevation of the muscles.

1.3 Research Objectives

1) Use motor agility exercises to reduce some of the lower limb injuries of oil club players forsoccer.
2) Knowing the effect of motor agility exercises to reduce some of a lower limb injuries of oil club players forfootball .

1-4 Research Hypothesis

1) There are statistically significant differences between the results of the pre- and post-tests in reducing some lower extremity injuries of Al-Naft Football Club players.
2) The motor agility exercises used have a positive effect in reducing some of the lower extremity injuries of the players of the oil football club.

1.5 Research Areas

1.5.1. Human Field: A group of 22 players of the Oil Club (Youth Category).

1.5.2. Temporal Domain**:** The period from 1/11/2024 to 19/12/2024.

1.5.3. Spatial Field**:** The Stadium of the Oil Club in Baghdad Governorate.

2- Research methodology and field procedures

2-1 Research Methodology

The researcher used the experimental method with one experimental group as it is the closest approach to solving a research problem (**Zafer Hashem Al-Kadhimi, 2012, p. 68).**

2.2 Research population and sample

The research population was selected by the deliberate method, represented by the clubs of the Iraqi Youth League for the sports season (2024-2025), which are (44) teams, and the percentage of the research sample was (3.25%) of the research population, and the sample is defined as the selection of a part of the whole, and this part is a formative part of the whole, and the sample is a process that comes to facilitate scientific research that gives accurate results.

The researcher selected the sample by the deliberate method from the players of the oil club (youth category) for football, which are (2 2) players, and the exploratory experiment was applied to (2) players, and they were excluded after the completion of

the survey experiment, and the remaining (20) players were homogenized between them in terms of (height, weight, training age, age).

The following table shows the homogeneity of the research sample in these variables and the anthropometric measurements in the aforementioned variables, and shows the arithmetic mean, mean, standard deviation and torsion coefficient as shown in Table (1).

Table (1) shows the homogeneity of the sample with the indicators of anthropometric measurements and the training age

The A coefficiento f torsion	Thestandarddeviatio n	Broke r	Arithmeti c mean	Unit of Measuremen t	Variabl e
0.36	5.25	173.0 0	173.18	Poison	Length
0.17	3.98	66.00	66.43	kg	Weight
0.08	0.50	18.00	17.52	Year	Age
0.06	1.30	7.00	6.95	Year	Trainin g Age

It is clear from Table (1) of the homogeneity of the sample in terms of anthropometric measurements and training age that the torsion coefficients range between (0.36 to 0.06), which indicates that the extracted measurements are close to the average, as the values of the moderate torsion coefficient range between ±3 and are very close to zero, which confirms the homogeneity of the sample in the variables of anthropometric measurements and training age, and the researcher agrees with (**Ali Kazem Al-Sharifi and Marwa Odeh Abed, 2025, p. 12)** that the use of arithmetic mean and standard deviation gives a general idea of the data shown through comparison between different groups and shows the extent of convergence or divergence between the values in the data set.

2.3 Methods and tools used in research

2.3.1 Means of collecting information

1) Arab and foreign sources
2) Personal interviews: The researcher has conducted several personal interviews with experienced professionals in the field of sports medicine, physiology and football coaches.
3) The Survey Experience
4) Questionnaire Form: The questionnaire form was presented to the experts regarding the muscular injuries of the lower extremities, and the researcher agrees with (**Hussein Rahimi Kalor et al., 2024, p. 3**) that the questionnaire

can help to obtain figures and percentages that can be analyzed statistically, which increases the reliability of the apparent results and provides decision-makers in the field of sports with accurate information that helps them develop realistic development plans.

5) Tests & Measurements
6) Associate Staff
7) International Information Network (Internet)
8) Statistical Means of SPSS

2.3.2 Devices and instruments used in the research

- Medical Scale for Measuring Height and Weight
- Measuring tape length (50) meters
- Whistle
- Japanese Made Electronic Stopwatch (Casto) (3)
- Football Stadium
- Pointers and cones of different sizes
- Ground Training Ladder

2-4Zakzaky Running Test 30 Meters Round Trip **(Ali Salman Abdel Tarfi, 2013, p. 162)**

Objective of thetest: to measure the overall agility of the body during its transitional movement

Test instruments: four indicators, distance between indicators, 2 meters, distance between the first indicator and the starting line, 4 meters, and distance between the fourth indicator and the finish line (20) meters.

Performance Method: The player performs the round-trip test as fast as possible

Registration: Records the time it takes for the player to perform .

2.5 Exploratory Experiment

Among the recommendations recommended by scientific research scientists for the purpose of obtaining accurate and reliable results, is the conduct of exploratory experiments, as they are considered as scientific and practical exercises on the basic field experiment and give a complete idea to the researcher about the field procedures and the validity of the experiment and avoid the obstacles that may appear when applying thetests and the survey experiment is "a mini-experiment and work done by the researcher to identify the negatives andpositives." which may accompany the conduct of the main experiment of the research."

The researcher conducted the experiment on (16/11/2024) on a sample of (two) youth players of the oil football club , who were excluded after the end of the experiment.

2.6 Pre-tests

The pre-tests of the research sample were conducted on (17/11/2024) at the Al-Naft Football Club stadium , and the researcher confirmed the conditions of the tests, the method of managing them, and the method of implementation by the assistant work team in order to achieve the same conditions when conducting the post-tests.

2.7 Main Experience

After completing the mini-study, the researcher reviewed the scientific sources available in the field of sports medicine and sports training, developed and prepared a set of exercises for motor agility to affect the muscle groups of the lower extremities byusing exercises with various means and tools, as the researcher developed a set of mobile exercises and used exercises using different tools, as he emphasized in these exercises on a factor Attention and concentration during performance in order to avoid any injury, taking into account the gradual use of motor exercises that are appropriate to the training curriculum of the coach and the level of the players.

The exercises were applied to the lower limb muscle group by the assistant team and under the supervision of the researcher when applying these exercises to the research sample, which the researcher believes will have a positive effect on the current variable of the study, which will lead to improving the work of the variables of the study and thus reducing the occurrence of injury A included agility exercises at different times and distances of all kinds through the use of free exercises and exercises with different toolsThe researcher relied on scientific sources for the purpose of reaching the best results in improving the work of the special muscles of the lower limbs in the research sample and reducing injuries, as the process of changing direction and speed and developing them has a great role in avoiding collisions with the opponent because of the skill and motor aspects that these exercises constitutes that lead to the improvement of the players with their movements inside the field and the improvement of the process of passing the opponent. The following points are applied to preventive exercises.

1) The first training unit was implemented on Sunday (18/11/2024)
2) The duration of the exercise lasted for (4) weeks at the rate of (3) units per week
3) The duration of the workouts is (from 10 – 30) minutes taken from the main section
4) The duration of the training module for the team is (120) minutes
5) The goal of the exercise is to improve the muscle masses of the muscles of the lower extremities to reduce or reduce some muscle injuries.

2.8 Post-tests

After the completion of the exercises prepared by the researcher, the post-tests were conducted on the research sample, which is (20) players in the place and conditions of the tests themselves and under the direct supervision of the researcher on (19/12/2024) at ten o'clock in the morning.

2.9 Statistical Methods

In order to reach the results of the research, the researcher processed his data obtained from the tests used using the statistical package (SPSS**),** and the researcher agrees with **(Manal Al-Khalil, 2024, p. 3)** that through the SPSS program, the statistical results can be interpreted to make evidence-based decisions by tracking the numerical differences between one period of time.

3- Presenting, analyzing and discussing the results:

3-1 View Results Test Agility, Analysis, and Discussion:

Table (2)

Shows the arithmetic media, standard deviations, calculated t-value, error percentage, and significant significance of the agility variable.

Significance	Error Percentage	Calculated value (t)	A.F.	Q F	Dimensional		Tribal		Unit of Measurement	Variable
					on	Going to	on	Going to		
D	0,00	8,01	0,28	0,53	0,61	7,60	0,63	8,12	Second	Agility

(*) at a significance level of (0.05) and a degree of freedom of n-1

3.1.1 Analysis of Agility Test Results

Table (2) shows the results of the pre- and post-tests of agility, as the mean of the pre-test was (8.12) with a standard deviation of (0.63), while the mean of the post-test was (7.60) with a standard deviation of (0.61), while the difference in the medians was (0.52) while the difference indeviations was (0,28) In order to know the significance of the differences between the two tests, the results of the (T) test showed that there is a significant difference in favor of the post-test, as the calculated value of (T) of (8.01) was at the level of significance (00.5) with a degree of freedom (19), which means that the difference is significant and in favor of the post-test.

3.1.2 Discussion of the results of the agility test

Table (2) shows that there are statistically significant differences for the post-test in the agility variable, and the researcher attributes this to the preventive exercises used by the researcher, which were developed on sound scientific foundations, which led to the improvement of that trait that was reflected positively, such as changing direction or diversity by running, and this is what the player is subjected to in conditions similar to playing, and therefore the player will not be injured suddenly due to a change in his body positions inside the field because He was exposed to the same situation in training, and this makes the body subject to changes without injury, and that the integration of this trait, which most scientists agreed on, is a comprehensive quality of all qualities in the sense of the integration of qualities leads to the development of the

attribute of agility because the game of football depends on fast running, turning right and left, and sudden stops and collisions either with the field or with the opponent, which makes Lower limb injuries are very common at various levels, especially the injury (anterior quad femoral muscle, posterior quadriceps muscle, tricephemius muscle, and calf muscle).

The researcher also attributes this to the fact that preventive exercises contributed to increasing the ability of players to properly control the body and its parts according to the motor position of each side, and this increased the possibility of dealing with body parts smoothly and without any effort, and this changed the values of the arithmetic circles in the dimensional test and in favor of the dimensional test, as "agility is clearly manifested in the forms of motor performance that require dodging the body or swinging Zakzak, stop and then start or change body positions quickly."

Agility is also shown in the forms of motor performance that require rapid change of body positions, direction, stopping, then running or dodging the body, and compatibility in the speed of modifying motor performance in a way that is commensurate with the requirements of changing positions, running and slaloming (**Amin Khazal Abed , 2014, p. 36**).

The researcher believes that agility is one of the very important elements of physical fitness and should be learned and developed early in the early stages of starting the practice of football, and it is recommended that it be programmed for buds and juniors so that it allows players to adapt to it because it means the ability to adapt well to the movements that the player makes, whether with all parts of his body or a specific part of it.

The researcher agrees with all that has been mentioned that the interdependence between the physical traits between them made the attribute of agility directly integrated and the improvement in agility is one of the most important reasons to reduce the injury if we know that the game of football has many variables and great transformations, whether in speed and change of direction, and therefore this will lead to reducing the chances of injuries to the lower extremities, and the researcher explains the improvement in agility due to giving enough importance to this trait, and the researcher agrees with **(Huda Dawood Salman and Nahi). Yassin, 2017, p. 4)** that the use of scientific sources and references contributes to supporting research and documenting information and ideas, which makes the research more credible and accurate by raising the academic level and relying on real references that are far from error or repetition.

4. Conclusions and recommendations

4.1 Conclusions

1. The motor agility exercises used by the researcher in a codified scientific method and the use ofappropriate tools that are compatible with the abilities of the players are sufficient to protect them from injuries by raising the efficiency of the muscles of the lower limbs through motor exercises.

2. The preventive motor exercises used play an important role in the development of agility in the research sample.
3. Raising the efficiency of the muscle groups of the lower extremities through the appearance of the results of thetests in favor of the posterior tests , which gives a positive indication and conclusive evidence in the development of the work of these muscles.

4.2 Recommendations

1. The researcher recommends the use of motor agility exercises because of its positive and noticeable effect in reducing some of the muscle injuries of the muscles of the lower extremities.
2. The need to educate trainers and specialists and guide them to pay attention to preventive exercises and to allocate part of the training unit to these exercises continuously to reduce the occurrence of injuries
3. Conducting similar studies and research on other samples and age groups.
4. The needto pay attention to the preventive aspect in football and focus on it because of its positive effectsand shortening time and effort.

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Appendix No. (1)

Appendix No. (1) shows the statistics of the mini-study carried out by the researcher on the sports rehabilitation centers, which were (4) centers, and the number of injured people in these centers was (25) injured, and the injuries were distributed in different percentages, and the percentage law was used, for the purpose of extracting the percentage of each injury separately.

Percentage of Muscular Injury	Muscular injury	t
25%	Posterior femoral muscle injury	1
21%	Anterior femoral muscle injury	2
16%	Connective muscle injury	3
23%	Leg muscle injury	4
14%	Gluteal muscle injury	5

Appendix No. (2)

Motor agility exercises

Performance	Exercise	t
[Standing] from the standing position, running between the signs back and forth and for a distance of 10 meters.	Slalom jogging between the signs	1
[Standing] from a standing position Running winding between cones back and forth for 20 meters.	Slalom running between cones	2
[Standing] Running around the circle for 30 seconds with a change of direction when the whistle signal is heard.	Circuit Running	3
[Standing] Running around the triangle with a change of direction when hearing the whistle signal for (30) Again.	Triangle Running Workout	4
[Standing] The player stands behind the starting line and when he hears the start signal, he runs	Shuttle Running Exercise	5

at full speed to the opposite line to touch it with his hand, then turns around to touch it again in the same way for a distance of 10 meters.		
[Standing] Four markers, the distance between the markers is 2 meters, and the distance between the first indicator and the starting line is 4 meters.	Zakzaky Running Exercise 30 Meters	6

Appendix No. (3)

Training Module for the Development of Motor Agility Total Time (10) minutes

Exercise Objective	Total Time	Total rest time	Total exercise time	Number of Totals	Repetition	Exercises	t
Developing motor agility	60 S	30 S	30 S	1	1×1	Exercise (1)	1
Developing motor agility	80 S	40 S	40 seconds	1	1×1	Exercise (2)	2
Developing motor agility	120 S	40 S	60 S	2	1×2	Exercise (3)	3
Developing motor agility	100 S	40 S	60 S	2	1×2	Exercise (4)	4
Developing motor agility	80 S	40 S	40 S	2	1×2	Exercise (5)	5
Developing motor agility	110 S	50 S	60 S	2	1×2	Exercise (6)	6