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Noor Khudeir Ghazi
College of Physical Education
and Sports Sciences,
University Thi-Qar, Iraq

Dr. Ali Awad Jabbar
Assistant Professor, College of
Physical Education and Sports
Sciences, University Thi-Qar,
Iraq

Corresponding Author:
Noor Khudeir Ghazi
College of Physical Education
and Sports Sciences,
University Thi-Qar, Iraq

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The effect of rehabilitative exercises using (Alpilats pero) for the treatment of biceps femoris muscle injury for juniors

Noor Khudeir Ghazi and Dr. Ali Awad Jabbar

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Abstract

The aim of the research is to prepare a rehabilitation program using the (Alpilats) device in the rehabilitation of the biceps femoris muscle injury. The researchers used the experimental approach to suit the nature of the solution to the research problem. The two researchers conducted homogeneity in the research variables. The qualifying units are applied by the researchers. The duration of the qualifying program was (8) weeks for the period from Sunday 19/3/2023 until Tuesday 18/5/2023, as the program included (24) units of Rehabilitation at the rate of three rehabilitative units per week. The researchers concluded that the rehabilitation program prepared by the researchers had a positive effect in treating the injuries of the front and back muscles of the nomads in the swimming players and that the Pilates device helped the players in the rehabilitation of muscle rupture. The researchers recommend the need to use rehabilitation programs according to the scientific bases attributed to the biological and kinetic side in the rehabilitation of the injuries of the front and back muscles of the legs.

Keywords: Swimming- Alpilats pero - rupture of the biceps femoris muscle

1. Introduction

Injury, in general, is one of the main problems facing a person, as it stands as a major obstacle to his progress and development, and works to limit giving and the capabilities he possesses, which in turn wants to employ these capabilities during his daily activities, whether it is at home, in the street, or in his workplace. On this basis, the concept of injury has become the subject of interest for many researchers, experts and specialists in the medical field, as they turned to study and research in order to find scientific means based on correct and sound foundations to reduce these injuries and find adequate solutions to them as much as possible in order to reveal their causes or reduce their occurrence. Also, treating and rehabilitating the injury as soon as possible is a very important goal in order for the injured person to return to his normal or semi-normal state so that he can return to his position in life, exercise his right to it, and take his place among other people through the use of various means. Treatment and rehabilitation based on scientific foundations.

And since swimming is a sporting activity and a common pattern for recreation, swimming was also considered an important global sport in addition to being healthy exercises, so it was necessary to reach high levels, so the swimmer had to be prepared according to scientific foundations that work on the process of integration in physical, skill, functional, as well as chemical capabilities in order to be The rule is the solid foundation on which the swimmer depends on his ability to continue and communicate in the training process to reach the desired goal.

Therefore, the junior category (14-16) years is one of the important stages in the life of swimmers, and this stage is accompanied by many injuries to which the swimmer is exposed. These injuries may be due to poor training or wrong performance, without observing the correct technique that is commensurate with the game and according to the degree of injury and that these injuries may lead to poor or wrong performance that is difficult to overcome in advanced stages of life, as well as play a major role in acquiring skillful performance, which is the basic rule for every game in achieving achievement.

Hence the importance of research on the effect of the (Alpilats) device in rehabilitating the biceps back muscle injury and because of its great role in treating it, as well as working to avoid many problems that occur in the future for muscle groups and stopping the level of performance of the swimmer and thus the inability to perform according to speed, strength and endurance Which the swimmer needs as a major requirement in the skillful performance in addition to its impact on the functional devices.

And through the researchers conducting a survey of a number of centers, specialized schools and sports clubs in the south and the middle Euphrates in I found that there are some various sports injuries that occur in swimming and it was found that the injury of the posterior muscle of the leg is one of the most common injuries that swimming players are exposed to, and the reason may be lack of warm-up Inadequate or weakness in some physical and chemical abilities as a result of poor training and lack of interest in the main muscle groups that the swimmer relies on to achieve the maximum possible speed during sports performance.

The study aimed to prepare rehabilitative exercises using the (Alpilats) device in the rehabilitation of the biceps femoris muscle injury, and also to identify the effect of rehabilitative exercises using the (Alpilats) device in developing some physical capabilities and muscular balance of the biceps femoris posterior muscle.

The researchers assume that there are statistically significant differences between the pre and post-tests in the development of some physical abilities and muscular balance of the biceps femoris muscle in favor of the post test.

The human field was represented by the Specialized School for Swimming in Dhi Qar Governorate, with ages (14-16) years, the temporal field from 12/27/2022 to 6/1/2023, and the spatial field, the Nasiriyah Model Swimming Pool-affiliated to the Directorate of Youth and Sports in Dhi Qar Governorate.

2. Research Methodology: The researchers used the experimental approach due to its suitability to the nature of problem solving for the purpose of reaching the research results.

2.1 The research community and its sample: The research sample is represented by the injured swimmers of the Specialized School in Dhi Qar Governorate, who numbered (5).

2.2.1 Sample Homogeneity: The two researchers conducted the homogenization process for the research sample in the variable of mass, the variable of training age and height, and for the purpose of ensuring the homogeneity of the sample members and the validity of the normal distribution among its members, the researchers used the coefficient of variation in all research variables, as shown in Table (1).

Table 1: Shows the homogeneity of the research sample in terms of (Training Age, mass, and Length)

Anthropometry Variables	Measuring unit	Mean	Std. deviation	Difference coefficient
Length	Cm	166.4	0.15	0.90
Mass	Kg	64	0.25	0.39
Training Age	Year	5	0.00	0.00

2.3 Methods, devices and tools used in the research
 Sony hdd video camera with tripod, metal tape measure, DELL computer, tow cable, medical bed, Pilates machine.

2.4 Determine the tests

The two researchers prepared a questionnaire form to determine the best test, and the form was presented to a

group of experts and specialists in the sciences of physical education, and table (2) shows that.

Table 2: Shows the tests nominated by experts for physical variables and their validity for the purposes of the study.

N	Physical variables	Candidate tests	Validity	Non validity	ki ²	Sig level
1	The maximum Strength for measuring the front and back thigh muscles	-Triciss legs front -Triciss legs behind	11	0	11.00	0.00
2	Strength characteristic of speed to measure the muscles of the front and back of the thigh	-Triciss legs front -Triciss legs behind	11	0	11.00	0.00
3	Strength endurance to measure the front and back thigh muscles	-Triciss legs front -Triciss legs behind	11	0	11.00	0.00

2.5 Tests used in the research

- Triciss legs (front - back) to measure the maximum strength in the front and back thigh muscles. (2008: 3)
- Triciss legs (front - back) to measure the strength characteristic of the speed of the front and back thigh muscles. (2002:4)
- Triciss legs (front - back) to measure the strength endurance in the front and back thigh muscles. (4:2002)

2.6 Exploratory Experiment: The two researchers conducted an exploratory experiment on 16/3/2023 on a sample consisting of (2) and it was done under the supervision of the trainer and the two researchers.

- Knowing the work obstacles that may hinder the work of the field experiment
- Ensure the validity of the tools used in the test
- Knowing the rest time after repetitions of each qualifying exercise
- Knowing the rest period after the totals used for one qualifying exercise.

2.7 Field Research Procedures

2.7.1 Pre-tests: The pre-tests were conducted by the two researchers, on Saturday 18/3/2022, in the presence of the assistant work team.

2.7.2 Rehabilitation Units: The rehabilitative units are applied by the two researchers and with the help of the trainer for the research sample. The curriculum is (24) rehabilitative units, at the rate of three rehabilitative units per week, where the rehabilitative unit was divided into three sections as follows:

(preparatory section: 15 minutes, main section: 40 minutes, closing section: 5 minutes)

2.7.3 Post-test: After completing the curriculum, post-exams were conducted on Wednesday, corresponding to 19/5/2023, under the same conditions in which the pre-exams were conducted, and with the help of the assistant team.

2.8 Statistical means: The researchers relied on the statistical bag (SPSS) in extracting the results.

3. Presentation the results

3.1 Presentation, analysis and discussion of the results of

pre and post measurements of the physical variables of the injured leg

Table 3: Shows the arithmetic mean, standard deviations, and the calculated (t) value for the pre and post measurements of the posterior and anterior left thigh muscle.

Variables	Pre-test left		Post-test left		T value	Sig level	Sig type
	Mean	Std. deviation	Mean	Std. deviation			
maximum Strength (behind)	0.7660	0.17213	1.0100	0.2000	6.246	0.003	Sig
Strength Distinguished by Speed (behind)	2.1600	0.37650	3.5100	0.6674	3.586	0.023	Sig
Strength endurance (behind)	8.1200	0.83666	13.000	0.70711	5.488	0.005	Sig
maximum Strength (front)	2.2200	0.24648	3.8000	.44721	5.210	0.006	Sig
Strength Distinguished by Speed (front)	3.6900	0.37650	5.5900	0.2678	8.393	0.001	Sig
Strength endurance (front)	24.864	0.547	32.764	0.765	5.986	0.000	Sig

3.2 Discussing the results of the pre and post-tests of the research sample

Through the results of Table (3), we find that the value of (sig) for all variables was smaller than the significance level of (0.05), and this means that the difference is significant and in favor of the post-tests for the research sample, and the researchers attribute this to several reasons, the most important of which are:

Their continuity and regularity in applying the exercises had a clear and effective role in developing these variables, and this improvement in performance was attributed by the researchers to the thigh muscles adapting to the level of achievement capabilities at a high level as a result of modern training methods, and this is indicated by (Sydhoare) " The usual daily training represents its place Important in a sports preparation program at all levels because of its importance in developing the elements of comprehensive and specific physical fitness by developing muscular capabilities while maintaining the flexibility of the joints that help the player to move and control body parts in a specific way. (1994:1)

The researchers attribute the reason for the development and emergence of significant differences in the variables of the study to the fact that the sample used exercises that work to develop the working muscle groups, especially the biceps femoris muscle, with a focus on the use of exercises on the device used and with effective stresses, which would develop and develop these variables that are closely related. Directly with the skillful performance of the swimmers, as these exercises were given in proportion to the age of the target group and the severity of the injury, which were developed according to the scientific foundations of physical rehabilitation, and this was confirmed by (Hamdi Abdel Moneim and Mohamed Abdel Ghani)" that importance is given to rationing the training load used so that it is commensurate with the level of the trained player and the goal of training and choosing appropriate rest" (1999:3).

3.3 Presentation, analysis and discussion of the results of pre and post-tests of muscular balance of the thigh muscles

Table 4: shows the mean, standard deviations, and the calculated (t) value for the pre-test of the right and left thigh muscles.

Variables	Right		Left		T value	Sig level	Sig type
	Mean	Std. deviation	Mean	Std. deviation			
maximum Strength (behind)	1.1300	0.2280	0.766	0.1721	2.849	0.022	Sig
Strength Distinguished by Speed (behind)	2.6700	0.4438	2.1600	0.3765	3.459	0.023	Sig
Strength endurance (behind)	9.600	0.8944	8.1200	0.8366	3.461	0.032	Sig
maximum Strength (front)	2.543	0.586	2.200	0.2468	2.132	0.070	Non Sig
Strength Distinguished by Speed (front)	4.940	0.777	3.690	0.3760	0.06	0.023	Non Sig
Strength endurance (front)	27.765	0.438	25.864	0.547	2.342	0.059	Non Sig

Table 5: Shows the mean, standard deviations, and the calculated (t) value for the post-test of the right and left thigh muscles

Variables	Post Left		Post Right		T value	Sig level	Sig type
	Mean	Std. deviation	Mean	Std. deviation			
maximum Strength (behind)	1.0100	0.20000	1.2500	0.21909	2.487	0.071	Non Sig
Strength Distinguished by Speed (behind)	3.5100	0.6674	3.756	0.5511	2.357	0.084	Non Sig
Strength endurance (behind)	13.000	0.70711	14.000	0.70711	1.987	0.138	Non Sig
maximum Strength (front)	3.8000	.44721	4.2000	0.4472	2.193	0.086	Non Sig
Strength Distinguished by Speed (front)	5.5900	0.2678	5.954	0.5130	1.873	0.132	Non Sig
Strength endurance (front)	32.764	0.765	34.875	0.764	2.338	0.083	Non Sig

3.4 Discussing the results of the pre and post-tests of the muscular balance of the thigh muscles

From Table No. (4) the researchers note that the pretests for the muscles of the right and left legs, that in the back muscle there are significant differences, and the researchers attribute these differences to the presence of an injury in the back muscle, while in the front muscle there are no

significant differences due to the absence of an injury It is clear from Table No. (5) that there are no statistically significant differences between the averages of the post-test of the research sample members in the physical research variables, as the researcher attributes this remarkable improvement in the balance of the front and back muscle between the right and left foot to the regularity of the

sample members in the program units and their commitment to the vocabulary of the curriculum Prepared using standardized exercises on the device used (Alpilats pero), in addition to the variety of exercises, which resulted in an ideal balance between working and opposing muscles, the back and front muscles, and an improvement in the maximum strength of the front and back muscles.

The researchers attribute this to what was confirmed by (Abu El-Ela Ahmed Abdel-Fattah) (when working to achieve the strength characteristic of speed, the transition of the muscle from a state of tension to contraction and vice versa from contraction to tension or relaxation so that the work is consistent). (1997:2)

4. Conclusions and recommendations

4.1 Conclusions

1. The rehabilitation program prepared by the two researchers has a positive effect in treating the injuries of the front and back muscles of the nomads among the swimming players.
2. The Pilates device helped the players to rehabilitate muscle rupture

4.2 Recommendations

1. The need to use rehabilitative programs according to the scientific bases attributed to the biological and kinetic side in rehabilitating the injuries of the front and back muscles of the legs.
2. Conducting studies similar to the current study on other events and competitions.

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