



Physical program after partial meniscectomy and its effect on some special strength and motor abilities of soccer players

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Abstract

This research aims to identify the effect of a physical program on removing the meniscal meniscus for soccer players. The researcher used the experimental method with one experimental group for the tribal and remote measurements. The sample number was 6 injured soccer players, their ages ranged from (20-25) years, where the physical program took 12 weeks. Where the physical rehabilitation began after the end of 3 months of the surgery and after the injured were subjected to the tests and criteria for the transition to physical training, the researcher used a program to develop physical fitness during the rehabilitation period and the researcher used the exercises to develop general endurance. The researcher also used the method of training the phosphate system to develop speed and endurance of speed and the method of tactical training, as well as using psycho training to develop agility, plyometric training and the development of anaerobic capacity for the injured. The physical program was applied individually because the sample was not available at one time.

The most important conclusions were the presence of significant differences between the results of the pre-test and the results of the post-test in special strength and motor abilities. The researcher recommends conducting future studies on the criteria for returning to competition, and being guided by the physical program and the scientific tests used in the research, which had a role in moving from one training stage to another.

Keywords: meniscectomy, soccer players

Introduction

Injury to the meniscus of the meniscus is one of the most common injuries in football, where we notice its rise recently, for reasons including violent movements that put pressure on the knee and the wrong training that leads to stress as well as the lack of hospitalization after training units in addition to the lack of strength training in the training program ^[1]. Aspetar Hospital for Sports Medicine stated that 20% of all sports injuries are meniscus injury in Asia ^[2]. The research of sports medicine, physical education and sports sciences devoted a lot of effort to find effective methods for such an injury and to use the best means of physical therapy and physical rehabilitation for the injured, but there is no integrated program that can be generalized to the injured because of the type of rupture and its difference ^[3]. The scientific and applied importance of the research lies in identifying the extent of the impact of physical exercises in the program for the injured after the removal of the meniscus for football players and the development of preventive exercises to not recur the injury again ^[4]. The researcher also noted the absence of a physical and functional training program in the rehabilitation programs, and this is what prompted the researcher to develop physical exercises.

Recently, the researcher noticed a large number of meniscal meniscus injuries to football players, and this requires scientific efforts in how to develop rehabilitation and physical programs that seek to return the player to sports competition ^[5]. In addition to putting exercises to prevent injury by placing strength training in training programs and through the researcher work in the field of rehabilitation of sports injuries has not seen a physical rehabilitation program for the injury of the meniscal meniscus of the knee that depends on physical exercises that seek to develop the physical fitness of the injured players. Based on scientific tests aimed at achieving the injured return to play and competition, in addition to that and from this point of view the researcher decided to design a program Integrated physical rehabilitation of the meniscal meniscus. The researcher believes that although there are many studies that examined the study of meniscal meniscus removal, there are some shortcomings in the rehabilitation programs, in addition to the lack of strength training in some training programs and plyometric exercises. All in the rehabilitation of meniscal meniscus came the research problem. The aim of this study was to design a physical program for the meniscal meniscus injury and knowing the differences between the tribal and remote tests of special strength and motor abilities.

Materials and Methods

Participants

football players (n=6) ages a ranged between (20-27y) with the second degree of injure diagnosed by medical assessment were selected in this study. Participants selected by intentional method, which is a sample of men with meniscus ruptures.

Physical Tests

Some physical tests were used in this study including, Running Based Anaerobic Sprint, Prone Bridge Test, Test Sied hop 30 s, Leg Strength Test, 505 test Agility and Lllinois test Agility.

Physical Program

The physical training began after the injured fulfills all the conditions and criteria from the last stage, and the muscular strength is equal to or less than 30% of the healthy leg, then the transition to the stage of physical rehabilitation. Where the running starts with water in the pool, then the running moves on soft surfaces and then moves to running around the stadium. After one month, the job training can be entered and the standards are applied, which is the absence of pain and tumor, where it can move to job training. The jogging program begins after a period of 3 months after the surgery. The researcher also developed a gradual jogging program from 1 minute to 60 minutes, distributed into groups and times according to the condition of each patient, aiming to develop periodic respiratory endurance using the continuous training method and the periodic method. In the week, the researcher used 3 training units in the Iron Hall to develop muscle strength, with 8 repetitions in 3 groups of exercises aimed at developing muscle strength using fixed muscle training (isometric), mobile muscle training (isotonic) and mixed muscle training. The researcher also used plyometric exercises and resistance training exercises in the fifth month. The injured can gradually use the ball after fulfilling the criteria and tests found in the research and move to using the easy exercises with the ball and gradual using it in the beginning, doing short handling exercises, crosses and then moving to long passes and shooting on the goal. The researcher put the tests at the end of the fifth month to move to the sixth month and move on to more difficult exercises. The researcher put speed-endurance exercises by performing quick runs with high intensity and for a short period of time within the first phosphate system, and the ratio of work to rest is (1-2) or (1-4). Fast running These exercises are used in speed training, but the difference in speed endurance is not giving complete rest between repetitions. It is one of the modern methods for developing agility (SAQ). The researcher also used exercises, and the researcher used exercises to change direction, stop suddenly, and zigzag at multiple angles. Within the first phosphate system. The researcher also used anaerobic capacity development exercises using (recovery training, low-intensity training, high-intensity training, and endurance training method). The physical training program continued for a period of 3 months after the rehabilitation period, which also lasted 3 months. The training program contained 60 training units distributed over 3 months, the fourth month included 20 training units, the fifth month 20, and the sixth month 20 training units. The researcher used physical tests at different times in the training program mentioned above. Rehabilitation was individually due to the absence of the sample at one time.

Statistical Analysis

SPSS v.22.0 was used to analyses the data. Comparisons of the original and cross validation demographic and pain characteristics data were analyzed using a t-test followed by an arithmetic mean, standard deviation, and probability value.

Table 1: shows the mean, standard deviation, standard error of the differences, the calculated value and the probability value in the test tribal and dimensional for the research sample in the researched variables.

T	Variable	Prior test		Post test		error standard	Calculatedt value	probability value	indication
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation				
1	Agility	5.933	0.524	2.650	0.281	0.170	19,299	0.000	moral
2	naerobic capacity	35.333	2.422	74.333	5.680	1.732	22.517	0.000	moral
3	Filial agility	18.98	2.595	15.083	0.847	1.270	3.069	0.0 28	moral
4	Fast power	15.47	1.075	9.206.	1.452	0.559	11.201	0.000	moral
5	Central force	26.666	4.760	1.288	0.113	1.914	13.257	0.000	moral
6	Bearing speed	59.833	1.329	40,833.	1.471	0.966	19,667	0.000	moral

Results

As shown in Table. 1. a significant were found in atilgty between post-test ($P>0.000$) compared to prior test. However, the yticapac ciborean also showed significant in post-test ($P>0.000$) compared to prior-tests. Moreover, fytiliga laili determined significant in post –test ($P>0.000$) compared to prior test Frewop tsa and cecrof lartne also shown significant in post-test ($P>0.000$) compared to prior test.

Discussion

Discussing the results of the prior and post tests for the physical variables (strength and strength characteristic of speed) under research. Through Table No. (1), the researcher attributes the individual differences between the results of the prior and post-tests of strength variables and in favor of the post tests to the injured players to the physical exercises used in the training curriculum, which relied on scientific foundations in developing the exercises in terms of intensity, size and comfort, in addition to the researcher's use of methods. The training method is a fixed muscular contraction (isometric). whereas the previous study ^[6] states that muscle training with constant isometric contraction contributes and helps to strengthen ligaments, muscles and tendons without putting an amount of pressure on the joints involved in performance.

The researcher also used the muscular contraction (isotonic) training method, and this led to the development of muscular strength. With these three training methods, the researcher developed muscular strength exercises. The researcher agrees with earlier study ^[7] that central strength training depends on training the trunk muscles directly and strengthening the general muscles indirectly. Through Table No. (1), the researcher attributes the development of the strength characteristic with speed to the exercises used in the physical training curriculum in the plyometric method.

The researcher also agrees with the previous study ^[8] that plyometric exercises lead to improving and developing the ability of players with football, in addition to that each of the previous types has a certain specificity. In activity as in explosive movements, as for speed exercises, it works to reduce the time required to perform the required movements [9] states. The basis for dividing plyometric exercises on the following types: rhythmic, ability, and speed is depending on the goal of the training, and on the nature of the load or the burden on the player's body. Where the researcher relied in the physical training curriculum on the divisions of the American College of Sports Medicine (2012), which divided plyometric exercises in terms of intensity level, which are low intensity exercises, medium intensity exercises, and high intensity exercises, by the size and height of the box, the barriers used, and the degree of complexity of the exercise). The researcher also attributes the development of the distinctive force with speed to the method of resistance. Discussing the results of the pre and post tests for the physical variables (agility) under research. Through Table No. (1), the researcher attributes the reasons for the moral differences between the pre and post-test of the physical variable (agility) and in favor of the post test of the research sample members to the use of physical exercises in the training program according to scientific foundations in terms of intensity, size, comfort and gradualness in giving agility exercises, which began in The fifth month and it was gradual, the researcher used the Psycho training method in the rehabilitation of meniscus, because it contains multiple forms of movement, in addition to the Psycho training develops speed, linear speed and agility and this is what notes (Trainers should put in Their training programs are seiko exercises because they aim to develop agility, speed, and kinetic speed). The researcher also put exercises to change direction and stop suddenly and quickly, such as cases that occur in the match. It is with the injured, and this is an important point that must be focused on in the rehabilitation programs for the injured, whose rehabilitation period lasts for a period There is a large period of time that extends to a number of months, so the researcher decided to put such recreational exercises aimed at developing agility and getting rid of psychological pressure.

Discussing the results of the pre and post tests for the physical variables (speed endurance) under discussion. Through Table No. (1), the researcher attributes the reasons for the moral differences between the results of the pre- and post-tests for the physical variable (endurance of speed) and in favor of the post-test for the members of the research sample. To the method developed by the researcher in training the endurance of speed; And that is in performing fast repetitions with a very high intensity and in a very short period of time in the first phosphate energy system, and the ratio of work to rest is (1-2) or (1-3), where the injured performs quick sprints with a little rest between repetitions and this method Similar to speed training, but the difference in speed endurance is not giving complete rest.

Bomba and colleagues ^[10] state that the ability to repeat speeds that are less than 6 seconds with partial recovery between those speeds so that the performance is in the short lactic capacity, as this training method allows the participation of the aerobic capacity with difficulty in the rest time in the return of phosphate and its replacement in phosphorylation Aerobic and from this point of view, the researcher used the training methods in the physical program for meniscus injury, which are the variegated running training method, the fast interval running, and the fast running. These methods are used in speed training, but the difference is not giving or not giving complete rest, that is, jogging fast, taking a little rest, then starting, and so on, and these exercises are similar to the cases of play that are in the game, so the researcher used them to develop the physical fitness of the injured in the physical program. This was confirmed by FIFA in (2017). In the World Youth Cup matches in South Korea, the running distance is from (10-12) ^[11] km and it was not always continuous, but intermittently and at a very high speed, some of which are transitional and some of them are kinetic. The analysis showed that they run between (30-40) short runs during the match and from this point of view, the researcher put his training in the physical program for meniscal meniscus tear injury. Where physical fitness training should be included in the program and its

development, and this was confirmed by Bolivius study ^[12] interest in developing physical training aimed at developing the physical fitness of injured players in physical training programs after rehabilitation.

Discussing the results of the pre and post tests for the physical variables (anaerobic ability) under research. Through Table No. (1), the researcher attributes the reasons for the moral differences between the pre-test and the post-test and in favor of the post-test to the exercises used in the training curriculum and the development of the anaerobic capacity variable dependent on the phosphate system. Where the researcher worked on developing anaerobic capacity through the use of exercises targeting the first energy system phosphate through the use of capacity training such as speed training and strength training characterized by speed that depend on the first phosphate system and this agrees with previous study ^[10]. The ability training is at the highest intensity and with a time of 6 seconds. The researcher also used plyometric exercises to develop anaerobic capacity in the latter stages, and this was confirmed by earlier study ^[13]. Attention should be paid to plyometric training for those injured in meniscal ruptures in the stages of physical rehabilitation because it has a clear role in developing anaerobic capacity and strengthening muscles as well as not recurring injury. The researcher also agrees with Terris *et al.* ^[14] that plyometric exercises led to good results in developing anaerobic capacity and developing muscle strength for injured soccer players.

Conclusions

The physical program had a positive effect on the functional efficiency of the knee and the surrounding muscles, as indicated by the pre and post-tests. The qualifying program had a positive effect on the special force when referring to the pre and post-tests mechanism. The physical program for meniscal meniscus tear achieved the desired objectives of the research

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