

Effectiveness of an Educational Training Program on Phalanges Ligament Tear Injury in Hand Fingers of Volleyball Juniors

¹Ahmed Elsed Mowafy Khatab and ²Hamdy Mohamed Goda Elkalupy

¹Department of Curriculum and Teaching Methods of Physical Education,
Faculty of Physical Education, Mansoura University, Egypt

²Department of Sport Health Sciences, Faculty of Physical Education, Mansoura University, Egypt

Abstract: This study aims to identify the effectiveness of an Educational Training program on Phalanges Ligament Tear Injury in Hand Fingers of Volleyball Juniors. The researchers used the experimental method using a design with one experimental group of the two measurements pre and post of the variables under consideration. The sample was chosen in intentional manner of 5 junior volleyball players injured with tearing ligaments phalanges of the fingers of the hand, born in 1998 from Elhaware, Metgamr, Mansoura Stadium and Island of Roses Dakahliya clubs for season 2010-2011. Results indicated that the exercises functional impact and effectiveness is good to improve some of the variables where the incidence of ruptured ligaments interphalangeal fingers reached rates of improvement of the experimental group in the test measure. The degree of pain for the phalanges of fingers infected ruptured ligaments ratio improved by 207.7%, while the test measuring range of motion of the phalanges of fingers infected ruptured ligaments ratio, improved by 203.9%. For training, educational impact and effectiveness improved some of the variables, skills, to learn the skill scroll from the top of the volleyball under consideration as it recorded test the accuracy of the scroll from top to wall ratio, improved by 208.7%. In light of the results, researchers recommended benefiting from the exercise program, employment and educational proposals for the rehabilitation of people with torn ligaments phalanges of the fingers of the hand.

Key words: Training % Career % Ligament Tear % Phalanges % Fingers % Volleyball

INTRODUCTION

Volleyball is one of the group games characterized by the properties of particular advantage for the rest of the other games like failure to relate to a certain time as well as how to deal with the ball while still in the air, touch her in any part of the body and all this depends on the integrity of parts of the body. This means that the real power to those who have the ability to provide first aid and diagnosis of infection and the development of treatment programs and job training, educational and specialists are those who are able to implement those programs and exercises for the occurrence of such injuries faded. The hand is an unique member of the body and its parts and a sense of the grace of touch, writing, eating and carrying objects and others and that the injuries the hand, which represents 60% of the injuries games and most of

these injuries are abrasions, bruises and lacerations and sprains, the composition and anatomical hand as it is very simple to accent complex consists of groups of ligaments, muscles and bones and phalanges, which worship the greatness of the creator [1].

Tear ligaments of the phalanges of the fingers of the hand are very common in sports medicine in general and volleyball in particular it is possible to rush the thumb and the rest of the phalanges of the fingers of a hand behind the violence in this case comply with movement of the joint because of the small tears ligaments or the portfolio between bones with severe pain and swelling accompanying the injury in this case we resort to install the thumb and the phalanges bond tightly to install and physical therapy aimed at restoring the situation to the natural movement of joints and sports and the removal of pain and swelling associated with infiltrative injury [2].

The important role that might play in the rehabilitation exercises to help restore the speed of healing, which is one of the most influential means the vehicle in the treatment of individuals infected with any sports injuries, it is preventing the emergence of bleeding can be done with the speed of restoration of muscle functions and here may highlight the role of rehabilitative exercises that contribute to the return of the player to practice natural to sports activities after he was injured [3].

The game of volleyball like all games, which may be exposed by the practitioner or the emerging of many injuries, due to the causes that led to the occurrence of such injuries may be due to: (loads of educational or training non-regulated-not gradual steps educational or training from easy to difficult-not to rehabilitation teachers or volleyball coaches-neglect to warm up-handling error with the ball-contact a colleague or opponent-the sudden change of movement of the body-to receive or the defense of balls multiplied the strong parts of the body such as the fingertips of the hand or hands) and other causes that may lead to injury and regardless of the causes of these injuries, it was noted researchers that these injuries may have caused the reluctance or unwillingness of some young people from completing a game, volleyball and access to many of the studies and previous research, which dealt with various traumas in a game of volleyball and did not find the researchers study of injured ligaments rupture phalanges of the fingers and the lack of educational and rehabilitation programs for this type of injury in the field for the game of volleyball, due to the importance of using a particular phalanges of the hand and fingers.

Within each of the skills of volleyball game, in general and in the skill scroll from the top of a private, which was invited to the identification of: the effectiveness of training and career and educational injury torn ligaments of phalanges of the fingers of the hand to beginners in the game of volleyball and this is what researchers established to experiment.

MATERIALS AND METHODS

Researchers used the experimental method of one experimental design group of the pre and post-measurements of the variables under consideration, so as to suitability of the nature of the research. Research sample was selected in intentional way from volleyball beginners in Dakahlia, El-hawar, Metgamer, Mansoura stadium and Island of Roses clubs

(born in 1998 with 12.6 years median age, 168.7 cm average height and 66.2 kg average weight) and enrolled in tables of the Egyptian Federation of the volleyball in season 2010-2011. They had torn ligaments of phalanges of the fingers of the hand. The research community was of 10players, within 50% patients, the experimental group was one of 5players.

Terms of Sample Selection: The sample selection depended upon having torn ligaments phalanges of the fingers in the hand and the selection was after presenting the players to the bone specialist by taking into account the following conditions:

- C The exclusion of the infected cases that are broken or fracture of the phalanges of multiple fingers.
- C The selected player did not subject to any other treatment programs.
- C The selected player should not be injured with other phalanges injuries of the fingers of the hand.
- C Regularity in the qualifying program and educational experience during the period under discussion.
- C The selected player should not participate in any competitions or internal or external training on tools and hardware or volleyball skills for the duration of the experiment under discussion.
- C The approval of the research sample to participate in the program, educational qualification in question.

Executive Steps of the Research

Pre-Measurement: pre-measurements, tests, were conducted on the research sample of for the variables under consideration in the period from Saturday 23/10/2010 until Wednesday 29/10/2010.

The Experience of Basic Research: Rehabilitation programs and educational proposals under discussion were applied on the experimental group for 8 weeks, by 4 weeks of the program of rehabilitation by 3 units per week and time of the unit was 45 s on Saturday, Monday and Wednesday. The application of the educational program was for 4 weeks by 2 units per week and time of the unit was 90 s on Saturday and Wednesday from Saturday 11/6/2010 until Wednesday 29/12 / 2010.

Post-Measurement: The measurements of the post variables (under discussion) were in the same way and the order passed by the pre-measurements after the application of the program directly, in the period from Sunday 02/1/2011 until Wednesday 5/1/2011.

RESULTS AND DISCUSSION

It is seen from Tables 1 and 2 that there are clear differences between the pre and post-measurements for post-measuring in the physical variables in question. the grip strength test improvement ratio of pre-measurement average of the experimental group was 18.90 kg, and average telemetric was 24.48 kg improved by 29.5%. The experimental group recorded average of 5.238 meters in the test of throwing a medical ball of 3 kg weight for the pre-measurement. The telemetric average recorded 6.760 meters, improved by 29%. Time of the feedback arm gave pre-measurement average of 0.494 seconds and telemetric average of 0.320 (35.2% improvement). The average of volleyball pass repetition on the wall for 25sec pre-test recorded 5.2, while the telemetric average of the same test gave 14.2 repetitions and the improvement was 173%. Average recorded in the test of correction by hand on the circles numbered 4.8, while the telemetric average number recorded 9.2 improved by 91.6% and here we note a positive improvement and effectiveness for the benefit of post-measurements of physical variables in question.

Seen from the Tables 1 and 2 that there are clear differences between pre and post-measurements and for measuring post changes in the health question. This is shown through the ratios improved to test the measurement of the degree of pain to the phalanges of fingers infected with tear ligaments, where the average of

the pre-measurement of the experimental group was less than 2.6 degrees and the telemetric average was 8 degrees, by improvement of 207.7%. The experimental group in the test measuring kinetic of the phalanges of the torn ligaments infected fingers gave average pre-measurement of 35.6 degrees, while the average rate of telemetric was 108.2 equaling to 203.9% improvement which shows a positive improvement and effectiveness for the benefit of post-measurements in the health variables under consideration.

Researchers attribute improvement in the variables of physical health and injury tearing ligaments phalanges of fingers in volleyball juniors to building complementary in the exercise program. Many of the experts and academics from the professors of anatomy and sports medicine and physical therapy and exercise tried find out the most appropriate exercises and muscles working in each session to take advantage of their expertise by building the program in question, taking account the training the natural functions of the phalanges of the fingers that reduce pain and improve range of motion of the phalanges of the hand fingers by improving muscle strength of the muscles of the phalanges of the hand fingers as well as to conform to the exercises matching the objective of the program and with taking into consideration the available capabilities gradient in the implementation of exercise functional set of easy to difficult and taking into account the lack of access to the stage of pain. Exercises lengthen the muscles of the arm of the affected hand and exercises

Table 1: Significant differences between pre and post-measurements of variables in the research

Variables Under Consideration	Measurement Unit	Pre-Measurement Average	Telemetric Average	Difference Between Averages	Positive Ranks	Negative Ranks	Value Of (Z)	Significance
Grip strength	Kg	18.90	24.48	5.58	5	-	-2.023*	0.043
Throwing the 3 kg Medical ball	Meter	5.238	6.760	1.522	5	-	-2.023*	0.043
time of the feedback arm	Seconds	0.494	0.320	-0.174	-	5	-2.032*	0.042
Passing a volleyball on the wall for 25 sec	Number	5.2	14.2	9	5	-	-2.023*	0.043
hand Correction on the numbered circles	Number	4.8	9.2	4.4	5	-	-2.060*	0.039
Degree of pain to the fingers phalanges	Degree	2.6	8	5.4	5	-	-2.070*	0.038
Kinetic of the phalanges of the fingers	Degree	35.6	108.2	72.6	5	-	-2.023*	0.043
Accuracy of the exercise from the top to the wall	Number	4.6	14.2	9.6	5	-	-2.032*	0.042

Value of (z) at the level of (0.05) = ± 0.196

Table 2: Rates of improvement between pre and post measures of variables in the research

Variables under consideration	Measurement Unit	Pre-Measurement Average	Telemetric Average	Difference Between Averages	Rate of improvement
Grip strength	Kg	18.90	24.48	5.58	%29.5
Throwing the 3 kg medical ball	Meter	5.238	6.760	1.522	%29
Time of the feedback arm	Seconds	0.494	0.320	-0.174	%35.2
Volleyball pass on the wall for 25sec	Number	5.2	14.2	9	%173
Hand correction on numbered circles	Number	4.8	9.2	4.4	%91.6
Degree of pain to the fingers phalanges	Degree	2.6	8	5.4	%207.7
Kinetic of the phalanges of the fingers	Degree	35.6	108.2	72.6	%203.9
Accuracy of the exercise from the top to the wall	Number	4.6	14.2	9.6	%208.7

stimulate blood circulation and maintain the muscles of phalanges of the hand fingers. Exercises increase flexibility of the joints and muscles of the phalanges of the hand fingers and exercises improve muscle strength of the muscles of the phalanges of the fingers holding the affected hand to try to reduce the degree of pain and exercises reduce the fear of infection and other foundations of the program in question.

The consistent results of this study agree with the results of previous studies [4-7] that the use of functional exercises and rehabilitation have a positive impact on improving range of motion of the joint and the muscle participation ability, even in high degree of pain. These programs have an impact and significant effectiveness and this goal is achieved in the first hypothesis of the objectives of the study which is that the training under the proposed functional impact is significant in the long fingers of the hand of the affected volleyball junior with torn ligaments phalanges of hand fingers and that the proposed program has his influence and effectiveness with a positive sign.

Tables 1 and 2 clear that there are clear differences between the pre and post-measurements for the post-measurement in the skill variables to learn the scroll skill under consideration. And that is evident from the improving ratios to test the accuracy of the scroll from the top of the wall where the average measurement of the pre-group under the experimental average number of attempts was 4.6 and post-measurement average was 14.2, improved by 208.7%. And here we see a positive improvement and effectiveness for the benefit of post-measurements in the skill variables under consideration.

The researchers explain this effective and positive improvement of the skill variables with torn ligaments phalanges of the hand fingers injury and especially with teaching the skill of the scroll from the top to complete the process of construction complementarities out of the educational exercise program, taking into account the track therapeutic and motor skill scroll from the top of the volleyball through the steps of learning, giving the young players having phalanges of the hand fingers (the sample under consideration) the basic information about the correct performance of the scroll from the top skill against the recurrence of the injury and after the exercise program functional.

The use of the educational program accurately without fear, taking into account the basis for formulating the educational program in question; the characteristics of youth (the sample in question); the investigator

understanding to their needs; the logical sequence organized in education and the individual differences among themselves and to challenge the contents of the program capabilities allowing instigating motivation to achieve the educational aim taking into account safety and security factors according to the potential and the tools and the right place to implement this educational program in question.

The consistent results of this study agree with results of prior studies [4-7] that the use of the educational program after the qualifying program helps in treating of infection and removes the theme of fear gradually to the young, which had a positive impact on learning motor skills, thus fulfilling the goal and the second premise of the objectives of the study, which is that the training educational proposed program influences positively learning the skill of scroll from the top of volleyball juniors with torn ligaments phalanges of the fingers of the hand.

CONCLUSION

Based on the results of this study and discussion within the limits designated, it can be concluded the following:

- C Exercising the functional impact and effectiveness of the proposed program to improve some of the physical variables, when spraining ligaments of phalanges of the fingers of the hand, reached 29.5% rate of improvement concerning the experimental group under discussion in the strength of grip. The test of throwing a medical ball of 3 kg weight recorded 29% improvement rate. The test of using the ruler to measure the feedback time of the arm gave an improvement ratio of 35.2% and the improvement ratio for test of passing the volleyball on the wall for 25 times reached 173%. The improvement rate recorded in the test of hand correction on numbered circles was 91.6%.
- C The exercise program had a functional impact and effectiveness to improve some of the variables of health where the incidence of ruptured ligaments phalanges of the fingers of the hand, reaching 207.7% rates of improvement of the experimental group in question in the test measuring the degree of pain to the phalanges of fingers infected with tear ligaments. While the test measuring kinetic of the phalanges of the fingers infected with ruptured ligaments recorded an improvement ratio of 203.9%.

- C The training program had an educational impact and effectiveness on number of variables to improve the skills such as to learn the skill of scroll from the top of the ball under consideration, as the test measuring the accuracy of the scroll from the top of the wall recorded improvement by 208.7%.

Recommendation:

- C Taking advantage of the exercise program, employment and educational proposals for the rehabilitation of people with torn ligaments phalanges of the fingers of the hand.
- C Studying the common infections of different games and sports and designing programs for treatment and rehabilitation.
- C Periodic disclosure on the volleyball players of different stages to detect any malfunction or physical injuries.
- C putting treatment programs for injured thumb ligament rupture of the volleyball players.
- C Immediate treatment and rehabilitation of injuries so as not to reach the level of chronic injuries.
- C Attention and focus in the education of basic skills for an emerging game of volleyball and correct errors.
- C Taking a basic skills education especially for junior enough time to learn and not involved in internal or external competitions only after fully completed to make sure they learn basic skills.

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