

EFFECT OF RESISTANCE STRETCHING ON FLEXIBILITY, POWER AND PERFORMANCE OF JUMP FLOAT SERVE FOR ELITE VOLLEYBALL PLAYERS

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Abstract

Objective. As in many other sports, Flexibility is very important in volleyball, since the lack of it can complicate the assimilation of the execution techniques or technical elements of that discipline. Resistance stretching focus on match strength with flexibility. This means that you only stretch your muscles as often as you can contract them simultaneously. The active contraction of the muscles in the position of the elongated body helps it become more flexible, stronger and stable. This stretch method also helps protect from injury because the player matches the range of motion with strength. The aim of this investigation was to explore the effect of resistance stretching on flexibility, power and performance of Jump Float Serve for elite volleyball players.

Methods. Fourteen elite volleyball players from Elminia club. (experimental group 7 players and control group 7 players). The experimental group were receiving ten-weeks intervention of resistance stretching training program (n = 7). The control group were receiving ten-weeks intervention of traditional training. All data collected before and after the program for the experimental and control groups. The researcher conducted the average in High, weight and age.

Results. The results showed significant differences were observed between pre-post-tests for experimental group, and posttests between the experimental and control groups in all Parameters of flexibility, power and performance of jump float serve.

Conclusion: In conclusion, our data suggest that (10) weeks of training with the resistance stretching could improvement of the flexibility, power and performance of jump float serve for elite volleyball players.

Keywords: resistance stretching, flexibility, power, jump float serve.

Introduction

The sporting achievements during the last years reflect the extent of benefiting from scientific progress by adapting the various applications of the sciences related to the sports field in preparing athletes to reach them to high levels starting from the junior stage as they are the main pillar on which to achieve sports aspirations.

Volleyball is one of the sports that was clearly positively affected by the development of science related to the sports field and the novelty of methods and methods of training and preparing players, which helped raise the level of player performance in all physical, skill and planning aspects. And other variables that contributed in taking them to the higher levels. As a result of the great development in volleyball sport in terms of physical, skill, planning, and others, developed countries in this field used modern scientific methods in the means of measurement and analysis of technical errors that occur to players during training periods where the latest devices are used to photograph matches and computers that have become of great importance In the process of analyzing the performance of players. (A. Abdel-Aty & K. Ziada, 2004)

Volleyball can be defined as an explosive activity in which periods of intense effort (when the ball is in motion) are constantly alternated with others of relative rest and recovery (when the ball is not in play), and in which the duration of the same is not initially determined. This sport is characterized by the variability of technical-tactical gestures that follow each other throughout a game and that require a fast, intense and effective response from the athlete (L. Kich, 1986; H. Sozen, 2012).

In this sense, actions such as the successes in the serve, errors in the reception, blocking errors and offensive effectiveness related to the achievement of direct point, have been observed as indicators of success in volleyball.

The serve is the fundamental initiating element of the game. It happens every time it is interrupted by a foul, it is resumed with a serve, the team that does not know how to take out cannot win. (M.C. Marques, et al. 2008)

The serve is first action of the game and the only action in which the player has some time to keep the ball under control in his hands and decide the type of action and intentionality of service that he is going to take. Its objective is to weaken the

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Received 8.11.2019 / Accepted 2.01. 2020

defense of the opposing team. It has become an important element of attack within the game. With the power that is printed to the serve, the possibility of obtaining direct points is given. (I. Manna, et al. 2012)

However, there are a number of factors that can indirectly condition it such as: development and influence of the competition, level of the opponents, rotation of the team, time of the game, the scoreboard, the set in play, the physical state, etc.

Some authors consider the physical condition as a fundamental factor, as it allows the player to maintain optimal and efficient technical-tactical-competitive behavior during the game and throughout the season, highlighting the strength, velocity and Flexibility as a fundamentals factor. (R. U. Newton, et al. 2006).

Flexibility is the ability of the muscle to stretch without damage. The magnitude of the stretching is given by the maximum range of movement of all the muscles that make up a joint, likewise it should be indicated that it is of an involuntivity nature since it is lost over time. So, it is recommended to practice it several times a week.

(M. Vieira, et al. (2010) Muscle flexibility contributes to the rest of the other physical capabilities such as strength, endurance, speed and compatibility in forming the ideal performance, as it is one of the pillars upon which the acquisition and mastery of motor performance is built upon in order to reach the higher levels, where the low level of flexibility leads to the inability to benefit from levels The strength that is developed and the growth of strength is related to the extent of the ability to perform the exercise at different levels of the kinetic range of the joints.

(AL. Nariman, et al. 1997) indicated that muscle stretch exercises work to take advantage of physiological processes to achieve muscle relaxation so that muscles can be stretched under the best possible conditions, and this method is one of the best methods of stretching because it increases positive flexibility and helps to build coordination movement .

In this regard, (M. Hammad, 2010) explains that the increase in the degree of muscular elasticity and its length affects positively the strength of the muscle contraction, and also the more the muscle is distinguished by its length and its ability to elongate the more it helps to produce the best degree of muscle strength.

(I. Rahma& M. Ibrahim, 2009) explain that the muscular flexibility exercises for the various muscles of the body, especially the group working in performance before the training or competition unit, reduces the dangers of stretching and tearing the muscles or sprains of the joints in addition to improving the individual's awareness of his body conditions.

(S. Kathy, 2001) notes that flexibility exercises can help correct many errors and defects in technical performance, those movement defects, which in turn affect the delay and decline in general in general, and this is considered a sufficient reason to pay attention to muscle flexibility programs based on practical principles.

(N. el-Badry and A. Hamza, 2019) indicate that when mentioning the term flexibility, it comes to mind directly from the range of motion (ROM), and in the Arabic literature, flexibility is related to the work of joints and the term lengthening is related to the work of muscles, and in Western literature the term flexibility is related to the work of muscles to be a movement The joints are considered the same in all human beings, and the difference is in the motor range of the joints that are related to the efficiency of the muscles, and recently it has been found that the flexibility is not related to any of the joints or muscles but to the wraps that surround the muscle fibers, namely Fascia.

In this regard, (A. Stecco, 2017) points out that the primary focus should be on the muscles and their coils in flexibility training, bearing in mind that the bones, joints, ligaments, tendons and skin contribute to the overall flexibility, but we control it in a limited way and can be destroyed if the player tries to extend it directly.

(N. el-Badry and A. Hamza, 2019) indicate that Resistance Stretching training have become varied and multiple, and it is imperative for the coach to choose the methods that are appropriate to the characteristics and capabilities of his players and that work to develop muscle flexibility and that in turn leads to improving the level of their performance.

To achieve this, multiple methods of length training are used, including static stretching, active isolated stretching (AIS), (Ki-Hara), active release technique, (PNF), Yoga stretching. (H. Ahmed, 2012; C. Norris, 2004)

(B. Walker, 2011) argues that the (Ki-Hara) method is a new and innovative form of Resistance Stretching training developed by Steven Sierra and Anne Tierney, and works to develop both strength and flexibility together during the training unit, where the player deals Constantly with his muscles while gently pushing the other end inside. By dynamically lengthening and strengthening the body in safe ranges, thereby keeping muscles and joints safe from injury.

(D. Torres, et al. 2009) indicated that Flexibility exercises with (Ki-Hara) work to maintain muscle contraction that avoiding injuries.

She adds that this type of prolongation is difficult to learn and will lose its effectiveness if it does not lead to appropriate resistances, where the player can gain flexibility with strength in addition to the speed of disposal of lactic acid, and it can be

performed before or after the competition, as it is useful after the competition in reducing the feeling of pain and reducing the severity Muscle and pre-competition tensions work to reduce muscle (muscle lightness)

In traditional strength training, elastic machines, weights, and static weights or negative body weight are used as resistance, which the player then tries to overcome. In Resistance Stretching (Ki-Hara) the player is the one who generates resistance, as well as the strength to overcome. By using "internal resistance", the underlying muscles are activated for fixation because one side of the body works against the other.

In this regard, (C. Rowland, 2017) doubts that Resistance Stretching is one of the newly used exercises to develop flexibility for competitors to improve the effectiveness of complex skill performances.

The aim of this investigation was to explore the effect of resistance stretching on flexibility, power and performance of Jump Float Serve for elite volleyball players.

Experimental Approach to the Problem

Two groups (experimental and control) performed a pre and post training designed intervention in which Flexibility (Deep flexion of the body), Leg power, Arm power, and performance of Jump Float Serve. The experimental group trained 25 minutes (15 minutes in warming up part-10 minutes in cooling down part) per day 4 times a week on resistance stretching for ten weeks. The control group trained on the traditional training. The experimental and control groups completed the training program to see whether this type of training modality would have a positive or negative or no effect on study variables.

Methods

Fourteen elite volleyball players from Elminia club. (experimental group 7 players and control group 7 players). The experimental group were receiving ten-weeks intervention of

resistance stretching training program (n = 7). The control group were receiving ten-weeks intervention of traditional training.

All data collected before and after the program for the experimental and control groups. The researcher conducted the average in High, weight and age.

Procedures

Deep flexion of the body

Objective: To measure globally the flexibility and elasticity of the trunk and limbs.

Material: measuring device or strip marked on the floor and foot stop.

Execution:

- Flex the entire body by bringing the arms back and between the legs to move the marker as far as possible.
- The test will be carried out slowly and without pushing the marker.
- Good strategy to avoid it is to make a stop with the hand of the tester, acting as a brake for the test
- Be done smoothly.
- The balance must always be maintained, and the device will be left by the front and walking.

Annotation: The CMS that have managed to move the marker will be noted.

Sargent Jump test

The Sargent Jump test or the vertical jump test was developed by Dr. Dudley Allen Sargent (1849-1924). This test measures the difference between the height of the athlete with the hand stretched upwards and the height that can be reached with the same hand after jumping. The player should be placed on the side of the wall, at the beginning of the test you should keep your feet flat on the floor and stretch your arm up as high as possible, the distance reached with that arm is recorded. After taking the first measurement, the person should flex their legs slightly and jump up as high as possible, with the arm up, touch the wall at the highest point of the jump and this second measurement is recorded. (3) opportunities to perform the test, the highest height of the three attempts, is the one that will be considered.

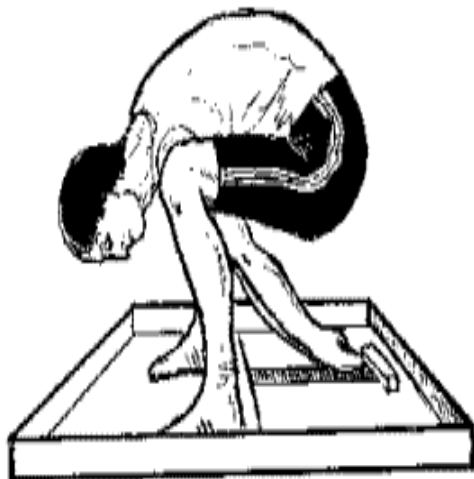


Fig (1) show Deep flexion test

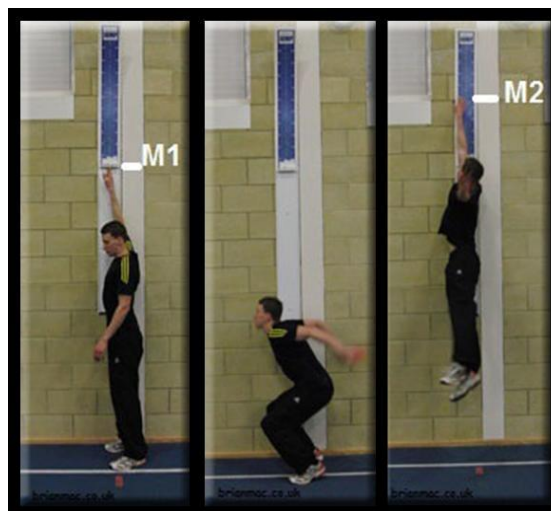


Fig (2) show Sargent Jump test

Performance of Jump Float Serve. (Velocity – Accuracy)

All serves were captured using a high definition digital video camera (Sony HDV HDR-HC7 Handycam).

The camera collected images at 50 frame per second. the researcher used this camera to determine the velocity. The player performed (5) trials. the player put the ball in the specific area to measure the accuracy



Time (Frames)

Statistical Analysis

All statistical analyses were calculated by the SPSS statistical package. The results are

reported as means and standard deviations (SD). Student's t-test for Paired samples was used. The level of significance was set at $p \leq 0.05$.

Results.

Table 1. Anthropometric characteristics of the studied athletes

Variables	Mean	Skewness
Age (years)	20.9 ± 1.638	0.65
Height(cm)	183.7 ± 6.18	0.79
Weight(kg)	78.8 ± 5.01	0.92

Table 1 shows no significant differences were observed in the all characteristics of the subjects.

Table 2. Parameters of flexibility, power and performance of jump float serve

Mean ± SD	Experimental group		Control group		P
	Before	After	Before	After	
Flexibility (cm)	36.2 ± 1.62	38.9 ± 1.31	36.00 ± 1.78	36.7 ± 1.31	0.05
Leg power (cm)	27.14 ± 1.02	29.14 ± 1.56	27.08 ± 0.89	27.19 ± 1.42	0.05
performance of jump float serve (time -accurate)	2.00 ± 0.87	3.19 ± 0.91	2.07 ± 0.54	2.34 ± 0.60	0.05

Table 2. shows significant differences were observed between pre-post-tests for experimental group, and posttests between the experimental and control groups in all Parameters of flexibility, power and performance of jump float serve.

Discussion

The purpose of this article was to determine the effect of the resistance stretching on flexibility, power and performance of Jump Float Serve for elite volleyball players. After (10) weeks of training with the resistance stretching, the flexibility, power and performance of jump float serve showed a significant increase for the posttests for experimental group relative to the pretests.

The researcher attributes the occurrence of these changes to the good planning of the resilience program with resistances ((Ki-Hara)) and codification of training loads in a scientific manner appropriate to the Sunni and training phase of the research sample in order to develop muscle flexibility, where the researcher considered the focus on training the various muscle groups, especially the muscles of the center, arms and legs in addition to the muscle groups Working during complex skill performance and accurate selection of Resistance Stretching exercises as this improved the physical and skill variables under consideration.

The researcher believes that the basic hypothesis behind elasticity with Resistance Stretching(Ki-Hara) is the true definition of the term elasticity, which means the ability to bend. Flexibility in (Ki-Hara) resistance we keep muscles strong through their motion ranges in order to build soft muscles, thus not only allowing muscles to stretch but to shorten them properly.

In this regard, (B. Walker, 2011) emphasizes that Resistance Stretching ((Ki-Hara)) helps to increase the range of motion in the joint, increase the length of the muscles working on it and enable the muscles to produce maximum strength because the muscles that have been stretched perform their function more efficiently and produce a greater amount Of strength due to the storage of elastic energy in muscle tissue during the elongation stage and its release during the shortening stage following this elongation.

(D. Torres, et al.2009) Resilience Resistance ((Ki-Hara)) is a combination of strength and flexibility in training to create balance and efficiency in the body, as it helps the body to work better as a whole, increases flexibility and muscle tone, and reduces the feeling of chronic pain.

This is confirmed by (N. el-Badry and A. Hamza, 2019)that uses of Mashing method as a key component of flexibility training with resistors (Ki-Hara), which helps to gain muscle lightness and softness in addition to the rapid disposal of lactic acid inside the muscles.

(AL. Nariman, et al. 1997) assert that muscular stretching is of great importance in developing flexibility, preventing injury and developing physical skills and abilities in addition

to speed of recovery to recovery and removal of muscular pain. Flexibility also plays a vital role in improving the motor range of various body joints, which play a very important role in performance Distinguished for the player in many of the motor skills and capabilities, where the narrow range of movement in the joint impedes the level of showing strength, speed and compatibility of the athlete, and also leads to a weak level of nervous compatibility between the muscle fibers inside the muscle as well as between the muscles, and this leads to the economic decline in performance is often the cause of the occurrence of muscle injuries and ligaments.

In conclusion, our data suggest that (10) weeks of training with the resistance stretching could improvement of the flexibility, power and performance of jump float serve for elite volleyball players.

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