Available online at www.elixirpublishers.com (Elixir International Journal)

Social Studies

Elixir Social Studies 107 (2017) 47393-47396

ISSN: 2229-712X

The Effect of Eight Weeks Plyometrics and Common Taekwondo Training on Anaerobic Power, Agility and Speed of 17 to 20 Year Old Taekwondo Players in Qasr-e Shirin City.

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ARTICLE INFO

Article history:

Received: 19 May 2017;

Received in revised form: 16 June 2017;

Accepted: 28 June 2017;

Keywords

Taekwondo,
Plyometric,
Strength,
Endurance,
Agility,
Taekwondo speed.

ABSTRACT

The effect of plyometric exercises, to train with weights to gain better record evaluate, and taking into account such things as the specific features of exercise plyometric, which in the short term increase the power and speed of muscle is, and not to get to specific, however, in sports clubs, great importance is given to plyometric exercises, the question arises, do plyometric exercises on land and water, to improve the performance of Taekwondo, is more effective, or common practice Taekwondo performance, effective Trust. This study is quasi-experimental, and the preliminary and final test design (pre-test and post-test), with two experimental and control groups with 24 people. Data, enjoying Spss22, and dependent t-test, were analyzed. Results indicate that all the research hypotheses were confirmed, and the results dependent t-test to check the exercises common of taekwondo and plyometric, water and land-based aerobic capacity Taekwondo, agility Taekwondo, the speed of the Taekwondo, and be anaerobic Taekwondo, respectively, significantly, 0.000, 0.000, 0.000 and 0.001, impacted, and all the means of the experimental group, in all the research hypotheses, more than the control group, and this suggests that the effect of the exercises common taekwondo and plyometric, on land and water, the is all dependent variables.

Introduction

Taekwondo, can be one of the most popular martial arts in Iran and the world. Over 201 member states of the field, the World Taekwondo Federation, which 43 countries of the continent of Asia. Iran in recent years, progress has been considerable in this field, so in 2011, he won the World Championship (1). Taekwondo is a sport where proper implementation and timely movement, of the utmost importance. Although the nature of Taekwondo, activity-based explosive power and speed, but having features, such as maximum power of high-speed appropriate response, muscle strength high, good flexibility joints, balance, agility and great endurance, anaerobic desirable, and even General endurance all, the success of an effective taekwondo. The reason for performing, having high speed, strength and explosive power of good, important principles straw physically ready for that, is very important in martial arts taekwondo (2).

From the perspective of sports science experts, record decrease and increase performance in sports is very important (3). Over the past years, researchers have tried to essential information about variables, and an increasingly recognize learning motor skills. In physical education to improve the performance, there are several ways, the most common of practical training, exercise science principles are. Plyometric exercises, with the aim to enhance response capabilities nervous system, to improve the ability of the nervous system, muscle, as an effective manner, the main part of training programs for coaches, has formed (21-22).

In connection with the execution of each exercise, and to achieve the proper preparation, doing special exercises should be used. Plyometric exercises, one of the traditional training methods is very important in enhancing explosive power, with the right combination of speed and muscle power (2). Plyometric in the last 30 years, a method of strength training, common in many countries of the East (23), coaches and athletes claim that plyometric, a bridge between the power and the ability to create and direct the performance of competitive raise. They often exercise power, as resources to increase public power, and plyometric exercises, as the method of applying the power to consider the development of performance (24).

Performing plyometric exercises, as a way to increase muscle strength athletes, attracted the attention of many coaches and athletes, were (9). In general, plyometric exercises, exercises or movements that, to achieve some kind of explosive reactive motion, strength and range of motion with each link. Plyometric exercises often used as a springboard exercises, and called deep jerks, while each exercise or movement, reflections stretch for production use explosive reaction, some plyometric exercises (4).

Plyometrics of two words Pelayo (increase) and metric (measurement), meaning cumulating have been evaluated. In fact, plyometric exercises, refers to those practices which, by contraction of muscle power, in response to a load or dynamic stretching, and muscle fast engaging means (5).

The exercise is designed to increase horizontal and vertical acceleration of the lower back, and all the motions of running and jumping, as well as some of the vertical and

horizontal forces antigravity, is a plyometric exercise. Even shift in coming down as part of this category. Medicine ball training with wings, in addition to strengthening the upper body, lower body members combined exercises can also be used (6).

Research has shown that performing plyometric exercises, vertical jump, grab, leg strength, muscle power, increase awareness and sensitivity receptors deep joints, helps. Since plyometric exercises usually standing start and shift, in a situation when involved, the movements of the components that are able to develop agility, speed, reaction time, balance, and can help athletes, training plyometric specific features and applications extensive (10). The results Soleimani (1996), the effect of exercise gym with weights and plyometric on record hundred meters crawl swimmers Kerman, examined, and the results showed group exercises plyometric had done, records better business they (7). In addition Pirani (1993), the effect of plyometric exercises in the positive fast work, exercises with weights evaluated (8). According to previous studies, the effect of plyometric exercises, than weight training to increase better record, evaluate, and taking into account such things as the specific features of exercise plyometric that, in the short term increase the power and speed of muscle is (11, 12), and failure to get to specific, also in sports clubs, is of great importance to plyometric exercises are not given, the question arises, do plyometric exercises on land and water, to improve the performance of Taekwondo is more effective, or exercises common of Taekwondo is more effective performance.

History

Ghasemi et al (2014), the study showed that an exercise of plyometric, compared with exercises common taekwondo, on agility and vertical jump taekwondo teenage boys 14 to 17 years, the positive effects have, while the changes in the speed of movement is not significant. In order to increase the agility and explosive power Taekwondo can be tailored to the fitness level of use plyometric exercises (11).

Asad et al (2012), the effect of exercising deep jump plyometric, the explosive power of students volleyball boy city Abhar as compared to that, in general, according to the results, it seems, to improve students explosive power status volleyball, deep jump plyometric exercises, very useful (12).

Hasanluyi et al (2010), in a study entitled "The effect of 6 weeks of plyometric exercises, vertical jump in the water, and muscle soreness" showed that six weeks of plyometric exercises in the water, a significant impact on vertical jump. In addition to plyometric exercises in the water, reduces muscle soreness, it seems that, plyometric exercises in water can be improved vertical jump athletes. In addition to training in the water, soreness and muscle damage, prevent water in (9).

Kalvandi et al (2011), in his study the effects of exercise elastic, plyometric and resistance on the performance of anaerobic volleyball elite in Kurdistan province showed that exercise elastic than plyometric exercises can be a useful tool in improving some functions of anaerobic athletes (13).

Chaudhary and colleagues (2010), in a study entitled "Effect of plyometric exercises, the ability to move the selected women's basketball player at the University" found that, plyometric exercises effective way to improve agility, flexibility, vertical jump and speed women's basketball, respectively (29).

Markovic et al (2007) concluded that, in the short term sprint training, exercise the same, or even more than do conventional plyometric exercises, muscle function and athletic performance are created. The above study, the general theory of sprint training, functional training as a method for improving throughput performance athletes support (30).

Burgess et al (2007), in a study entitled "The effects of plyometric exercises, the isometric exercise, the characteristics of tendon and muscle efficiency", 30 men in two groups of plyometric and isometric exercises for six weeks respectively. According to the measured variables, extreme isometric exercise showed that, plyometric exercises benefit and profit to the same extent, but with reduced impact forces (31).

Kotzamanidis et al (2006), in a study entitled "Effect of plyometric exercises, running and jumping performance in male teenagers Sargent", reported that, plyometric exercises to increase the jump, and improve the speed of running in the teens. Significant differences between the groups jump and control, in sprint and jump squats showed. In jump, sprint distances, 30-0, and 20-10 mm increased ($P < 0.05$), but for a distance of 10-0 meters, this did not ($P > 0.05$). In addition, the implementation of the jump squat, jump dramatically increased in the group ($R < 0.05$). While change, Sprint, or jump squats there was no control group (32).

Research hypotheses

1. Between Taekwondo common exercises and plyometrics, in land and water, on anaerobic thee Taekwondo 17 to 20 years old, in the district of Qasr-e Shirin, there are significant differences.
2. Between Taekwondo common exercises and plyometrics in land and water, on agility Taekwondo 17 to 20 years old, in the district of Qasr-e Shirin, there are significant differences.
3. Between Taekwondo common exercises and plyometrics, in water and land to be 17 to 20 years old Taekwondo foot speed, in the district of Qasr-e Shirin, there are significant differences.
4. between Taekwondo common exercises and plyometrics, in water and land-based on aerobic capacity Taekwondo 17 to 20 years old, in the district of Qasr-e Shirin, there are significant differences.

Research method

This semi-experimental study, and preliminary and final test design (pre-test and post-test), with two experimental and control groups, is executed. The study, all 17 to 20 year taekwondo, clubs active participant in the Taekwondo Club, in the district of Qasr-e Shirin, up. Of these, 24 of which Taekwondo, volunteers were volunteers, and conditions (minimum age 17 years and maximum 20 years, at least 3 years blonde in the field of Taekwondo and minimum red belt) to have. The study, available, after the interviews are selected. Before receiving consent from participants, information on the nature, how to conduct research, risks and points that should meet the participants in this study, will be available to them. After informed consent, the athletes were randomly assigned into two groups plyometric exercises on land and water (n = 12), and the common practice taekwondo (12 persons). Both groups, pre-test on the variables (strength, endurance, agility and speed of movement), is accomplished, then plyometric group on land and water, for 8 weeks, each week, each session lasting 40 minutes, plyometric exercises selective in land and water, Radcliffe and Farntios run (8). Taekwondo is also common practice group, in the same period a common practice taekwondo, 8 weeks, 3 sessions per week, each session 40 minutes under the supervision of the coaches are doing.

In this study, the purpose of the exercise plyometric exercises selection including: the chest pass with the medicine ball, land, move the swinging arms, throwing the medicine ball, swimming Swedish miles, jumping vertically upward and forward, Search-by-side, etc. , on land and water. Despite the differences between land and water environments (two different liquids), as possible we have tried to do exercises, in terms of the environment, and muscle groups involved are the same. Consecutive 8 to 12 reps, do 40 minutes (8). Group program, common exercises include common practice taekwondo, including Mitt handling (20 minutes), and the fight contract or release (20 minutes), played for 8 weeks. At the end of 8 weeks of training, post-test in both groups, the practice is, the results of the effect of plyometric exercises, in water and on land, the variables are dependent, in plyometric exercises on land and water, and exercise common research determined, and compared with each other. To investigate the hypothesis research, t-test, was used.

Findings

In this section using t-test, the research hypotheses, action.First hypothesis: between Taekwondo common exercises and plyometrics, in water and land, on anaerobic power Taekwondo 17 to 20 years old, in the district of Qasr-e Shirin, there are significant differences.

T-test results, to search for Taekwondo common exercises and plyometrics, water and land, on anaerobic power Taekwondo, between the two groups showed significant (sig = 0.001). Inferential statistics related to T-dependent results, to search for Taekwondo common exercises and plyometrics, water and land, on anaerobic power Taekwondo, Table 1.

T-test results analysis, in line with the average difference between pre-test and post-test in both control and experimental groups to be Taekwondo anaerobic showed that the changes are statistically between the two groups was significant at the 0.05 level. The mean of the experimental group than the control is indicative of the impact of Taekwondo common exercises and plyometrics, water and land is the anaerobic power Taekwondo. So, the hypothesis that, between Taekwondo common exercises and plyometrics, in water and land,on anaerobic thee Taekwondo 17 to 20 years old, in the district of Qasr-e Shirin, there are significant differences were confirmed.

The second hypothesis: between Taekwondo common exercises and plyometrics, in water and land on the agility Taekwondo 17 to 20 years old, in the district of Qasr-e Shirin, there are significant differences.

T-test results, to search for Taekwondo common exercises and plyometrics, water and land, the agility Taekwondo, between the two groups showed significant (sig = 0.000). Inferential statistics related to T-dependent results, to search for Taekwondo common exercises and plyometrics, water and land, the agility Taekwondo, Table 2.

T-test results analysis, in line with the average difference between pre-test and post-test in both control and experimental groups, for Agility Taekwondo, showed that the changes are statistically between the two groups was significant at the 0.05 level. The mean of the experimental group than in controls, which reflects the impact of Taekwondo common exercises and plyometrics, in water and land, on the agility Taekwondo. So, the hypothesis that, between Taekwondo common exercises and plyometrics, in water and land, the agility Taekwondo 17 to 20 years old, in the district of Qasr-e Shirin, there are significant differences were confirmed.

The third hypothesis: Between Taekwondo common exercises and plyometrics, in water and land, on foot speed Taekwondo 17 to 20 years old, in the district of Qasr-e Shirin, there are significant differences.

T-test results, to search for Taekwondo common exercises and plyometrics, water and land, to be foot quickly of Taekwondo, between the two groups showed significant (sig = 0.000). Inferential statistics related to T-dependent results, to search for Taekwondo common exercises and plyometrics, in water and land on ability Taekwondo foot speed, is summarized in Table 3.

The mean of the experimental group than the control is indicative of the impact of Taekwondo common exercises and plyometrics, in water and land, is the Taekwondo foot speed ability. So, the hypothesis that, between Taekwondo common exercises and plyometrics, in water and land, in water and land on 17 to 20 years old Taekwondo foot speed, in the district of Qasr-e Shirin, there are significant differences were confirmed.

Fourth hypothesis: between Taekwondo common exercises and plyometrics, in water and land-based on Taekwondo aerobic capacity 17 to 20 years old, in the district of Qasr-e Shirin, there are significant differences.

T-test results, to search for Taekwondo common exercises and plyometrics, water and land-based aerobic capacity Taekwondo, between the two groups showed significant (sig = 0.000). Inferential statistics related to T-dependent results, to search for Taekwondo common exercises and plyometrics, in water and land-based on aerobic capacity Taekwondo, Table 4.

Table1. Comparison of the anaerobic powe taekwondo mean, the two groups.

group	Paired Differences					t	Degrees of freedom	p-value
	mean	SD	The average standard deviation	Confidence95 percent				
				low	up			
control	11.4833	2.39255	.30888	.48870	1.81130	3.480	23	.001
experiment	12.6333	3.37230	.43536					

Table2. Comparison agility taekwondo average, the two groups.

group	Paired Differences					t	Degrees of freedom	p-value
	mean	SD	The average standard deviation	Confidence95 percent				
				low	up			
control	10.2792	2.33484	.30143	-1.74482	66351	4.457	23	.000
experiment	11.4833	2.39255	.30888					

Table3.Comparing the Taekwondo foot speed mean, two groups.

group	Paired Differences					t	Degrees of freedom	p-value
	mean	SD	The average standard deviation	Confidence95 percent				
				low	up			
control	8.0500	1.87844	.24251	.24145	3.87481	2.90852	23	0.000
experiment	11.4417	2.32906	.30068					

Table4. Comparing of aerobic Taekwondo mean, the two groups.

group	Paired Differences					t	Degrees of freedom	p-value
	mean	SD	The average standard deviation	Confidence95 percent				
				low	up			
control	8.0500	1.87844	.24251	33.28046	29.61441	34.329	23	0.000
experiment	39.4974	7.80952	1.00820					

The mean of the experimental group than in controls, which reflects the impact of Taekwondo common exercises and plyometrics, in water and land-based on aerobic capacity is Taekwondo. So, the hypothesis that, between Taekwondo common exercises and plyometrics, in water and land, on Taekwondo aerobic thee in the land and water 17 to 20 years old, in the district of Qasr-e Shirin, there are significant differences were confirmed.

Conclusion

According to what was studied, it was observed that all hypotheses were confirmed, and the results dependent t-test to check the exercises common taekwondo and plyometric, water and land-based aerobic capacity Taekwondo, agility Taekwondo , the speed of the Taekwondo, and anaerobic power Taekwondo, respectively, significantly, 0.000, 0.000, 0.000 and 0.001, impacted, and all the means of the experimental group, in all the research hypotheses more than the control group, and this has the effect of Taekwondo and plyometric exercises fit usual, in land and water on all variables Is associated buffers.

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