



Effects of 6 Weeks aquatic plyometric training program on vertical jump 10-14 years Amateur children Taekwondow pleyers

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ABSTRACT

There is a substantial evidence that plyometric training significantly increases muscular strength and vertical jump. Due to the vigorous nature of this type of training, however, there is a risk of incurring musculoskeletal injuries. Therefore, conducting plyometric exercise programs in an aquatic environment might lead to significant improvements in vertical jump with possibly a lower risk of injury. To examine the effects of an aquatic-plyometric training (APT) program on vertical jump height compared with land based plyometric training. The subjects were 120 amateur boy Taekwondow players of 10 to 14 year old in Oshnavieh City. Twenty six boy Taekwondow players ($12/19 \pm 1/80$ yr, $41/5 \pm 1$ kg, and $156/49 \pm 4$ cm) were randomly divided to aquatic plyometric($n=13$) and control groups($n=13$). All groups participated in pretest vertical jump. Experimental groups performed six weeks of plyometric exercise twice weekly and 45-55 minutes every session, in addition to traditional Taekwondow training either in water pool or at gym. In addition, after 4 weeks of practice, exercises to overload the 4 was increased to 10 duplicate. In 3 groups vertical jump height) first session, after 4 week and after 6 weeks of training .but control groups performed only normal exercise and also of total groups in post-test had modeled of vertical jump and muscle soreness. ($=0.05$). The stational analysis of variance analysis were used for repetition and size to describe the raw data and to test the hypotheses from descriptive and inferential statistics largely dependent and independent T and anova were used for analysis. ($=0.05$). The results displayed significant increases in vertical jump height after six weeks of training in APT group. The aquatic plyometric training that can cause to improve athletes vertical Jump ($=0.05$).

Key words: Aquatic Plyometric Training (APT), Vertical Jump, Taekwondowpleyers

INTRODUCTION

Access and utilization of new exercises, especially in the areas of physical fitness One of the major achievements of athletes in recent decades, Progress in the field of sports athletes championship has brought. Exercise primarily increases the ability Human action, but if you want to maximize the potential is continuous and what should be done? The importance of exercise science principles and practice The physical and physiological needs of sports Is desired, it is an important principle. Speed and Power jump, without a doubt, the most important factors affecting Athletes who compete in sports skills

And conditions are in constant competition to be the Gets stronger, faster and more athletic body by race and International competitiveness against its rivals in preparation, is essential. The Also look for unusual activity caused muscle soreness And the two species is acute and delayed . The new training methods, training in the areas of readiness Always been considered more of rest and relaxation for the sure The role and contribution of the muscular system With other body systems, the performance is. The muscular fitness training, exercise Plyometric. By a set of capabilities and capacities and mechanical Physiological muscle is built.. Typical plyometric exercises are explosive exercises that Athletics at the 1960 Summer Olympics work the first time, Russian gymnasts and weightlifters were used. Yuri and Rvshansky, the famous Russian coach, adding exercises to jump training, considerable success for athletes Marked. He claimed that people can participate in these exercises to jump and decelerate significantly Increase. Generally, the name is synonymous with sports heroes injury, As one of the most important determinants of survival Champions The amount of damage that the athlete has experienced. The exercises are the most important preventive Improve sport-related factors and reduce the incidence of injuries . Although plyometric exercises conducted on variables that Is shown . but because of muscle soreness Many educators are addressing the matter . Therefore, the method having the implementation of such works to reduce muscle soreness, it seems to be necessary. One of the methods these exercises, Plyometric exercises In water 3 That the exercise plyometric Land workouts to improve vertical jump in the water environment can be less vulnerable to risk. The have strong evidence indicating the effectiveness of the training plyometric significant increase vertical jump and speed on land there. Also strong evidence indicating the effectiveness of the training Significant increase in water plyometric vertical jump and run down . Miller and colleagues (2002), haghghi Najaf Abadi (2007) demonstrated a significant improvement However, the vertical jump did not see Robinson et al. (2002) reported a similar effect of exercise on land, but Martel And colleagues (2005) reported a significant improvement compared to the control group. Grouping of similar or different results and not available to researchers who study the The effect of this exercise, the researchers found that this approach to study the effect of APT on muscle soreness, vertical jump, and its athletes Compared to the control group and stiffness.

METHOD

The research is quasi-experimental study using Experimental and control groups in collaboration with the Department of Physical Education and Swimming Board Oshnoyeh city implemented accordingly. In this study, 26 subjects Amateur Taekwondo (age: 12.19 ± 180) years, weight: $(41.55 \pm 1) 156.491 \pm 4$) voluntarily participated in the study. . Subjects were randomly paired based on vertical jump Water to an experimental group (N =13) and one control group (N =13) groups . The group, 2 sessions per week for 6 weeks 55-45 minute sessions three sets of 8 repetitions The water was practiced before the first practice session one Sargent vertical jump test, including the pretest, After exercise and after 4 weeks and after 6 weeks Exercise. While the control group's activities Continued their normal daily routine and exercises and They are only 4 and 6 weeks after the tests and post-tests were used. Statistical Methods Descriptive statistical methods to analyze data Indicators of central tendency, standard deviation For descriptive study of the structural subject and The generalization of the results of the investigation of inferential statistics, including t tests for independent and dependent multivariate analysis of variance (ANOVA) was used LSD test sequence.

RESULTS AND FINDINGS

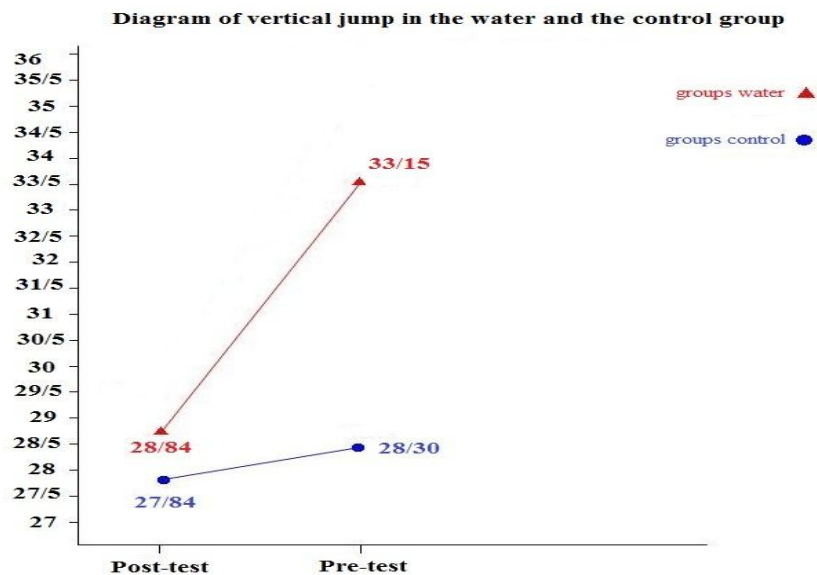
The first six weeks Plyometrics jump in the water. Taekwondo is vertical impact. Independent t-test to compare the mean jump Vertical experimental group (Plyometrics exercises in water) in the pre -test and post-test As that Able in the vertical jump test. Significantly higher than pre-test has been (At any significant level and $t = 5/647$). In other words , Plyometric Training on vertical jump in water has a positive effect on the participants Vertical jump Plyometrics exercises in the Athletes of wather is significantly higher than

before .Independent t-test to compare the mean pretest and post test vertical jump control As can be seen in the vertical jump test The pre-test is not significant in other words, Significant difference between pre-test and post-test vertical jump.Control has been shown ($p \geq 5\%$).

variable	groups	Mean difference	Deviation mean	sig
jump	water	4/84	2/3472	0/046
	control			

The comparison between the control group and analyzed using ANOVA. ANOVA analysis was used to determine significant differences plyometric training on vertical jump athletes among the There is water to the control group. ($p \geq 5\%$)

variable	groups	Mean	sd	d.f	t	sig
jump	pre-test	27/84	6/98	12	-1/720	0/111
	post-test	28/30	6/51			



DISCUSSION AND CONCLUSION

As previously mentioned, the type of exercise Plyometrics Some of their effects on physical fitness training are Physical factors on water when they are done, Is shown. The aim of this study was The

effects of exercise in water. The Purpose Comparison with other studies and then discuss They will be discussed in the conclusion. Results showed that the first six weeks Plyometrics Water levels in the vertical jump taekwondo boys 10-14 years and the average effective vertical jump in the water group. After the test, 31/4 inches higher than the pretest. The above findings indicate that, in practice, the vertical jump is an increase in water ($P \leq 0/05$). The results of studies Martel et al (2006), Robinson (2004), Miller et al (2002), haghghi NajafAbadi (2007) and ZahediAsl (2009) is consistent. The second study showed that six weeks of training in water Plyometrics Taekwondo 10-14 years has a positive effect on muscle soreness. With the findings of recent research findings on vertical jump Markovic (2007), FaygnBayom and et al (2007), Rymnt and colleagues (2006), Martel et al (2006), Robinson et al (2004), Miller et al (2002), ZahediAsl (2009), Islam (2007) , daneshmandi(1386),Shahdadi (1998) is consistent with the findings of the real Najaf Abadi (2007), Messner and et al (1999), kenry(1998), is inconsistent because of the discrepancy in the intensity and volume of natural Najafubadidown exercises. because of the disparity in Messner and kenry , Because of the 4 weeks were used according to Robinson is the training should be more than 4 weeks.

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