



## EFFECTS OF HYDROTHERAPY ON THE SELECTED PARAMETERS IN ADOLESCENT BOYS WITH KYPHOSIS

Seyyed Aboozar Saeidyan Panah and Bijan Goodarzi

<sup>1</sup>Master of Correction Exercise, Department Of Physical Education and Sport Sciences ,  
Borujerd Branch, Islamic Azad University , Borujerd, Iran.

<sup>2</sup>PhD, Department Of Physical Education and Sport Sciences ,  
Borujerd branch, Islamic Azad University, Borujerd, Iran.

**Abstract :-** The purpose of this study was to evaluate the therapeutic effect of water on some of the parameters in relation to the boys with kyphosis. After the identification of patients with kyphosis of male students, 18 students were selected. Training session was conducted in 12 and 3 days a week, 30 minutes each practice session. Dependent variables in the study include back muscle strength, flexibility. The dependent variables were measured using dynamometer, a goniometer and tape meter was conducted in two phases, before and after exercise. Data Analyze using t-test to compare the amount of water before and after exercise was carried out ( $p < 0/05$ ). Before and after training, there is a significant difference ( $p < 0/05$ ) according to these findings, hydrotherapy back muscle strength, flexibility compared to pre treatment levels in creased exercise. The results showed that the effect of water on the power and flexibility of the back muscles

**Key Words:-** Kyphosis, Water treatment, The Selected parameters.

### INTRODUCTION

One of the most common disorders of the spine kyphosis that excessive natural convexity of the dorsal vertebrae included (Sokhanghoie 2008, Sayari 2009) In kyphosis, shoulders and chest comes forward and falls short of the respiratory muscles are weak (Behbodi 2008) The ability to maintain postural muscles in your body and consequently lose their length increases, Therefore posterior and anterior muscle balance in the trunk will (Arshadi 2008, Gige dnd etc 1999) Muscle weakness in the body will have undesirable consequences if ignored, can be fixed and incorrigible defects in future (Sayari 2009) These weaknesses, weakened organs such as weakness and impaired blood circulation, respiration, etc. (Behbodi 2008). For example, the kyphosis complications is reduced chest expansion pulmonary ventilation and oxygen therapy system performance is greatly impaired. Also progressive appearance and short stature may be considered inappropriate (aesthetic), the problem is widespread and cause psychological effects (Esbati 2008). research of Ahmadipour, Goodman and Sinai who showed that exercise "increase in power" positive effect. According to research carried out, corrective exercises favorable effects on muscle strength and improve the condition of the dorsal kyphosis have (Ahmadipour 2003, Goodman 2001, Sinaki 1999). On the other side, the medical treatment of the water is not merely a matter of today is taken into consideration, But in the past and widely throughout the world, water treatment considered And has quickly become one of Rehabilitation of Sports Therapists (Esfandyari 1998). Hydrotherapy (water, non-food use) is one of the oldest methods of treatment of disorders of bone and muscle (Mahdavejad, 1998) These exercises include activities and exercise, swimming and playing in water Hydrotherapy aimed at the prevention of various diseases of the locomotor and also help to improve or maintain the normal function of the body, including strength, muscular endurance, flexibility and mobility, relax the muscles, cardiovascular endurance, coordination at the right time for placed. In water, the intercostal muscles and diaphragm must work harder, thus strengthening the muscles involved in breathing (Hanson et al 2008). Floating in the water causes pressure on the spinal column can easily be controlled (Exeter et al., 1985; Ari yo shi et al., 1991) when the body moves in the water, the water resistance of the moving parts

that are causing creating more work for the muscles(Shojaodin 2008). Hydrotherapy leads to increased muscle strength and endurance, especially during intense muscular weakness when moving against the direction of water takes place.The water pressure on the limb comes to strengthen the weakened muscles.Hydrotherapy more resistance than airAnd physical properties of water and heat to improve or maintain range of motion plays an important role. Buoyant water reduces the compression forces on painful joints and joints that allow it to move more freely(Maghzi 1381, milian Coich 2004,Hanson et al1385). Silva's research on patients with osteoarthritis performed and revealedWater treatment compared to land-based exercise training is more effective for reducing pain in patients with osteoarthritis of the knee's range of motion(Ahmad pour, 1371 )Also on Esbati results achieved in patients with mechanical low back pain who Hydrotherapy increase the acidity of the spine flexible, offset by lower limb muscles, reduce pain and improve function model is significant (Esbati 1384). According to research carried out in the event of kyphosis and effectiveness of corrective exercises to strengthen the muscles that are weak,Kyphosis correction with respect to the benefits of hydrotherapy on strengthening the muscles, no study has examined the effect of hydrotherapy on this complication.Therefore, Considering to the adverse effects of kyphosis. Researcher is to help hydrotherapy period (the swimming backstroke) to investigate the influence Bdrmany opener on back muscles, flexibility to pay back.

## RESEARCH METHODOLOGY

Statistical population studied consisted of male students attending the summer school were Dehdasht city. These included 236 students and 18 students with kyphosis were purposively selected condition.These included 236 students and 18 students with kyphosis were purposively selected.New York and checker board test was used to evaluate kyphosis. Subjects were asked with a naked torso, the checkerboard pattern on the back side of the normal stand. Tester at a distance of 3 meters in front of the chair checker board only examined the symptom kyphosis (Sokhangoei 2009).Measurement of the back of the leg and back muscles was performed using a dynamometer. The sample is placed on a dynamometer system platform, so that the feet about 15 inches apart are parallel .Perfectly straight legs, and hands Dynamometer while those that are both internal rotation. Then tested without deviation to the side of the body and using only the muscles of the back, pulls the handle upward.In this test, the person must at all levels, to keep his starting position, the head and the foot is held vertically (Sayari, 1386, Sokhangoei, 1386). To assess the flexibility of the backbone of changed Schober test was used. The spinal processes of the seventh cervical vertebra C7 mark and then the last thoracic vertebra T12 spinal processes to identify and measure with a tape measure this distanceThe samples will perform spine extension and re-measure the distance and make clear the difference (Sokhangoei, 1386; Ahmad, 1378).To measure the range of motion of the shoulder( shoulder abduction )Goniometer mechanical means, a person is sitting or resting on the abdomen, while the humerus in neutral position. Goniometer put in the posterior shoulder joint, so that the Axis Goniometer (center) located under the arm appendages. A Goniometer arm parallel to the midline of the bodyspine regulated and the other arm is parallel to the long axis of the humerus posteriorly placed with its arm is displaced( Foley et al., 2003).

## TRAINING PROGRAM

In order to prevent damage and to help implement best the exercises, at the beginning of each session was 5 minutes to warm up. In doing warm-up of slow and fast running water in foot crawl and backAfter the warm-up exercises, stretching from public and private water was used for the upper extremities. Move the person to a wide pool backstroke (which was equivalent to ten repetitions for each hand ) performed.Swimming backstroke in this case is that the person is floating on his back. Hands up of the body, from the little finger along the front of the shoulders in water. When the hand enters the water, elbow bent at an angle of 90 degrees will. Then hand the elbows pulled away from the body and moves downward.A person during the the width pool, while the floating on his back and stretched out her hands to the head. This tension also takes about 30 seconds.Useful time to perform the exercise 20 minutes. Last 5 minutes of practice is devoted to the recovery.Followed by the public, and especially upper body stretching movements are doneAt this time, walking slowly in water with deep breathing.

## TIME AND DURATION OF THE EXERCISE

According to the research objectives, water treatment program was formulated four weeks. The subjects participated in three sessions per week training program. Useful minutes each session was 30 minutes.

## STATISTICAL METHOD

Analysis of THE collected data were analyzed using SPSS software. For comparison, the pre-test and post-

test, t-test was used for hydrotherapy program. The significance level for data analysis  $P=0/05$  is considered.

**RESULTS**

Chart (1). The t-test for comparison of back extensor muscles before and after Hydrotherapy

t-test			SD	Average	The number	Indicators
Sig	df	T Calculated	-	-	18	Extensor strength
0.001	17	-7.710	4.33	24.13	18	Pre-test
			4.30	41.86	18	Pos-test

At level  $P = 0/05$  is significant.

According to Table 1, Considering to the results of t-test, zero hypothesis is rejected. So Hydrotherapy extensor muscles on the back of significantly effect.

Table 2 results of the t test to compare the flexibility before and after Hydrotherapy

t-test			SD	Average	The number	Indicators
Sig	df	T Calculated	-	-	18	flexibility
0.001	17	-5.127	0.43	1.03	18	Pre-test
			0.69	1.86	18	Pos-test

At level  $P = 0 / 0.5$  is significant.

According to Chart (2) with respect to t is obtained, zero hypothesis is rejected. Hydrotherapy has a significant effect on the flexibility of the back muscles.

**DISCUSSION**

According to research findings are significant effect hydrotherapy on the back extensor muscles. In this (Foley 2003) determined that the Hydrotherapy increased quadriceps muscle strength. (Konlian 1999) stated that water therapy to increase muscle strength and endurance in patients with low back pain leads, Also (Bilberg 2005) in their study of patients with rheumatoid arthritis, stated that the warm water exercises increase muscle strength of the upper and lower body. Gieck 1999 ,Esbati 1385, Ar Yo Shi 1999)Stated that water training program to increase performance and reduce physical pain leadsThese results can be achieved by increasing muscle strength. Konlian have stated that following the weakness and muscle tightness, enabling tasks to different causes little pain.According to Wendy Pnrad editing program( Physiotherapist )patients who suffer from severe pain in joints due to their health conditions covered, need more time to do exercise therapy in waterUsually patients with severe joint pain exercises that can be done outside of the water and the need to bear weight. He explained that it is floating in the water to prevent excessive weightAnd patients can tolerate the pain without doing your sports sessionAs for the water treatment increases muscle strength. By doing exercises in water treatment, to increase the power of performing functional tasks and daily activities will create a basisDescription of expression, as well as research carried out, the findings of the study on the effect of water treatment on muscle strength confirmed. The findings also indicated that the flexibility of the hydrotherapy has a significant effectThis is because they can be created as a result of the increased mobility of the joints between the spine and soft tissues in the water, he said. In this context we refer to research Esbati, He showed that water treatment is effective in providing flexibility and the important point is thatIncrease between the first and among the most flexible form of intermediate and final session, and it showsThe rise of flexible foam started the first week, but gradually becomes Konlian also believes that exercising in water allows the patient full range of motion without weight-bearing jointsOn the spine move.( Bilberg 2005) in their study showed that the flexible foam of the Hydrotherapy increases the findings of the present study confirm. The present study was designed to meet short pectoral muscle and increase flexibility for the extension is done. At least 120 cm deep pool for water treatment is intended to be used to increase traction. The water temperature is about 29-30 ° C, immersion to improve flexibility and very good. Arshadi and his colleagues to increase range of motion as well as the water temperature was 29 degrees above the temperature of the water is recommended to draw, The effect of the temperature of Greek civilization has ever known. The temperature is mild dilatation of the vessels involved and relaxation, in addition to the decrease in the density.

## CONCLUSION

Sinaki based research (1996) on the relationship between the extensor muscles of the back muscles and thoracic kyphosis was shown that the negative correlation between the observed, The results show an increase in muscle strength and reduce the amount of kyphosis. Also Sinaki (1996) showed that high doses of extensor muscles of the lower thoracic. The Kia 2005 found that the rate of kyphosis in the extensor muscle strength and those who are associated with lower thoracic, The extensor muscles of the upper back. Arshadi (1385) also the relationship between the extensor muscle strength and flexibility to the spine kyphosis and lordosis and kyphosis and lordosis between the extensor muscles of the back and found a significant relationship And indicated that the extensor muscles of the back, is the best predictor of kyphosis. Since the study of water treatment on muscle strength is the most effective And according to research carried out by the kyphosis associated with the extensor muscles of the back, Maybe the Hydrotherapy can be effective in reducing kyphosis.

## REFERENCES

- 1.Ahmadzadeh,GH. (2007). Evaluate the performance of the flexor muscles of the spine and straight students, MSc thesis, University of Madras
- 2.Ahmadi pour.M.(2006). The effect of isometric exercises to increase muscle strength and extensor and flexor spine and back pain in students with low back pain
- 3.Ariyoshi M, Mautor, 1991. Aquatic exercise for lumbago, J Sport Sci. 10:496-503.
- 4.Auxter, 1985. Daivid and pyter, jeam. Principles and method of adapted physical education and recreation, Mosby, st, Lous.
- 5.Arshadi,R.(2008). The relationship between the extensor muscle strength and flexibility to the spine kyphosis and lordosis, MS Thesis, Tehran University
- 6.Bandolier, 1996. Ankylosing Spondylitis: Kwoing what to do for the best, Healt Care Industry, Agu.
- 7.Behbodi,L.(2009). Assess the impact of a specific corrective actions on FVC kyphosis 15- 18 female students Karaj city, MA thesis, Tehran University.
- 8.Belman, 1980.Mittman.Ventilatory muscle training improvesExercise capacity in copd patients.Am.ReV.Respir.Disease, 121-273.
- 9.Bilberg A, Ahlmen M, Mannerkorpi K, 2005.Moderately intensive exercise in a temperate pool for patients with rheumatoid arthritis:a randomized control stady,Rheumatology Advance Access , 1-7.
- 10.Esbati.N.(2008) The effect of the water treatment program for patients with low back pain, MS Thesis, University of Mazandaran.
- 11.Foley A, Halber J, Hewitt T, Crotty M, 2003. Dose hydrotherapy improve strength and physical function in patient with osteoarthritis-a randomized controlled trial comparing a gym based and a hydrotherapy based strengthening programme , Annals of the Reumatic Disease.
- 12.Gieck ,joeh. Susan ,a ,for man.e.saliba ,1999. Evaluation and correction of common postural dysfunctions in the athlete, the journal of athletetreaning.
- 13.Goodman c, hrysomallis c, 2001.A review of resistance exercise and posture realignment, journal of strength and condition research
- 14.Konlian. C, 1999. Aquatic therapy: making a wave in the treatment of low back injuries, or thopaedic nursing, 18(1): 8-11.
- 15.Milenkovic SM,Kocijancic RI,Belojevic GA.,2004.Left handedness and spine deformities in adolescence.Eur Epidemiol,19(10)72-967.
- 16.Robinson, Kgelgaard, 1982.Improvement in Ventilatory muscle function with running.Applied physiology, 1400-1450
- 17.Sokhnaghoei.Y.(2009). The effect of some of the performance indicators for postural correction, energy and fitness in adolescent girls with kyphosis, PhD Thesis, University of Social Welfare and Rehabilitation Sciences.
- 18.Sayari,A.(2009). Effects of eight weeks of training reform of the spirometric indices with kyphosis students of Islamic Azad University of Abadan.
- 19.Silva LE, Valim V, Pessanha AP, Oliveira LM, Myamoto S, Jones A, Natour J, 2008.Hydrotherapy versus conventional land basedexercise for the management of patients with osteoarthritis of the knee;arandomized clinical trial , Phys ther.
- 20.Sinaki m, Itoi E , John W Bergstralh , Erik J , 1996.Correlation of back extensor strength with thorasik kyphosis and lumbar lordosis in strogen –dificient women,AM.J Phys Med &Rehabil
- 21.Weiss HR, 1991.The effect of an excise program on vital capacity and rib mobility in patients with idopathic scoliosis.The physician and sports medicine, -60-65.