

**THE EFFECTS OF A 12-WEEK-SWIMMING TRAINING ON
SOME ANTHROPOMETRIC PARAMETERS AND HAND GRIP
STRENGTH OF FEMALE ELEMENTARY SCHOOL STUDENTS**

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Key words: swimming, exercise, handgrip.

Abstract:

Purpose: Regular exercise is to increase children's physical and functional capacities. Significant degree of physical working capacity in children with growth changes. Developmental age children tend to grow faster than the body parts of the body. This period of major changes occur in the children's motor skills. The purpose of this study, that girls swimming training as height, weight, and in particular to investigate whether the effect of the arms and hand grip strength of the development. **Methods:** Group of subjects trained in swimming for 12 weeks (40), do not exercise any control group (40) generated a total of 80 female students. Each of the two groups were evaluated by pre-test and post-test measurements.

Results: The pre-test and post-test measurements, the girls swimming training on weight, front arm circumference, Handgrip right, there were significant differences between the values of the left Handgrip.

Conclusions: The results obtained in the experimental group compared to the control group of girls, especially the front arm circumference and hand grip strength suggests that more rapid development.

Introduction

Besides being a key manifestation of general health and physical fitness, having a good body composition, size and structure has utmost significance in reaching an optimal physical performance (Açıkada C, 1990; Boileau and Horswill, 2000; Heyward V.H, 1998). In swimming, where the gravity is almost zero, all muscles of the swimmer work in harmony. Since swimming is performed against the resistance of water, it increases the strength of body without any harm. At the same time, as one of the rare sports used in physical therapy, it improves muscles in a

balanced and symmetrical way (Bozdoğan, A. 2006; Anonymous (www.alternatifsporlar.net/yüzme).

The aim of this study is to investigate the effects of a 12-week-swimming training on some anthropometric parameters and handgrip strength of female elementary school students.

Tools and method:

Choosing the participants:

80 voluntary female students were chosen randomly from elementary school grades. 40 of them, with the average age of $10,19 \pm 0,79$ and the average height of $137,04 \pm 13,08$, constituted the experimental group, and the other 40, with the average age of $10,50 \pm 1,40$ and height of $139,89 \pm 13$ cm, acted as the control group.

Measuring the body weight:

The body weights of the participants were taken with an electronic scale with 0.1 kg sensitivity. The participants were bare feet, wearing only shorts and a t-shirt (Otman A.S. et. al. 1995).

Body mass index:

It was calculated by dividing the body weight in kilograms (kg) by the square of the participants' height in meters (kg/m^2).

Circumference Measurements:

Anthropometric tape measure with 1mm sensitivity was used to measure the participants' biceps in flexion and extension together with the forearm circumference (İkiz İ. et. al. 1995).

Measuring the Hand Grip Strength:

Measuring was done with Takei Hand Grip Dynamometer. The reading was done after a five-minute warm-up as the volunteers were standing up with their arms unbent in a 45° angle and not touching their bodies. The procedure was repeated three times for the right and left hands, and the highest value is used as the hand grip strength value (Tamer, K. 2000).

Statistical Analysis

The raw data derived from the measurement was processed by SPSS-16 package program. In order to examine the differences between the two independent groups, i.e. Experimental and Control groups, Student's T test was conducted on independent groups. The differences between the groups' preliminary and final test results were evaluated by Dependent t test. Significance level was chosen as 0.05 and 0.01 to interpret the difference between the variables.

Parameters	Measurements	Experimental Group (n=40)	Control Group (n=40)	** p
Age	-	10,19±0,79	10,50±1,40	-
Height (cm)	-	137,04±13,08	139,89±13	-
Weight (kg)	Pre Test	37,16±12,84	36,88±11,40	0,895
	Post Test	41,92±12,92	37,26±12,65	0,039
	*p	0,003	0,787	
BMI	Pre Test	19,39±3,75	18,44±3,26	0,116
	Post Test	20,63±3,71	18,46±3,45	0,001
	*p	0,065	0,966	
Flex. Biceps	Pre Test	23,70±3,26	22,21±2,82	0,005
	Post Test	22,76±3,29	21,71±3,35	0,076
	*p	0,060	0,169	
Ext. Biceps	Pre Test	21,74±2,98	20,63±2,75	0,027
	Post Test	21,61±2,82	20,49±3,04	0,034
	*p	0,762	0,626	
Front arm circumference	Pre Test	20,53±2,37	20,99±4,64	0,520
	Post Test	21,23±2,29	19,48±4,93	0,022
	*p	0,036	0,017	
Handgrip (right)	Pre Test	24,93±9,82	28,38±10,65	0,061
	Post Test	33,02±15,29	28,87±14,42	0,111
	*p	0,000	0,642	
Handgrip (left)	Pre Test	21,48±9,18	24,06±9,07	0,110
	Post Test	25,85±12,78	24,16±13,09	0,461
	*p	0,007	0,873	

Table:1 Comparison of Experimental and Control Group Measurement Parameters

Findings:

After the measurements and comparison of the experimental and control groups' averages, a significant increase ($p < 0.01$) was observed in the experimental group's preliminary and final weight test values: the former being $37,16 \pm 12,84$ and the latter $41,92 \pm 12,92$. A significant increase ($p < 0,05$) was observed in the preliminary and final test values of Forearm Circumference values from $20,53 \pm 2,37$ to $21,23 \pm 2,29$.

There was a significant increase ($p < 0,01$) in the preliminary and final test values of left hand grip from $24,93 \pm 9,82$ to $33,02 \pm 15,29$. There was also a significant increase ($p < 0,01$) in the preliminary and final test values of

right hand grip from 21,48±9,18 to 25,85±12,78. No significant change was observed between the preliminary and final test values of the experimental grup's BMI, Flex. Biceps and Ext. Biceps ($p>0,05$). Similary, no significant change was detected between the control group's preliminary and final test average measures ($p>0,05$). After comparing the average measures of the experimental and control group, a significant difference was identified between the averages of final Weight tests, final BMI tests, preliminary Flex. Biceps tests and Ext. Biceps preliminary and final tests ($p<0,05$) (Table.1)

Conclusion:

In conclusion, we can say that the 12-week swimming training affected the anthropometric parameters and hand grip strength of male elementary school students. We believe that this stems from the unique qualities of the swimming activity.

Bibliography:

1. AÇIKADA C., (1990).. Sporcularda Vücut Kompozisyonu Parametrelerinin İncelenmesi. Marmara Üniversitesi, Doktora Tezi, İstanbul.
2. ANONİM(www.alternatifsporlar.net/yuzme), Access date:23-09-2009
3. BOÏLEAU R.A. AND HORSWILL, C.A., (2000).. Body Composition in Sports: Measurement and Applications for Weight Loss and Gain. "Exercise and Sport Science" (Ed. E.W., Garrett and D.T., Kirkendall)'da, Lippincott Williams ve Wilkins, s. 319-338.
4. BOZDOĞAN A., (2006)..Yüzme, Morpa Kültür Yayınları, İstanbul, s:67.
5. HEYWARD V.H., (1998).. Advanced Fitness Assessment & Exercise Prescription. Third Edition, Human Kinetics, USA.
6. İKİZ İ, YILMAZ 0, AKCA C, ÇANKAYA C. (1995), 633. Kırkpınar Yağlı Güreşlerine Katılan Güreşçilerin Ekstremitelerine Ait Bazı Antropometrik Ölçümler. Morfoloji Dergisi. 3(2): 16-9.

Titlu: Efectele unei perioade de instruire de 12 saptamani de înot asupra unor parametri antropometrici și a forței de strângere a a mâinii a elevilor din învățământul primar.

Cuvinte cheie: înot, execuții, forță de strângere.

Rezumat: Scopul: exerciții fizice regulate cresc abilitățile fizice și funcționale ale copiilor. În mod semnificativ capacitatea de muncă fizică variază la copiii cu schimbări de creștere. Vârsta de dezvoltare a copiilor tinde să crească mai repede decât părțile corpului. Această perioadă de schimbări majore se răsfrânge și în abilitățile motorii ale copiilor. Scopul acestui studiu, este să observe influența natației în ceea ce privește înălțimea, greutatea, și mai ales să examineze dacă are efect și la dezvoltarea forței de prindere.

Titre: Les effets d'une formation 12 semaines de baignade sur certains paramètres anthropométriques et poignée de force étudiantes du primaire.

Mots clés: natation, l'exercice, manchons.

Résumé: Objectif: L'exercice régulier est d'augmenter les capacités physiques et fonctionnelles des enfants. De façon significative la capacité de travail physique chez les enfants avec des changements de croissance. Les enfants de l'âge de développement ont tendance à croître plus vite que les parties du corps. Cette période de grands changements se produisent dans les habiletés motrices des enfants. Le but de cette étude, que les filles formation natation comme la hauteur, le poids, et en particulier d'examiner si l'effet des armes et force de préhension du développement.