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Comparing the Effects of Eight-Week Corrective Selective Exercises on Kyphosis Abnormality Prior to and Following Puberty among the Girls Attending High Schools in Boroojerd, Lorestan.

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Abstract

The aim of this study was to compare the effects of eight weeks selected corrective exercise on kyphosis deformity before and after puberty in girls is Boroojerd city. According to the study, pre-test and post-test experimental and control groups, and independent and dependent variable is the type of quasi-experimental research survey of all elementary and secondary school students will form Boroojerd city. Using cluster sampling - a random number 1200 from 7 schools (450 schools, 750 elementary students) with the use of raster lines were evaluated plummet a total of 44 patients (24 person puberty prepubescent and 20 person after maturity) with kyphosis deformity, were selected as research subjects after obtaining informed consent and completed questionnaires, their kyphosis using flexible ruler and balance range to be measured by the stork balance test Then the four groups, 24 person before maturity (12 person group control and 12 group experimental), 20 person after maturity(10 person group control, 10 person group experimental) were classified then subjects experimental group eight weeks, 3 sessions a week, each session 30-45 minutes the program of corrective exercises (stretching and strengthening) were after completion of training, all subjects (control groups and Experimental before and after puberty) the tests were And test results independent T-test and dependent t- test the analysis. The result showed That There was no signification difference between 8 weeks corrective training on kyphosis deformity (p=0.12) pre-and post-pubertal girls students. But the practice effect on the improvement of kyphosis ago (p = 0.02) and after puberty (0.03) girls students had a significant impact.

Keyword: *Kyphosis, Corrective exercises, puberty, Female students.*

1 Introduction

Backbone is one of the vital limbs in human body and its position in human body is dependent on effective performance of limbs and ligaments, so any weakness in control limbs of backbones has inappropriate effect on body structure. If these mechanical abnormalities would not attend, they present as fixed abnormalities and without modify. (Shahmoradi, 2000). One of these abnormalities is Kyphos. Kyphos is changing in sagittal that is created because of increasing natural curvature in human back. Usually kyphos is distinguished by clinical studies and side radiography of chins. In natural mode, back curvature of chains is 20-40 degree and if it is more than 40, it is a kind of deformity. Based on correction, kyphos is divided to two types including performative and structural. Performative or reversible types can be correct by corrective exercises and using various corsets, but to correcting structural or irreversible type, it needs surgery. Causes of Kyphos similar to Scoliosis (other type of backbone abnormality) are because of bad habits such as: standing in curve mode, bad walking, sleeping and bad exercises, mental diseases, long height, none standard desks and weakness of back limbs and it gradually leads to a series of impositions such as shoulder rondure, short height, breathing abnormality and abnormality in limb equality and backache. (Sokhangoee, 2009). Among girls, this component is more extended because of physiological changes after puberty and there is probability of its increasing in future. Corrective movements are a pack of specific exercises that are used to correcting physical abnormalities such as kyphos and scoliosis and lordosis by creating equality in various limbs of body by powerful exercises and flexibility. (Rahnama et al, 2008). Since corrective exercises are including power exercises and flexibility and doing it necessitate physical activity, so in many scientific papers, it was introduced as one of the corrective methods to improving the human height و (Karter, 2002).

2 Review of literature

Many studies were done about present subject and findings of them are different in some cases. Mahdavinegad, (1991), studied the effect of exercise on correcting abnormalities in backbone if 11-14 years students and he found a meaningful relationship between exercises and improving these abnormalities.in another study, Seydi, (2010), compared the effect of 10 sessions of exercises on kyphos abnormalities and its case study were 56 cases with 20 years mean. He compared control and treatment groups and found that these exercises have effect on improving abnormalities. Also we can refer to study of Rahnama et al, (2008). These researchers studied the effect of 8 weeks exercise on conditions of backbones among 150 students. Naderi et al, (20080, in a study titled: the effect of 8 weeks exercises on backbone kyphos among students of Arak University and found that these exercises have not meaningful effect on improving kyphos.

Research Method:

The present study is semi- experimental and it is including two groups including control and treatment groups. The case study in the present study is 1200 cases of Broojerd students that were selected from 4 elementary schools and four high schools of Broojerd during 2010-2011. At first stage they were studied by New York test to measuring backbone curvature. 44 cases of them were suffered from kyphos and have not experience to damaging in their backbones and also they not consumed any drug. At first stage they complete questionnaire and satisfaction sheet. 24 cases of them were in time of before puberty and were divided to groups as control and treatment groups. Also 20 cases of high school students were selected and were divided to two groups as control and treatment groups.

Research instruments:

Instruments of collecting data in the present study are: 1- using chest page: to measuring kyphos, 2- balance: to measuring weight, 3- ruler: to measuring backbone kyphos 4- meter 5- Marker 6-questionaire: to recording individual data. Determining kyphos was done by chest page in a way that cases studies were inserted before this page and were observed in 2 meter distance. In

middle of chest page, there is a line that can be considered as balance line. In natural people this line is in foot ankle and it reach to ear and shoulder, But in people suffered from kyphos, this line not reach to ear and shoulder, (Sokhangoee, 2009). This test was used to distinguish cases that suffered from kyphos. Determining the angle of kyphos was done by ruler and 4^{th} and 12^{th} chains of backbone were signed and then curvature between them was measured. With connecting these two lines, the curvature of backbone was obtained. Finally the obtained data were computed by following formula:

e=4ArcTan 2h>40. To obtaining more reliability, the measuring was repeated three times and the mean of obtained angle was considered and angle equal to 40 degree or more, was considered as kyphos, (Daneshmandi, et al, 2001). The program of corrective exercises was done for 8 weeks and each week 3 sessions and each session for 1 hour. To analyzing data the SPSS16 software was used and then inferential statistics was used to measuring independent and dependent t and to analyzing data. Statistical computations were done by SPSS in meaningful level of .05.

Research importance:

Based on various studies, a considerable number of female students suffer from kyphos that their number is increasing. So it is necessary that this subject must be study in a deep way and scientific methods must identify about this subject. Indeed about children and adolescent that are in growing and it must be study in a serious way, because in these ages the physic of people is forming and so if the body forming is following with abnormalities, these abnormalities are in body till adult age.

Research questions:

In the present paper we want to compare the effect of eight weeks corrective exercise on kyphos suffer after and before puberty in female students of Broojerd.

1-Main questions:

Is there any meaningful difference in effects of 8 weeks corrective exercises on Kyphos among before and after puberty of female students in Broojerd?

2-Side Questions:

-what is effect of 8 weeks of corrective exercises on kyphos in female's before puberty in students of Broojerd city?

- What is effect of 8 weeks of corrective exercises on kyphos in female's after puberty in students of Broojerd city?

Research hypothesis:

1-main hypothesis: there is a meaningful difference between 8 weeks of effect of corrective exercises on kyphos after and before puberty in female students of Broojerd city.

2-Side hypothesis:

-8 weeks of corrective exercises have meaningful effect on Kyphos among female students before puberty in Broojerd

-8 weeks of corrective exercises have meaningful effect on Kyphos among female students before puberty in Broojerd

Findings:

Descriptive data about height, weight and age and kyphos rate were indicated in table 1.

Table 1: descriptive data about variables of age, weight and height of cases study

	ı and SD	Group	variable
.62±11.75	Before puberty	experiment	Age (years0
15.8±.42	After puberty		
11.75±.45	Before puberty	control	
15.9±.74	After puberty		
159.1±8.5	Before puberty	experiment	height
161.2±6.7	After puberty		
156.3±8.5	Before puberty	control	
162.2±	After puberty		
40.7±8.1	Before puberty	experiment	weight
56.3±9.5	After puberty		
9.9±45.3	Before puberty	control	
54.1±4.7	After puberty		

Table 1 shows the frequency distribution of age, weight and height and as it was seen, all cases have similar characters.

Table 2: descriptive data about kyphos degree of variables after and before puberty in two stages pf pretest and post test

Mean and SD		group	
2/8±47/5	Before puberty	experiment	Kyphos degree in pretest
6/4±50/9	After puberty		
2/4±48/8	Before puberty	control	
4/3±50/6	After puberty		
3/5±46/8	Before puberty	experiment	Kyphos Post test
6/7±50/4	After puberty		
2/8±48/9	Before puberty	control	
5/7±49/5	After puberty		

Table 2 indicates descriptive data in relation to kyphos degree of variables of two groups of control and experiment groups in two stages of pre puberty and post puberty. As it was seen the scores of mean and SD of variables in pretest and posttest has not difference

Table 3: comparing the rate of kyphos of variables in pre puberty and post puberty by t-test

Meaningful level	Independent t	Mean and SD	group	
0/12	-1/6	3/5±46/7	Before puberty	experiment
		6/6±50/4	After puberty	
0/78	-0/28	2/8±48/9	Before puberty	control
		5/7±49/5	After puberty	

The comparing the rate of changes between two stages of pretest and posttest in two groups before and after puberty shows that regarding to independent t, it was show that in -1.6 and meaningful level of .12, we can concluded that there is not meaningful relationship between the 8 weeks exercise and improving kyphos after and before puberty. Also there was not meaningful difference between control and experiment group.

Table 4: comparing the rate of variable kyphos before puberty by dependent t.

Meaningful level	Dependent t	Change rate	Mean and SD		
0/02	2/59	-1/47	2/8±47/5	pretest	Experimental before puberty
			3/5±46/8	Post test	
0/38	-0/92	+0/02	2/5±48/8	pretest	Control, before puberty
			2/8±48/9	Post test	

In study of pretest mean before puberty, a decreasing was observed equal to 2.59 that regarding to rate of t it was observed that 2.59 and meaningful level of 0.02 was meaningful.

Table 5: comparing to rate of kyphos of variables in after puberty and by using dependent t

Meaningful level	Dependent t	Change rate	Mean and SD	stage	group
.03	2.5	-1	6/4±50/9	Pre test	Experiment after puberty
			6/7±50/4	Post test	
.3	1.1	-2.2	4/3±50/6	pretest	Control after puberty
			5/7±49/5	Post test	

In the study of mean of pretest and posttest in experimental group in age of after puberty, a decreasing equal to 1 percent was observed and regarding to observed t and 2.5 and meaningful level of .03 had a meaningful decrease. And so it can be said that similar to second hypothesis, the first hypothesis was confirmed and there was not a meaningful relationship between 8 weeks exercise and improving kyphos.

3 Discussion

As it was referred the aim of the present research is comparing the effects of 8 weeks excursuses of corrective exercises on abnormality among students the comparing of 8 weeks on abnormality of kyphos among female students before and after puberty. The results indicated that the rate of abnormality of kyphos in females after and before puberty was decreased.

Table 1 shows the frequency distribution of age, weight and height and as it was seen, all cases have similar characters. Table 2 indicates descriptive data in relation to kyphos degree of variables of two groups of control and experiment groups in two stages of pre puberty and post puberty. As it was seen the scores of mean and SD of variables in pretest and posttest has not difference The comparing the rate of changes between two stages of pretest and posttest in two groups before and after puberty shows that regarding to independent t, it was show that in -1.6 and meaningful level of .12, we can concluded that there is not meaningful relationship between the 8 weeks exercise and improving kyphos after and before puberty. Also there was not meaningful difference between control and experiment group. In study of pretest mean before puberty, a decreasing was observed equal to 2.59 that regarding to rate of t it was observed that 2.59 and meaningful level of 0.02 was meaningful. In the study of mean of pretest and posttest in experimental group in age of after puberty, a decreasing equal to 1 percent was observed and regarding to observed t and 2.5 and meaningful level of .03 had a meaningful decrease. And so it can be said that similar to second hypothesis, the first hypothesis was confirmed and there was not a meaningful relationship between 8 weeks exercise and improving kyphos.

4 Conclusion

The results of the present study indicated that during 8 weeks of exercises were indicated and lead to decreasing the rate of kyphos angle among female students before puberty, but these periods had not a considerable decreasing. If the females leave their exercises their mode turn to primary mode, And so it can be said that the exercise have effect on improving kyphos. Performative or reversible types can be correct by corrective exercises and using various corsets, but to correcting structural or irreversible type, it needs surgery. Causes of Kyphos similar to Scoliosis (other type of backbone abnormality) are because of bad habits such as: standing in curve mode, bad walking, sleeping and bad exercises, mental diseases, long height, none standard desks and weakness of back limbs and it gradually leads to a series of impositions such as shoulder roundure, short height, breathing abnormality and abnormality in limb equality and backache. (Sokhangoee, 2009). Among girls, this component is more extended because of physiological changes after puberty and there is probability of its increasing in future.

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