

## The Relationships between the upper extremity posture disorders and shyness in secondary school students

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### Abstract

Good posture and body position plays a vital role in mental and physical health. The goal of the present research was to study the relationships between the upper extremity posture disorders and shyness in secondary school students. The statistical group composed of 17974 male students in middle school of Ardebil city, among which 378 students were selected as a sample group to participate in our research. This study is an analytical descriptive one and the results indicate the abnormality of upper- skeleton of students. Their photos were taken in three ways; computer software was used to analyze the posture of students (Ergo Therapy). In the study a questionnaire of 44 items were used. The mean values, standard deviation and frequency percent were obtained through descriptive statistical methods, then the differences were resulted through deductive statistics including Chi-square Test ( $\chi^2$ ) and Anova method by Spss 20 in  $\leq 0.05$  meaningful level. There is a significant correlation between shyness and the upper extremity posture disorders prevalence. The mean value of students' shyness with the upper extremity posture disorders is higher than that of students who lack any the upper extremity posture disorders. The results of this study indicate that the mean value of shyness in students with the trunk abnormality is 73.79%.

**Key words:** upper extremity posture disorders, shyness, secondary school students, students.

### Introduction

In recent decades, there have been great advancements in psychology and corrective exercises and these concepts have been regarded a lot more than before. Nowadays, in countries renowned in sports, these fields play an important role both in function and in research. Corrective movements are of the important branches of physical education that deal with correcting postural deformities and after recognizing the type of deformity, they try to treat the deformity by recommending physical activities and special sports exercises.

The false pattern of sitting, standing, walking and carrying objects, wearing improper dressing and clothes, disease, inheritance, job positions, culture and anthropometry may reduce growth rate and make disorders in growth. Disorder and weakness in growth may followed by posture disorders and one may miss his optimum body posture. These weaknesses weaken automatically the other organs of body such as blood circulation and respiratory systems.

Howadays, in developed countries comprehensive and precise programs have been designed in order to define people the good physical posture, so that authorities of industrials and manufactures of required things such as table, chair, sofa, clothes, etc. Consider observing scientific standards around physical posture as their absolute priority. This is as an importance of human's physical posture. Hence, knowing and studying common reasons and factors of abnormalities and disorders of students seem an inevitable necessity.

The conditions of spine, like other body parts, follow the principles that govern human body. This column that forms the central axis of human body extends from the skull base to the small of the back and is made up of a series of vertebrae that are set upon one another and are connected by means of sinews and fibrocartilaginous discs (Daneshmandi, 2004).

Deformities of the spinal column are usually manifested as scoliosis, kyphosis, and lordosis. Transformation of different parts of spinal column leads to deviation in bones and commissures based on where they are located. For instance, weakness of anterior part of vertebrae and back muscles leads to kyphosis and lateral and irregular curvature of vertebrae leads to scoliosis. The most prevalent of these deformities is scoliosis; kyphosis and lordosis come later (Alizadeh et al., 1999).

Scoliosis is a disease and can be analyzed from a medical perspective. Its cause is not exactly known, but congenital factors are important in its development. Scoliosis may develop in dorsal or dorsal-lumbar area, but the most prevalent cases are in dorsal area with curvature to the right (Sokhangouee, 1999).

Many studies have shown that early knowing spine disorders (scoliosis, kyphosis, hyperlordosis, Drooping shoulders, pelvic obliquity) which are prevalence in childhood, may prevent their advancing and appearing serious transformations (Dickson, 1895; Dvonch et al., 1990; Ferris et al., 1988; Hansen, 1994; Lehner, 1990).

Temporary scoliosis is caused by imbalance or weakness of muscles around spinal column which can be reflexive or due to specific body postures. Usually scoliosis manifests before the age of 14 and its prevalence is 1.9% (Kasehf, 2001).

Andrew Hendrik (2006) carried out a research on 10-year-old students in South Africa and children having scoliosis were screened using Adam's Position and Erect Position tests. The results showed that scoliosis is more prevalent in primary schools and children who live under poorer economic conditions have a higher level of scoliosis than others.

Payne et al. (1997) studied the psychological impact of scoliosis and whether gender plays a role. The samples of this research included adolescents between 12-18 years of age and with scoliosis.

Henderson and Zimbardo (1996) described that shyness is basically shrinking back from life that weakens the bonds of human connection. Many students reports freezing encounters which lowers self-esteem and interferes with motivation and pro activity that leads to an avoidant and passive interaction style. The effects of shyness on the self-esteem of students have usually been observed highly negative.

In a screening plan of schools which is done on 316.000 students in Delaware of U.S.A from 1962 to 1975, it was shown that prevalence of scoliosis was 0.19% which was significantly less than results of Dr. Schandes and other related studies in northern American. Another study conducted on 14.900 children in Montreal, Canada showed 1.6% prevalence of higher than 10 degrees. A similar study conducted in Scotland showed 1.3 per thousand in children younger than 8 years-old and 1.7 per thousand in children older than 8 years-old. In early 1970s, Lancetin performed a great screening program on 1.5 million people in Minnesota, and finally evaluated scoliosis prevalence as 1.1% (Dvonch et al., 1990; Yawn, et al., 2000). Statistical results of some countries are: Japan: 1.92%; Greek: 2.7%; Southern Africa: 1.66%; Sweden: 1.9%; Finland: 4.1% Denmark: 14.3% (Goldberg, 1995; Grossman et al., 1995; Sugita, 2000; Willner et al., 1982).

Limited studies showed the scoliosis prevalence for 15-years-old girls as 4 per thousand and 1 per thousand for 9-years-old girls and 9 per thousand for 11-15 years-old boys (EbrahimAstaneh, 1997; NazmAra, 1993).

### **Materials and Methods**

The statistical population consisted of 17974 male students of the middle schools in Ardabil 378 students, ranging from 11-16 years old, were selected as samples using the Morgan Table. First, a list of middle schools of Ardebil was prepared to select the experimental group was randomly selected in order based on student population.

In this study, sampling and how performing the experiment and project was explained for experimental group after selecting them.

This study is a descriptive-analytical that was done in a field method. Also, regarding the time duration, conducting the research is cross-sectional and practical according to the obtained results indicating posture abnormalities in upper organs of students and their relation to shyness.

According to the adaptive plan and observing a few tips explained for them, the experimental group completed the agreement form and a questionnaire containing general information including first and last name, sleeping position and field of sport. Then their individual characteristics measured such as age and weight in which a normal digital scale was used and a normal tapeline was used to measure their height, then their photos were taken by means of a digital camera (5 omega pixel Canon) in three ways of posterior, lateral and anterior standing position. Finally, a computer software (Ergo Therapy) was used to analyze students' physical posture (Forwarded head, Scoliosis, wry neck, Drooping shoulders, Kyphosis, Hyper lordosis, Flat upper back, Flat lower back, Kyphosis and Hyper Lordosis).

A 44-item questionnaire was used to measure shyness. It consists of Likert 5-scale (never, rarely, sometimes, most of the time, always). The questionnaire reliability was reported through 0.8 Cronbach's Alpha and its validity was calculated by halving into odd and even of 0.7 which was significant at (P<0.0001) and the reliability was a re-experimenting one which was significant by re-distribution of questionnaire after 3 weeks 0.97 at (P<0.0001) level.

After collecting required information, K-S test was used to measure the normality of data distribution and mean, standard deviation and frequency percent were extracted by descriptive statistic methods and differences were resulted through deductive statistic including Chi-square Test ( $\chi^2$ ), Anova.

### Results

In this section, after measuring skeletal disorders and shyness of students the following results were obtained and had been presented in table 1 to 6:

Table 1, shows that the mean age for participants is 13.39 (years old) and height mean is 150 (cm) and weight mean is 40.51 (kg).

**Table 1: The results of the individual characteristics of students**

Factors	N	Minimum	Maximum	Average	St. deviation
Age	378	11.00	16.00	13.93	7.00
Weight	378	23.00	70.00	40.51	8.60
Height	378	1.29	1.80	1.50	.09

Table 2, shows the results of descriptive statistics. The general prevalence of skeletal abnormalities was 64.6% which according to frequency percent were: drooping shoulders was 64.6%; hyper lordosis, 51.3%; scoliosis, 24.3%; forwarded head, 20.6%; Kyphosis, 2.4%; wry neck, 15.1%; flat lower back, 2.9%; Kyphosis and hyper lordosis, 15.9%; flat upper back, 1.3%;

**Table 2: The rate of the upper extremity posture disorders of students**

upper extremity posture disorders	Percentage of abnormality holders	Percent of owners without abnormality
Scoliosis	24.3	75.7
Wry Neck	15.1	84.9
Forward Head	20.6	79.4
Hyper Lordosis	51.3	48.7
Flat Lower Back	2.9	97.1
Kyphosis And Hyper Lordosis	15.9	84.1
Kyphosis	2.4	97.6
Drooping shoulders	64.6	35.4
Flat Upper Back	1.3	98.7

Table 3, shows the results of descriptive statistics, that prevalence of shyness according to the frequency percent is: Flat Upper Back, 96.80%; Kyphosis, 95.77%; flat lower back, 92.09%; scoliosis, 84.13%; wry neck, 82.89%; forwarded head, 79.44%; Kyphosis And Hyper Lordosis, 76.21%; drooping shoulders 75.45%; hyper lordosis, 74.27%.

**Table 3: The relationship between shyness and the upper extremity posture disorder**

Skeletal Disorders	Average	St. deviation
Scoliosis	84.13	19.93
Wry Neck	82.89	20.51
Forward Head	79.44	20.62
Hyper Lordosis	74.27	18.19
Flat Lower Back	92.09	16.80
Kyphosis And Hyper Lordosis	76.21	16.26
Kyphosis	95.77	15.18
Drooping shoulders	75.45	18.08
Flat Upper Back	96.80	39.63

Table 4, shows that in studied subjects, the prevalence rate of disorders for upper part of the body is 93.9%.

**Table 4: Prevalence rate of abnormalities in trunk part and Without abnormality male students' body**

Region	N	Percent	Valid Percent	Cumulative frequency percent
Skeletal Disorders				
Without abnormality	23	6.1	6.1	6.1
Top	355	93.9	93.9	100.0
Total	378	100.0	100.0	

Table 5, shows that in the studied subjects, the mean value of shyness prevalence in students with upper part of the body (trunk), are 73.79.

**Table 5: The prevalence rate of shyness in students with the upper extremity posture disorders**

Region	N	Average	St. deviation	Std. Error	95% Confidence Interval for mean		Minimum	Maximum
					Lower Bound	Upper Bound		
					Skeletal Disorders			
Without abnormality	23	67.11	19.47	6.08	53.33	80.90	51.00	114.00
Top	355	73.79	15.98	1.25	71.31	76.26	52.00	128.00
Total	378	73.38	17.72	1.24	69.88	73.40	51.00	128.00

Referring to table 6, the mean value of shyness in students who lack the upper extremity posture abnormalities is less than students with skeletal abnormalities. In the other words, mean value of shyness in students with skeletal abnormalities is higher than students who lack skeletal abnormalities ( $P < 0.05$ ). The results from this study show that mean value of shyness in students with trunk abnormalities is 73.79% ( $P < 0.05$ ).

**Table 6: Shyness and posture of the binary (double) comparison analysis**

(I) Top. Down	(J) Top. Down	Average difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Without abnormality	Top	-8.044	4.34	.065	-16.59	.50
Top	Without abnormality	8.04	4.34	.065	-.5086	16.59

### Discussion and Conclusion

The purpose of this study was The Relationships between the upper extremity posture disorders and shyness in secondary school students. The results of the research showed that 64.6% of experimental group suffered from at least one posture abnormality which is in consistent with a conducted research by Heidari Nik entitled by "analysis of posture abnormalities of students studying at middle school of Komeijan city" 99% of subjects suffered from at least one posture abnormality and this result is proved (Heidari, 2007). In a study by Manshadi et al., entitled by "Diorders prevalence of Kyphosis and scoliosis in students of high school in Tehran" the general prevalence of Kyphosis and scoliosis was 46.3% (Manshadi, 2003). This value was resulted in Netherlands on 11-years-old children as 48.7% (Kratenova et al., 1992). In Nissinen study also 20% studied subjects were of complete symmetry in Kyphosis (Nissinen et al., 1983). However, another study showed that the rate of Kyphosis asymmetry was 25% (Grossman et al., 1995). The above observed differences are related to differences in race, culture, anthropometric and geography as well as differences in the ways of measuring used tools sensitivity and studied age group.

In this study, the highest prevalence of abnormalities was related to drooping shoulders with 64.6%, hyper lordosis 51.3% and the lowest prevalence of abnormalities is related to flat upper back with 1.3%, which is in consistent with the results of Heidari Nik including the highest prevalence abnormality kyphosis, drooping shoulders, with 69 and 63% respectively, and the lowest prevalence abnormality was observed in flat upper back with 1.6% respectively. Fathi and Rezai (2010), the drooping shoulders rate 21.80%, daneshmandi et al., (2004) was found to be 31.65% rate lower shoulder. This result was consistent with the research result of (Heidari Nik, 2007).

Goal of this study was the Relationships between the upper extremity posture disorders and shyness in secondary school students and the results showed there were relationships between the upper extremity posture disorders and shyness in secondary school students.

This study has shown that the highest frequency of shyness is related to Flat Upper Back with 96.80% and the lowest frequency of shyness is related to Hyper Lordosis with 74.27%. There is a significant difference between shyness and skeletal abnormality. The mean value of shyness in students with skeletal abnormality is higher than students who lack skeletal abnormality. The results from this study show a 73.79% mean value of shyness in students with trunk abnormality.

By summarizing the results of the present study on the male students of middle school in Ardebil and the results from other studies, the followings are suggested:

Continuous implementing of screening programs to trunk and scoliosis abnormalities at schools all around the country emphasize on following-up the identified factors (Nussinovitch et al., 2002; Sugita, 2000).

Direct and indirect instructions to correct false habits of students' position by their physical education trainers and health teachers at schools and media care for the relative high prevalence of scoliosis in students; considering the main reason of this problem and proposing scientific strategies in order to remove the existing limitations for physical activities. Thus it may be said that a desired posture position have many advantages such as appearance beauty in physical structure, increasing of movement efficiency, and reducing the limits in the systems' and interior organs' functionality and decreasing the energy consumption, but an undesired posture position, in other words, being an abnormality in body one may miss his physical appearance and suffers from many limits at the same time. According to the results from this study and other researchers' findings many factors involve in posture abnormalities such as anthropometry characteristics, job conditions, incorrect movement and behavioral pattern, improper sports and exercises, fatness, lack of movement, bad ways of sitting, walking and carrying objects, wearing improper clothes, economic, cultural situations.

It is suggested that other physical deformities, including genu valgus, genu varum, and the lower extremity posture disorders can be studied in the field of shyness.

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