Journal of Physical Education and Sport ® (JPES), 14(2), Art 41, pp.271 - 276, 2014
online ISSN: 2247 - 806X; p-ISSN: 2247 – 8051; ISSN - L = 2247 - 8051 © JPES

Original Article

The relationship between secondary school students' posture disorders and shyness

NADER SHAYGAN ASL[1] YÜKSEL SAVUCU[1]
[1]Department of Physical Education and Sports, Firat University, TURKEY

Published online: June 25, 2014
(Accepted for publication June 12, 2014)

DOI:10.7752/jpes.2014.02041;

Abstract
In this study, it is investigated the relationship between posture disorders and shyness in middle school students. Movement is an essential element of life which is important in maintaining the physiological and psychological functions. Good posture and body position plays a vital role in mental and physical health.
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. Selecting the experimental group was first done by making a list of middle schools of Ardebil city, then 14 schools were randomly selected and according to the population of each school, the experimental group was randomly selected in order. This study is an analytical descriptive one and the results indicate the abnormality of upper-and lower- skeleton of students. The students filled out a questionnaire including general information, they their general specifications were registered including age, weight and height. Then their photos were taken in three ways of anterior, lateral and posterior standing, computer software was used to analyze the posture of students (Ergo Therapy). In the study a questionnaire of 44 items were used, including 5 scales of Likert rating scale (never, rarely, sometimes, often, and always). After gathering required information, the resulted data was analyzed by descriptive static. The normality distribution of data was performed by K-S test (Kolmogrov-Smirnof test) and 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 x^2 and ANOVA method by SPSS 20/win software.
The experimental group was shown that has at least a body abnormality of 96.3%. Prevalence of abnormality was 64.6% drooping shoulders 51.3% Kyopsis and the lowest abnormality prevalence was 1.3% a flat upper back (non-curved) 1.1% extension feet. The highest shyness frequency percent was in 97.25% extension feet and the lowest shyness frequency percent was in 63.8% genu flexum. There is a significant correlation between shyness and skeletal abnormality prevalence. The mean value of students' shyness with skeletal abnormalities is higher than that of students who lack any skeletal abnormality. The results of this study indicate that the mean value of shyness in students with the trunk abnormality is 81.18%. Also the mean value of shyness in students with upper and lower skeletal abnormalities is higher than other students.
Key words: posture disorder, shyness, middle school students, students.

Introduction

Although, toady's machinery life has brought about notable industrial and technological advances and well-being for human beings and provides them with valuable services, it is followed by various disadvantages. The most fundamental disadvantage is the replacement of machine as a muscular power which underlies lack of movement and fatness. Besides these factors, 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. Nowadays, 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. The quality of body posture in an unconscious action and childhood and teens obtained body posture remains nearly unchanged in the other words, since these children are growing up and their epiphyses are soft and flexible and physical activities and sport can correct and form the disorders and abnormalities of their body, so it is highly important to know the students' body posture and provide them with physical activities to

Corresponding Author: NADER SHAYGAN ASL, E-mail: : nadershaygan@gmail.com

strengthen their body and remove any possible physical abnormalities during the sensitive period of growing, because if such disorders are not prevented and corrected, some secondary disorders will be generated in other parts of the body. Hence, knowing and studying common reasons and factors of abnormalities and disorders of students seem an inevitable necessity.

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

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 V.M, et al., 1990; Yawn.BP, 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.J, 1995; Grossman.TW, et al., 1995; Sugita.K, 2000; Willner.S, et al., 1982).

In a study conducted on 4.975 eleven-years-old children (2.588 boys; 2.387 girls) in Netherlands in 1992 showed a strong disorder prevalence of girls as 10.6% and 7.1% for boys (Hazebroek- Kampschreur.AA, et al., 1992).

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.M, 1997; NazmAra.Sh, 1993).

Method

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 lower and upper organs of students and their relation to shyness.

The experimental group consisted of male students studying at middle school in Ardebil city, among 17974 students 378 students were selected as samples ranging from 11-16 years old using Krejcie-Morgan sampling table to take part in our study. 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.

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 anterior, lateral and posterior standing position. Finally, a computer software (Ergo Therapy) was used to analyze students' physical posture (a forwarded head, wry neck, drooping shoulders, kyopsis, hyper lordosis, flat upper back, flat lower back, pelvic obliquity, genu- flex, knock-knee, genu recurvatum, jeno valgus, extension feet, flexioned toes).

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 old and even of 0.7 which was significant at $p\langle 0.00001$ and the reliability was a re-experimenting one which was significant by re-distribution of questionnaire after 3 weeks 0.97 at $p\langle 0.00001$ 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 (x^2), ANOVA and SPSS-20/win software.

Results

In this study, after measuring skeletal disorders and shyness of students the following results were obtained:

Table 1. The results of the individual characteristics of students

Factors	N	Minimum	Maximum	Average	St. deviation
Age	378	11.00	16.00	13.9339	7.00802
Weight	378	23.00	70.00	40.5106	8.60186
Height	378	1.29	1.80	1.5032	.09470

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 2. The rate of skeletal disorders of students

Skeletal Disorders	Percentage of abnormality holders	Percent of owners without abnormality
Scoliosis	24.3	75.7
Wry Neck	15.1	84.9
Genu Flexum	2.6	97.4
Genu Recurvatum	2.4	97.6
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
Jeno Valgus	5.3	94.7
Genu Varum	30.4	69.6
feet turned outward	1.1	98.9
Kyphosis	2.4	97.6
Drooping shoulders	64.6	35.4
Pelvic Obliquity	0	100.0
feet turned inward	3.2	96.8
Flat Upper Back	1.3	98.7
Toes curled inward	0	100.0

Table (2) shows the results of descriptive statistics. The general prevalence of skeletal abnormalities was 96.3% which according to the higher frequency percent were: drooping shoulders was 64.6%; hyper lordosis, 51.3%; knock-knee was 30.4%; scoliosis, 24.3%; forwarded head, 20.6%; kyopsis, 15.9%; wry neck, 15.1% jeno valgus, 5.3%; flexioned leg, 3.2%; flat lower back, 2.9%; genu flexum, 2.6%, kyopsis and hyper lordosis, 2.4%; flat upper back, 1.3%; extension feet, 1.1%.

Table 3. The relationship between shyness and skeletal disorder

Skeletal Disorders	Average	St. deviation
Scoliosis	84.1304	19.93518
Wry Neck	82.8947	20.51975
Genu Flexum	63.8000	9.31904
Genu Recurvatum	94.3333	17.22643
Forward Head	79.4487	20.62507
Hyper Lordosis	74.2732	18.19647
Flat Lower Back	92.0909	16.80152
Kyphosis And Hyper Lordosis	76.2167	16.26069
Jeno Valgus	74.7000	21.60677
Genu Varum	80.2609	19.05260
feet turned outward	97.2500	34.74071
Kyphosis	95.7778	15.18863
Drooping shoulders	75.4508	18.08148
Pelvic Obliquity	0	0
feet turned inward	81.4167	13.76067
Flat Upper Back	96.8000	39.63206
Toes curled inward	0	0

Table (3) shows the results of descriptive statistics, that prevalence of shyness according to the frequency percent is: extension feet, 97.25%; flat upper back, 96.80%; kyopsis, 95.77%; genu recurvatum, 94.33%; flat lower back, 92.09%; scoliosis, 84.13%; wry neck, 82.89% flextioned feet, 81.41%; genu varum, 80.26%; forwarded head, 79.44%; hyper lordosis, 76.21%; drooping shoulders 75.45%; jeno valgus, 74.70; hyper lordosis, 74.27%; genu flexum, 63.80%.

Table 4. Sleeping position of students

Sleep position	N	Percent	Valid Percent	Cumulative frequency percent
Sleeping on the back	102	27.0	27.0	27.0
Sleeping on abdominal	73	19.3	19.3	46.3
Sleeping on Side	203	53.7	53.7	100.0
Total	378	100.0	100.0	

Table (4), shows that subjects, sleeping position was 53.7% on the side, 27% on the back and 19.3% on abdominal.

Table 5. The dominant side of students

Dominant side	N	Percent	Valid Percent	Cumulative frequency percent
Left	41	10.8	10.8	10.8
Right	337	89.2	89.2	100.0
Total	378	100.0	100.0	

Table (5) shows that in the studied samples, 82.2% of students had dominant right organ and 10.8% were dominant on their left organ.

Table 6. Prevalence rate of abnormalities in trunk and lower part of male students' body

Region Skeletal Disorders	N	Percent	Valid Percent	Cumulative frequency percent
Without abnormality	14	3.7	3.7	3.7
Top	219	57.9	57.9	61.6
Top-Down	136	36.0	36.0	97.6
Down	9	2.4	2.4	100.0
Total	378	100.0	100.0	

Table (6) shows that in studied subjects, the prevalence rate of disorders for upper part of the body is 57.9% and both upper and lower parts of the body 36% and lower part of the body is 2.4%.

Table 7. The prevalence rate of shyness in students with skeletal disorders

Region Skeletal Disorders	N	Average	St. deviation	Std. Error	95% Confidence Interval for mean Lower Bound	95% Confidence Interval for mean Upper Bound	Minimum	Maximum
Without abnormality	14	58.3571	12.38862	3.31100	51.2042	65.5101	50.00	99.00
Top	219	66.4018	13.02866	.88040	64.6667	68.1370	49.00	111.00
Top - Down	136	81.1838	18.94913	1.62487	77.9703	84.3973	55.00	145.00
Down	9	75.8889	26.56334	8.85445	55.4705	96.3073	52.00	129.00
Total	378	71.6481	17.40059	.89499	69.8884	73.4079	49.00	145.00

Table (7) shows that in the studied subjects, the mean value of shyness prevalence in students with upper and lower abnormalities is 81.18%; upper part of the body (trunk), 66.40%; and the lower part of the body is 75.88%.

Table 8. 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	95% Confidence Interval Upper Bound
Without abnormality	Top	-8.04468	4.34986	.065	-16.5979	.5086
	Top - Down	-22.82668*	4.42890	.000	-31.5353	-14.1180
	Down	-17.53175*	6.74159	.010	-30.7879	-4.2756
Top	Without abnormality	8.04468	4.34986	.065	-.5086	16.5979
	Top - Down	-14.78200*	1.72269	.000	-18.1694	-11.3946
	Down	-9.48706	5.36671	.078	-20.0398	1.0656
Top - Down	Without abnormality	22.82668*	4.42890	.000	14.1180	31.5353
	Top	14.78200*	1.72269	.000	11.3946	18.1694
	Down	5.29493	5.43096	.330	-5.3841	15.9740
Down	Without abnormality	17.53175*	6.74159	.010	4.2756	30.7879
	Top	9.48706	5.36671	.078	-1.0656	20.0398
	Top - Down	-5.29493	5.43096	.330	-15.9740	5.3841

Referring to table (8), the mean value of shyness in students who lack skeletal abnormalities is less than students with skeletal abnormalities. In the other words, mean value of shyness in students with skeletal abnormalities in higher than students who lack skeletal abnormalities ($p\langle 0.05$). The results from this study show that mean value of shyness in students with trunk abnormalities is 81.18% ($p\langle 0.05$). Also the mean value of students with skeletal abnormalities in trunk and lower part of the body is higher than other students ($p\langle 0.05$).

Table 9. shyness analysis of ANOVA to investigate differences between groups

ANOVA					
	Sum of Squares	Df	Average Square	F	Sig.
Between Groups	21029.057	3	7009.686	28.153	.000
Within Groups	93119.147	374	248.982		
Total	114148.204	377			

Referring to table (9), the confidence coefficient of 95%, F (3.374) =28.153 is significant. It can be said that there is a significant correlation between shyness of students and skeletal abnormalities with 95% confidence coefficient.

Table 10. Level test of the homogeneity of variances

Test of Homogeneity of Variances			
Levene Statistic	Df1	Df2	Sig.
5.940	3	374	.071

The results from table (10) show that there is homogeneity between groups($p\langle 0.05$).

Discussion and conclusion

In this research it was shown that 96.30% of experimental group suffered from at least one posture abnormality which is in consistent with a conducted research by Hossein 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 Nik. H, 2007). In a study by Farideh Manshadi et al., entitled by "Diorders prevalence of kyopsis and scoliosis in students of high school in Tehran" the general prevalence of kyopsis and scoliosis was 46.3% (Dehghan Manshadi. F, 2003). This value was resulted in Netherlands on 11-years-old children as 48.7% (Kratenova. J, et al., 1992). In Nissinen study also 20% studied subjects were of complete symmetry in kyopsis (Nissinen. M, et al., 1983). However, another study showed that the rate of kyopsis asymmetry was 25% (Grossman.TW, 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%, evtension leg 1.1% which is in consistent with the results of Hossein Heidari Nik including the highest prevalence abnormality kyposis, asymmetry shoulders, with 69 and 63% respectively, and the lowest prevalence abnormality was observed in flat upper back and Genu Recurvatum with 1.6% and 2% respectively (Heidari Nik.H, 2007). The results of this study may differ from that of other studies in prevalence rate of abnormality, and this may be due to the subjects, research method and materials, economical, cultural and environmental conditions, yet indicating the rate of abnormality prevalence in society.

The results from this study show a significant rate of abnormality prevalence in trunk which 57.9% experimental group suffer from abnormalities in their trunk. The results from this study indicates that among studied subjects 89.2% students were dominant right organ and 10.8% on the left, which is in consistent with the results of, entitled by "Prevalence of body abnormalities and scoliosis in students at high schools of Tehran which 99% were dominant on the right and 1% were dominant on the left (Dehghan Manshadi. F, 2003).

This study has shown that the highest frequency of shyness is related to extension with 97.25% and the lowest frequency of shyness is related to genu flexum with 63.80%. 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 81.18% mean value of shyness in students with trunk abnormality. Also, the mean value of shyness in students with skeletal abnormality in trunk and lower part of the body is higher than other students.

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.M, et al., 2002; Sugita.K, 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, economical, cultural situations.

At least it is mentioned that although many studies have shown that screening programs are more economical than current treatment and surgical methods in economic (Cross.AW,1985; Montgomery.F, et al., 1990). The necessity of using standard factors for screening trunk and scoliosis posture disorders are emphasized to reduce the expenses (Korfage.IJ, et al., 2002; Yawn.BP, et al., 2000).

References

Cross, AW. (1985). Health Screening in schools, Part II. J Peditr, 107(5): 653-61.

Dehghan Manshadi, F; Khalkhali Zaviyeh, M; Mehrabi,Y (2003). Scoliosis Prevalence among students at high school in Tehran; Research Magazine, scientific Magazine of Medical University, Rafsanjani branch; 2nd volume; No. 3 & 4; Summer and autumn.

Dickson, RA . (1985). Screening for Scoliosis. Br Med J clin Res EJ. 4, 289(6440):269-70.

Dvonch, V.M; Siegler, AH; Cloppas, CC; Bunch, WH(1990). The epidemyology of "Scholiosis". J Pediatr Orthop,10(2): 206-7.

Ebrahim Astaneh, M. (1997). Analysis of scoliosis prevalence in 11-15 years old boys in the schools of Ahvaz; A proposed research article in 8th psysiotherapy scientific congress.

Ferris, B; Edgar, M; Leyshon, A.(1988).Screening for Scoliosis.ActaOrthops cand,59(4):417-8.

Goldberg, J; Dowling, E; Fogarty, EE; Moore, DP. (1995). School scoliosis screening and the United States Preventive Services Task Force. An examination of long term results. Spine, 15; 20(12):1368-74.

Grossman, TW; Mazu, JM; Cummings, RJ. (1995). An evaluation of The Adams forward bend test and scoliometer in a scoliosis school screening setting. J PediatrOrthop, 15(4):535-8.

Hansen, TB. (1994). Adolescent idiopathic scoliosis among girls in Herning region. A follow-up of girls with adolscent idiopathic scoliosis found in an earlier screening arschool. 156(35):4979-82.Danish.

Hazebroek- Kampschreur, AA; Hofman, A; Van Dijk, AP; Van Ling, B. (1992). Prevalence of trunk abnormalities in eleven-year-old school children in Rotterdam, The Netherlands. J PediatrOrthop, 12(4): 480-4.

Heidari Nik, H(2007). Analysis of physical abnormalities of students studying at middle school in Komeijan city; research counseling of education organization in Markazi Province, Educational Innovations.

Korfage, IJ; Juttmann, RE; Das, BV; Diepstraten, AF; Hazebroek-Kampschreur, AA; Van der Mass, PJ.(2002). Idiopathic scoliosis and treatment. NedTijdschrGennskd,146(26):1228-33. Dutch.

Kratenova, J; Zejglicova, K; Maly, M; Filipova, V. (2007).Prevalence and risk factors of poor posture in school children in the Czech Republic. J Sch Health, 77, 131-137.

Lehner, JT. (1990). Postural screening for Scoliosis who and when to refer. Ohio Med, 86(1): 71-4.

Montgomery, F; Persson, U; Polscj, G; Benino, G; Willner, S; Lindgren, B. (1990). Screening for Scoliosis.A cost-effectiveness analysis. Spine, 15(2): 67-70.

Nazm Ara, S (1993). Analysis of epidemiological of scolisos 15 and 19 years old girls in the schools of Tehran; M. S. thesis for psysiotherapy; Dr. Naser Salsabili; Medical university of Tehran.

Nissinen, M; Heliovuara, M; Tallroth, K; Poussa, M. (1983). Trunk Asymmetry and Scoliosis.ActaPediater Scan, 78; 747-53.

Nussinovitch, M; Finkelstein, Y; Amir, J; Baum, E; Volovitz, B. (2002). Adolescent screening for orthopedic problems in high school. Public Health, 116(1): 30-2.

Sugita, K. (2000). [Epidemiological study on idiopathic scoliosis in high school students.Prevalence and relation to physique, Physical strength and motor ability]. Nippon KoshuEiseiZasshi, 47(4): 320-325 Japanese.

Willner, S; Vden, A. (1982). A prospective study of scoliosis in southern sweeden.ActaOrthop Scand,53(5): 233-57.

Yawn, BP; Yawn, RA. (1985). The estimated cost of school scoliosis screening. Spine, 25(18): 2387-91.