

A BODY POSTURE IN THE SAGITTAL PLANE MEASURED AMONG GIRLS AGED 12 TO 15 FROM THE ŚWIETOKRZYSKIE PROVINCE

POSTAWA CIAŁA W PŁASZCZYŹNIE STRZAŁKOWEJ DZIEWCZĄT W WIEKU 12–15 LAT Z WOJEWÓDZTWA ŚWIĘTOKRZYSKIEGO

Jacek Wilczyński

Zakład Patomechaniki, Instytut Fizjoterapii

Wydział Nauk o Zdrowiu Uniwersytetu Humanistyczno-Przyrodniczego Jana Kochanowskiego w Kielcach

Kierownik Zakładu: dr hab. n med. Andrzej Rydzewski

SUMMARY

First, 247 girls aged 12 to 15 were drawn from the Primary School number 13 and from the Gymnasium number 4 in Starachowice and next they were examined. The research was carried out in November 2005. It was observed that there were 147 (59.51%) correct body postures and 100 (40.49%) faulty body postures. There were 122 (49.39%) K_1 types, 25 (10.12%) L_1 types, 1 (0.40%) K_2 type, 45 (18.22%) L_2 types, 54 (21.86%) R_1P types. Flat backs dominated – 54 (21.86%), next there were concave backs – 45 (18.22%) and only 1 case of rounded back – 1 (0.40%). The χ^2 test showed that as far as girls are concerned a posture type does not depend on age.

Key words: body posture, Moiré's photogrammetric method, posture type.

STRESZCZENIE

Badaniami objęto 247 dziewcząt w wieku 12–15 lat z wylosowanych uprzednio Szkoły Podstawowej Nr 13 i Gimnazjum Nr 4 w Starachowicach. Badania wykonano w listopadzie 2005 roku. Prawidłowych postaw było 147 (59,51%), wadliwych 100 (40,49%). Typów K_1 – było 122 (49,39%), L_1 – 25 (10,12%), K_2 – 1 (0,40%), L_2 – 45 (18,22%), R_1P – 54 (21,86%). Dominowały plecy płaskie, których było 54 (21,86%), następnie plecy wklęsłe 45 (18,22%) i tylko 1 (0,40%) przypadek pleców okrągłych. Test χ^2 wykazał, że typy postawy u dziewcząt nie zależą od wieku.

Słowa kluczowe: postawa ciała, metoda Moire, typy postawy.

INTRODUCTION

The development of civilization and modern lifestyle of children as well as teenagers cause the increase of faulty body postures. The results of correction of body postures are not still satisfactory. They are an inspiration to verify used programs and to look for new methods of therapy. Among all body postures the treatment of lateral curvatures of the spine is a long lasting process, which often lasts until adulthood. This defect determinates the choice of future job and a kind of performed work. That is why a preventive treatment, screening examination and posture reeducation are necessary. The concern connected with correct body postures among children should absorb teachers, tutors and parents, starting from kindergarten or even infancy. A correct body posture apart from an esthetic function has first of all health significance. The aim

of the research was to evaluate body postures in the sagittal plane measured among girls aged 12 to 15 with Moiré's photogrammetric method [1–6].

MATERIALS AND METHODS

First, 247 girls aged 12 to 15 were drawn from the Primary School number 13 and from the Lower Secondary School number 4 in Starachowice and next they were examined. The research was carried out in November 2005. There were 60 12-year-old girls (24.29%), 60 13-year-old girls (24.29%), 65 14-year-old girls (26.32%) and 62 15-year-old girls (25.10%). The photogrammetric method with the use of the effect of the projection chamber was used in the research (fig. 1.) [7]. Arithmetic mean (\bar{x}), standard

deviation (s) and self-reliance test (χ^2) were used to make a statistic analysis [8].



Fig. 1. The body picture with placed layers and the body section in two planes: sagittal (a) and transverse (b) (Nowotny, Podlasiak, Zawieska 2003)

RESULTS

According to Wolanski, typology postures were divided into correct (K_1 , R_2 , L_1 types) and faulty (K_2 , L_2 , R_1P types). Depending on girls' age faulty body postures in the sagittal plane look as follows: in the group of 12-year-old girls there were 44 (73.33%) correct body postures and 16 (26.67%) faulty body postures, in the group of 13-year-old girls there were 36 (60.00%) correct body postures and 24 (40.00%) faulty body postures, in the group of 14-year-old girls there were 36 (55.38%) correct body postures and 29 (44.62%) faulty body postures, in the group of 15-year-old girls there were 31 (50.00%) correct body postures and 31 (50.00%) faulty body postures. The χ^2 test showed that as far as girls are concerned a frequency of faulty postures in the sagittal plane does not depend on age. The general division of all 247 examined children showed that there were 147 (59.51%) correct body postures and 100 (40.49%) faulty body postures. In the group of 12-year-old girls there were 35 (58.33%) K_1 types, 9 (15%) L_1 types, 7 (11.67%) L_2 types, 9 (15%) R_1P types. In the group of 13-year-old girls there were 29 (48.33%) K_1 types, 7 (11.67%) L_1 types, 11 (18.33%) L_2 types, 13 (21.67%) R_1P types. In the group of 14-year-old girls there were 31 (47.69%) K_1 types, 5 (7.69%) L_1 types, 15 (23.08%) L_2 types, 14 (21.54%)

R_1P types. In the group of 15-year-old girls there were 27 (43.55%) K_1 types, 4 (6.45%) L_1 types, 1 (0.40%) K_2 type, 12 (19.35%) L_2 types, 18 (29.03%) R_1P types. The general division showed that there were 122 (49.39%) K_1 types, 25 (10.12%) L_1 types, 1 (0.40%) K_2 type, 45 (18.22%) L_2 types, 54 (21.86%) R_1P types. The χ^2 test showed that as far as girls are concerned posture types do not depend on age (table 1, 2, 3).

Table 1. A body posture in the sagittal plane

Gender	Posture of body correct	Posture of body defect	Total
Girls	147	100	247
% columns	49.49	48.51	
% in rows	59.51	40.49	
% total	29.22	19.88	49.11

Table 2. A body posture in the sagittal plane measured among girls

Gender	Posture typ						Total
	K_1	R_2	L_1	K_2	L_2	R_1P	
Girls	122	0	25	1	45	54	247
% columns	49.80	0.00	53.19	25.00	43.69	54.55	
% in rows	49.39	0.00	10.12	0.40	18.22	21.86	
% total	24.25	0.00	4.97	0.20	8.95	10.74	49.11

Table 3. Posture types

Age girls	Posture type					Total
	K_1	R_2	L_1	K_2	L_2	
12	35	9	0	7	9	60
% columns	28.69	36.00	0.00	15.56	16.67	
% in rows	58.33	15.00	0.00	11.67	15.00	
% total	14.17	3.64	0.00	2.83	3.64	24.29
13	29	7	0	11	13	60
% columns	23.77	28.00	0.00	24.44	24.07	
% in rows	48.33	11.67	0.00	18.33	21.67	
% total	11.74	2.83	0.00	4.45	5.26	24.29
14	31	5	0	15	14	65
% columns	25.41	20.00	0.00	33.33	25.93	
% in rows	47.69	7.69	0.00	23.08	21.54	
% total	12.55	2.02	0.00	6.07	5.67	26.32%
15	27	4	1	12	18	62
% columns	22.13	16.00	100.00	26.67	33.33	
% in rows	43.55	6.45	1.61	19.35	29.03	
% total	10.93	1.62	0.40	4.86	7.29	25.10
Total	122	25	1	45	54	247
% total	49.39	10.12	0.40	18.22	21.86	100
χ^2	χ^2	df	p			
	12.12	df=12	p<0.43			

SUMMARY AND CONCLUSION

It was observed that there were 147 (59.51%) correct body postures and 100 (40.49%) faulty body postures.

There were 122 (49.39%) K_1 types, 25 (10.12%) L_1 types, 1 (0.40%) K_2 type, 45 (18.22%) L_2 types, 54 (21.86%) R_1P types. Flat backs dominated – 54 (21.86%), next there were concave backs – 45 (18.22%) and only 1 case of rounded back – 1 (0.40%).

The χ^2 test showed that as far as girls are concerned posture types do not depend on age.

BIBLIOGRAPHY

- [1] Lowe TG, Betz R et al. Anterior single-rod instrumentation of the thoracic and lumbar spine: saving levels. *Spine* 2003; 28, 20: 208–216.
- [2] Michalski R. Operative Behandlung der Skoliose unter Verwendung des anterioren Zugangs zur Wirbelsäule. *Orthopädische Praxis* 1998; 34: 130–132.

[3] Michalski R. Anterior stabilization for idiopathic scoliosis treatment with CDH system. 67th AAOS Annual Meeting, Orlando USA, 2000.

[4] Sanders AE, Baumann R et al. Selective anterior fusion of thoraco-lumbar/lumbar curves in adolescents: when can the associated thoracic curve be left unfused. *Spine* 2003; 28, 7, 706–713.

[5] Wilczyński J et al. A posture of a body and the visual-motor coordination measured by Piorkowski's electrometer on the thirteen years old children. *Annales Universitatis Mariae Curie-Sklodowska Sectio D Medicina* 2006; 61, 17: 240–244.

[6] Wilczyński J. Lateral spinal curvature and the stabilographic parameters MLPX and MLPY measured among children aged 12 to 15 years. 2008; 8, 1: 65–71.

[7] Nowotny J, Podlasiak P, Zawieska D. *System Analizy Wad Postawy*. PW, Warszawa, 2003.

[8] Computer Statistic Programme: Statistica.7.1 statsoft, 2007.

Adres do korespondencji:

dr Jacek Wilczyński
Zakład Patobiomechaniki
Wydział Nauko o Zdrowiu UJK w Kielcach
25-317 Kielce, Al. IX Wieków Kielc 19
e-mail:jacekwilczynski77@poczta.onet.pl
tel. 603 703 926