

**PROFESSIONAL ARTICLE****Bojan Bjelica<sup>1</sup>, Tijana Siljegovic<sup>1</sup>, Badema Kurtovic<sup>2</sup>**<sup>1</sup>Faculty of Physical Education and Sport, University of East Sarajevo<sup>2</sup>Elementary School "Rifat Burdzevic-Trso", Sjenica, Serbia**UDK: 616.711-053.5**

Doi: 10.7251/SHTEN1402011B

**FREQUENCY OF INCORRECT BODY POSTURE FOR BOYS  
IN 7<sup>TH</sup> AND 8<sup>TH</sup> GRADE ELEMENTARY SCHOOL****Summary:**

*This research was conducted with the aim to establish frequency of incorrect body posture in the population of elementary school students at the territory of East Sarajevo. Secondary aim of this research was to determine differences in incorrect body posture between the boys who only attend regular school classes of Physical Education in comparison to boys who are besides school engaged in sport activities for minimum four years. Sample consisted of 84 boys divided into three groups: football players-24, karate players- 23, non-athletes-37. Postural status was assessed subjectively by visual examination of the spine and body posture in frontal and sagittal plane, as well as existence (Yes) or non-existence (No) of incorrect body posture. Research results were processed with the statistical software "Statistica 6.0" for calculation of **Kruskal Wallis** ANOVA method for determining the differences and hierarchy of variables and measures responsible for differentiation between athletes and non-athletes in non-parameter matrix. Kruskal-Wallis test values (N) were calculated as well as probability of their importance (p) and sum of ranks. After establishing the results it was concluded that deformities are more present in children who are not athletes.*

**Key words:** Correct body posture, deformities, medium school age

**1. INTRODUCTION**

Correct body posture is the habit of casual, normal upright pose we assume in walking, sitting and conducting everyday activities.

It is established that a child largely differs from an adult in body conformation, internal organs' function and the way of reacting to and observing wider environment where one lives, grows and develops.

Body posture is the basis of good health, an adequate development of human being, so it is crucial to be taken care of from the earliest age. In children's physical education there is a number of shortcomings that need to be answered. If we search for causes for incorrect posture in school age population than we surely need to start in the family, then in pre-school

facilities because adequate approach and understanding of physical activity by parents and educators in general represents prevention for children of school age and youth. The most important role in forming and maintaining correct body posture have the muscles, being an active part of movement apparatus. Weakness of certain muscle groups, their overload or load on a single side can cause different deformities on the spine, thorax, upper and lower segments and especially the foot. In correct body posture profile of the torso forms natural physiological spinal curve with moderate neck lordosis, thoracic kyphosis and groin lordosis. Head position is with eyes directed straight forward, shoulders are slightly moved to the back, chest is slightly moved forward, arms are following the body, stomach is tucked in, knees are stretched and pelvis is under 60° angle. Body posture types differ during the life span and their shape is influenced by various inputs created by person's movement activity.

Aim of this research is to determine differences in incorrect body posture between the boys who only attend regular school classes of Physical Education and boys who are besides school engaged in sport activities for minimum four years.

## **2. RESEARCH METHODOLOGY**

### **2.1. Sample of subjects**

Population for the sample of subjects was defined as population of students from two elementary schools on the territory of East Sarajevo, aged 12-13 ( $\pm$  6 months). Research covered the students from elementary schools "Sveti Sava" and "Petar Petrović Njegoš". Total number of subjects consisted of 84 boys divided into 3 groups: football players (24 subjects from FC "Tango"), karate players (23 subjects from KC "Igman") and non-athletes (37 subjects).

### **2.2. Sample of variables**

Postural status was assessed subjectively by visual examination of the spine and body posture in frontal and sagittal plane, as existence (Yes) or non-existence (No) of incorrect body posture.

### **2.3. Research description**

Measurement realization was performed in elementary school gyms. Room temperature was 20-23 Centigrade. All the subjects were wearing sport shorts up to half the pelvis, barefoot with weight evenly divided between two legs. Feet were position in parallel, on 10 cm distance. In somatoscopic method we start with observing entire body of the subject from the distance of 2-3 meters. In this manner we obtain general visual image of posture, constitution and interrelations between individual body parts. Students were asked to take casual pose, with eyes directed to the front and first turn their back, then the side and in the end the face to the examiner. The examiner sits and observes the subject following the procedure, one segment at the time and interrelation of the segments, outline of the muscles, shape and symmetry of bilateral segments.

Observation of body segments was performed by the same examiners.

## 2.4. Data processing methods

Single scientific issue can be dealt with using a number of different yet equally useful methods. Singling out individual methods for data processing is sometimes very difficult process. In order to reach satisfactory scientific solution it is primarily important to make a choice of concrete and adequate procedures which correspond the nature of the problem presented and enable transformation of suitable dimensions, testing the hypothesis, determination of inter-relations and establishing the regularities within the scope of research. Having all of the above mentioned in mind, for the purpose of this research we have chosen the procedure we found corresponding to the nature of the issue in question. In order to formulate valid conclusions we used statistical software BASIC STATISTICA v.6.0. and **Kruskal-Wallis** ANOVA method for determining the differences and hierarchy of variables and measures which contributed the differentiation between athlete and non-athlete subjects in non-parameter matrix. We calculated the values of Kruskal-Wallis test (N) and probability of their significance (p), as well as the sum of ranks.

## 3. RESEARCH RESULTS AND DISCUSSION

According to the results, for every group of boys were calculated result frequencies by grades which were defined as existence (Yes) and non-existence (No) of incorrect posture. Frequency percentages were also calculated in order to enable the use of Kruskal-Wallis ANOVA for calculating the significances of differences between the football players, karate players and non-athletes.

**Table 1.** Frequency and percentages of POSTURAL STATUS by groups

Postural Status	Football players		Karate players		Non-athletes	
	No	Yes	No	Yes	No	Yes
<b>Frequency</b>	22	2	23	0	14	23
<b>%</b>	91.67	8.33	100.00	0.00	37.84	62.16

Examining Table 1 we can establish that boys football players have incorrect body posture only in two subjects (8.33%), and that 22 subjects (91.67%) do not have incorrect body posture. In the group of boys karate players out of total number of 23 subjects there were no cases with incorrect body posture. The worst result was established in the group of boys non-athletes where 23 boys have incorrect body posture which is total of 62.16% and that 14 (37.84%) do not have incorrect body posture.

**Table 2.** Differences in deformities among the groups (Kruskal-Wallis Anova)

Group	N	Sum of Ranks
<b>FOOTBALL PLAYERS</b>	24	804.00
<b>KARATE PLAYERS</b>	23	690.00
<b>NON_ATHLETES</b>	37	2076.00
Kruskal-Wallis test:	<b>H (2, 84)</b>	<b>p =0.000*</b>
	<b>=33.20</b>	

*Legend: N – number of subjects; Sum of Ranks – sum of frequencies; H – values of Kruskal-Wallis test; p – coefficient of significance of differences of sum of ranks; \*- statistically significant level of differences.*

Analyzing the differences in sum of ranks in Kruskal-Wallis ANOVA test (Table 2) we can note that the difference is statistically significant at the level  $p \leq 0.000$ .

In order to obtain the information on the pairs of groups where statistically significant difference which would contribute total difference occurs, we calculated value of coefficient of differences between sum of ranks among the pairs of groups using multiple comparisons inside Kruskal-Wallis test. (Table 3).

From the obtained values of significances of differences between the couples of groups it is evident that statistically significant differences in postural status are present between the groups of football players and karate players on one side and boys from the group of non-athletes on the other, on the level of significance  $p \leq 0.00$ . there was no differences noted among the boys from the groups football players and karate players, considering the fact that the value of coefficient of significance of differences is 1.00, which confirms that the groups had equal results for postural status.

**Table 3.** Significance of difference for deformities among the pairs of groups

	<b>FOOTBALL PLAYERS R:33.50</b>	<b>KARATE PLAYERS R:30.00</b>	<b>NON-ATHLETES R:56.11</b>
<b>FOOTBALL PLAYERS</b>		1.00	<b>0.00*</b>
<b>KARATE PLAYERS</b>	1.00		<b>0.00*</b>
<b>NON-ATHLETES</b>	<b>0.00*</b>	<b>0.00*</b>	

*Legend: N – Number of subjects; Sum of Ranks – sum of frequencies; H – value of Kruskal-Wallis test; p - coefficient of significance of differences of sum of ranks; \*- statistically significant level of differences.*

#### 4. CONCLUSION

Research results indicate existence of incidence of deformities among athletes and non-athletes. There should be regular systematic check-ups organized in the schools in cooperation with health centers or other health institution. Special care should be paid to determining existence of deformities. Schools would keep records of students with deformities and in that manner establish health record for the student and further control and necessary measures. Cooperation between the school though teachers of Physical Education and specialists from health center would help determining the exercises for correction as well as the exercises for prevention of deformities. For every noted form of deformity school should notify the parents and demand cooperation with the aim of correction. Care should also be paid to enrolling the children who do not have trainings into sport activities because it leads to physical fitness, strengthening the muscular system and the skeleton for the purpose of better stabilization and resistance of the organism to changes in broader environment.

#### 5. LITERATURE

1. Bjeković, G.; Čalija, M. (2000) : (Ne) pravilno držanje tijela. S. Sarajevo.
2. Janković, M. (1952): Deformiteti tijela kod školske omladine, fizička kultura, Beograd, br: 8, 9, 10.
3. Jovović, V. (1999): Tjelesni deformiteti adolescenata. Nikšić, Filozofski fakultet u Nikšiću.
4. Podbukovšek, S. (1979): Vaspitanje držanja tijela. Sarajevo: Fakultet za fizičku kulturu.
5. Radisavljević, M. (1992): Korektivna gimnastika sa osnovama kineziterapije, Univerzitet u Beogradu, Fakultet Fizičke kulture.
6. Živković, D. (2000): Teorija i metodika korektivne gimnastike, Niš,