

## SCHOOLBAG - ETERNAL PROBLEM

(Preliminary communication)

Živorad Marković<sup>1</sup>, Goran Šekeljić<sup>2</sup> and Sandra Milanović<sup>1</sup>

<sup>1</sup>University of Kragujevac, Faculty of Pedagogical Sciences, Jagodina, Serbia

<sup>2</sup>University of Kragujevac, Teacher-training Faculty, Uzice, Serbia

### Abstract

World health organization recommends to students to carry schoolbags which are not heavier than 10% of their body mass. However, Serbian primary school students carry three times heavier schoolbags. The weight of a schoolbag which primary school students carry to school every day in different researches is from 4 kg to 7.7 kg. That's between 10 to 20% of students' body mass. The goal of this research was to find out relation between primary school students' body mass and schoolbag mass, as well as the relation of students to their schoolbag and connected problems. Some of recommendations would be: regular checks of what students carry in their bags, proper choice of a bag, small notebooks and pencil cases usage, quality anatomical materials, carrying of a schoolbag on both shoulders etc. The research was realized in primary school "Jovan Jovanovic Zmaj" in Svilajnac, in the second term of 2015/2016 school year. The sample consisted of 400 younger pupils. A six question survey was used for the collecting of the data. The teachers and the school management should provide school lockers, talk about correct schoolbag carrying, the students who sit together at the desk could carry the books alternately, the students who have all day stay should have the ability to leave the bags at school during the weekdays.

**Keywords:** primary school age, body mass, planovalgus, kyphosis, interview

### INTRODUCTION

A heavy schoolbag has always been a problem, especially for younger age students. The weight of the schoolbag which is carried by younger age students in the Republic of Serbia is more than 10% of the students' body weight and it is not within the recommended limits of the World Health Organisation. Numerous studies indicate that most children carry load heavier than 10% of their body mass (Guisti, Almeida, & Tomasi, 2007; Dianat, Javadivala & Allahverdi, 2011). Femic, & Djordjić (2016) have determined that most students carry a schoolbag that represents a big load from 10% to 15% of their body mass, and a smaller number of students carry a bag which is 15% to 20% of their body mass. The results indicate that the second grade students suffer the biggest load and they represent a critical group in the forming of disorders of locomotor system. The identical results and the confirmation that the second grade is the most critical period were confirmed in the work of Markovic, Visnjic & Ignjatovic, (2013). The negative influence of the schoolbag weight is manifested in higher percentage of deformities of feet (planovalgus, I, II and III degree) and spine deformities (kyphosis). The percentage of children with incorrect posture rises in the period from the age of six to the age of nine and the percent is 51% to 62% (Grimmer et al., 2002; Hong

& Cheung, 2003; Pausic, Kujundjic, & Mihalj, 2009).

According to one study the students who carry the schoolbags whose weight is over 15% of their body weight have 1.79 times greater risk to develop pain primarily in shoulders (37.9%), lumbar part of the back (21.6%) and the neck (18.2%) (Rodrigues, Montebelo & Teodori, 2008). The parents point out that a heavy schoolbag is not the only problem but the fact that the second grade students have too many and too heavy textbooks. Children often are offered optional magazines from which they get obligatory homework.

From the next school year workbooks will not be obligatory, and the number of pages in the textbooks will be reduced. The schoolbag will be lighter in this way but the teachers are afraid that this novice will influence students' knowledge which students acquire at the school. The problem is in the new plan of the textbooks which has been brought up about these changes. Piled up problems in our schools could be resolved completely by the new law about the textbooks, which is being prepared, by whose application the number of books will be reduced for each subject. The new law also introduces electronic textbooks as well as updating of the textbooks every year, instead of using textbook which have been the same for the last 20 years.

By the analysis of the contents of the schoolbag and

official weekly timetable it has been determined that: the first grade pupils had 32% of didactic material in their schoolbags (textbooks, notebooks, geographical maps, stationery, magazines etc,) which was not necessary for that school day. In the second grade there were 37% of unnecessary didactic contents, in the third grade 39% and in the fourth grade 35% (Kosinac, 2004).

By the insight of relevant research it is hard to get an exact answer how much is the maximal allowed ratio of the body weight and the schoolbag weight. Some research indicate that the allowed ratio is only 5% and that this ratio makes statistically significant postural changes (the angle of body inclination and the angle of legs) (Ramparsad, Alias, Raghuvver, 2009; Miloradovic, Pausic, & Kuzmanic, 2014). The results of Prvan and Versić (2011), that the worsening is the most significant between the spot without load (0%) and the first spot with load (5%) where the children during the first load change their body posture. The head is moving forward and there is a pain in the neck (Hundekari, Chilwant, Vedpathak, & Wadde, 2013). Beside the pain in the neck, the back pain is also present (Reneman, Poels, Geertzen, & Dijkstra, 2006).

## METHODS

The transversal character research was realized in the primary school "Jovan Jovanovic Zmaj" in Svilajnac, in the second term of 2015/2016 school year. The sample consisted of 400 younger pupils. A six question survey was used for the collecting of the data. The survey was filled during the regular physical education classes in the presence of a teacher. The nature and the distribution of the results determined by the adequate statistical procedures. In the realm of quantitative analysis of the data the following percentage expressing of frequencies was applied.

## RESULTS

At the very beginning the distance with a school bag on back is the most decisive negative factor which affects the daily weak postural status of the students. Discouraging is the fact that most students on their way from home to school travels over 3 kilometers in one direction (74.25%). A significantly smaller number of students travel every day over 1,000 meters in one direction (15.00%) and for the very small number of students the school is somewhat more than 5 hundred meters away from home (10.75%).

240 students, which represents 60% of school population, travel by bus on their way back. This situation is directly influenced by the knowledge that most students travel from home to school over 3 kilometers. A significantly smaller number of students (29.5%) go to school on foot, and the smallest number of students, only 10.5% is driven to school by their parents.

The results show that most students of younger school age carry their bags on both shoulders (84.5%), which is a recommendation of all doctors and health in-

stitutions. Significantly smaller number of students carries a school bag on one shoulder (9.75%) and that percent has been influenced by the female students who prefer carrying the schoolbag on one shoulder. The smallest number of students uses a schoolbag which is carried in one hand or pulled on the ground on the wheels (5.75%).

On the basis of the results it is devastating that most students of younger school age pack their school bags alone with all necessary and unnecessary loads (89%). The needed help of the parents especially in the first and the second grade is sporadic and it is only 5.25%. Sometimes an older brother or sister helps in packing. Their presence is also very rare and their help is got by 5.75% of the students.

The problem of unpleasantness during carrying of load on weak shoulders is manifested as a pain in the neck and loin part of the spinal cord. Out of 400 interviewed students 64.5% feel the pain on their shoulders, 32.25% in their backs and only 3.25% of the students of the younger school age do not feel any pain. If we look back on coming to school we can see that these are the students who come to school by car or their school is near their homes.

From the total sample, only 57 students, which represents 14.25% think that their school bag is not heavy. Somewhat a bigger number of students, feel and think that the school bag that they carry every day to school and back is heavy (27.75%). Most students, more than the half (58%) is aware that their school bag is too heavy and that they are not in the situation to do anything without the help of parents, teachers, school, regional and republic managements.

## DISCUSSION

The thing that does not encourage is the fact that despite the warnings of the World Health Organization and the experts, school bags are constantly heavier and most students on their way from home to school and back travel up to 6 kilometers. A significantly smaller number of students travel every day over 2,000 meters and the smallest number of students travel to 1,000 m. The most adequate solution are the school lockers and leaving of the text books and work books in the school lockers, which is unfortunately only available to the students in the schools in Belgrade. A great number of schools cannot purchase school lockers because of the inadequate material and spacial conditions (Marković, 2016). Most students come to school by bus, while there are students whose place of residence demands that they have to travel on foot most of the way to the first bus station. The students of village schools carry their heavy school bags from 1 to 8 kilometers in both directions. The most present distance is between 2 and 6 kilometers (Marković, Visnjić, & Ignjatović, 2013).

It is encouraging to know that 84.5% of students carry their school bag on both shoulders, which is in accordance with the results of similar research in which the values were between 68.94% (Cassie, & Dorell,

1996; Pascoe, Pascoe, Wang, Shim, & Kim, 1997). The situation is different for female students in about 30% of them carry the bag on one shoulder (Marković, et al. 2013). The school bag weight and its incorrect carrying on one shoulder are crucial factors in forming of lumbar pain syndrome at younger children (Scoffer, 2007). Paušić, et al. (2009) determined that 93.1% of the students carry their bags on both shoulders. A small percent of students carry their bags diagonally (0.8%), in one hand 2.3%, and for 3.8% of the students the parents carried their bags. The data in this research indicate that the school bag is carried in one hand or pulled in 5.75% of the cases. The doctors recommend that the bag should be light and anatomically shaped, not to exceed the height and the width of children's shoulders, and to reach up to the loin part of the spinal cord. It is necessary that the suspenders are wide and soft, so that they wouldn't cut in shoulders and that there is a belt which is buttoned around the waist, which helps in getting one more supporting spot.

The parents should regularly check the school bags of their children, in order not to be filled with unnecessary things, they should motivate their children to think carefully about the things they really need for school for that day. The help to the students especially in the first and the second grade in primary school is really needed by the older members of the family.

Regardless of the help of their parents, grandfathers and grandmothers who escort and wait for the students overload with a heavy school bag can cause pain in the neck, shoulders and spinal cord. Unpleasant things because of the heavy bag like pain in shoulders feel 64.5%, in backs 32.25% and only 3.25% of the students of younger school age do not feel any kind of unpleasantness while carrying a school bag. In England about 45% of students have periodical pains in neck and backs (Troussier, Davoine, de Gaudemaris, Fauconnier, & Phelip, 1994; Fosnarič, & Delčnjak Smrečnik, 2007). The children that are exposed to a heavy bag and suffer from the pain in back have higher risk of spinal cord illnesses in later years (Mackenzie, Sampath, Krtise, & Sheir-Neiss, (2003).

Despite numerous articles in the newspapers, expert programs, warnings of the regional and republic school management school bags are heavier. Only 14.25% of the students think that their school bag is not heavy, 27.75% think that it is heavy and the highest percent 58% think that it is too heavy.

## CONCLUSION

The results leads that on the basis of the students attitudes the attention should be directed to the parents who while preparing their small pupils should choose a school bag made of lighter material (the rucksack have been a good solution and most children carry them), a pencil case from lighter material and without many folders, the parents should buy small notebooks and not the notebooks in the format A4 in hard cover, they should show the child how to pack the books – in the part of the

school bag closer to the backs they should pack the bigger books, and forward they should pack smaller books and notebooks and it is necessary to control the school bag content before going to school. The students should be advised to carry their school bags on both shoulders, to check and change the content considering the time table, not to chase with a school bag on the shoulders along school halls and whenever it is possible to unload their schoolbags. The teachers and the school management should provide school lockers, talk about correct schoolbag carrying, the students who sit together at the desk could carry the books alternately, the students who have all day stay should have the ability to leave the bags at school during the weekdays (with assumption that additional duties for school are done in daily stay) and during physical education lessons it is necessary to strengthen the legs and back muscles.

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Correspondence:

Zivorad Marković

University of Kragujevac

Faculty of Education

Milana Mijalkovića 14, 35000 Jagodina, Serbia

E-mail zimarkovic@yahoo.com