

The significance of an active break in class

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Abstract

When performing numerous activities such as a sedentary job, working on a computer or phone, reading, etc., we are forced to round forward our whole back, so that our shoulders are hunched up by our ears. This means that the head is tilted forward and downward, and thus additional strain is placed on the spine. The curvature of the spine changes and consequently the balance is altered as well. If we do not analyse our posture and if we are not familiar with the proper body positions, we cannot adjust them to individual situations. Gumilar (b. d.) emphasises that the misconceptions about the correct posture are acquired in our childhood. Whenever we were slouching, we were told to sit up straight, not knowing that by doing so, we place additional strain on the spine. The present article presents the results of an online research, in which lower secondary level students took part. There were 138 students from grades 6 to 9 included in the research. The findings show that there are enough reasons to study the body posture of students and to form a programme which will help prevent the children from developing problems while growing. However, the question remains of how to incorporate daily practice of these exercises into the educational process, so that children will adopt them and also implement them in their home environment.

Keywords: active break, students' body posture, distance learning, sedentary lifestyle, movement

1. Introduction

»I personally consider that one of the most important things we were never taught in school is how to take care of our bodies and physical health. As a matter of fact, PE (physical education) indeed is one of the subjects within the school curriculum, however, it is viewed as a marginal subject with many schools reducing PE time and besides, PE lessons are not structured in the appropriate way. During PE lessons, we should learn about everyday movement patterns, for instance, how to sit properly in order to avoid having any back pain and problems later in life, what exercises can help prevent neck or back pain, how to walk properly so that one doesn't drag himself/herself around like a cloth, and about the importance of the body stability and flexibility which may have a huge impact on various sport activities and everyday life in general.

*(V. Valič in the book Česa šole ne povedo?
(English title: What They Don't Tell You in Schools)*

Distance learning has brought several challenges, one of them certainly being children's posture, the issue that is frequently overlooked and unintentionally neglected. When performing numerous activities such as a sedentary job, working in front of a computer or on a phone, reading, etc., we are forced to round forward our whole back, so that our shoulders are hunched up by our ears. This means that the head is tilted forward and downward, and thus additional strain is placed on the spine. The curvature of the spine changes and consequently the balance is altered as well. Both, children as well as adults are faced with this problem because they spend a lot of time in a seated position. This article aims to increase the awareness of this issue, so that we would pay more attention to this problem and take an active approach to finding appropriate solution.

2. The anatomy of a healthy spine

In order to understand a body posture, one needs to be familiar with the anatomy of the spine, therefore I will briefly summarize the basics. The spine provides the main support for our torso, thus allowing for an upright position (Remec, 2007). The spine is made up of vertebrae and intervertebral discs. Intervertebral discs lie between vertebrae and they act as buffers intercepting the vibrations, blows and strokes that we are exposed to every day. Muscles and ligaments along the spine (neck, back, abdomen, buttocks, legs and pelvic floor muscles) move the spine and help spinal function: bending forward or backward, turning right and left, and bending right and left. In addition, the spine protects the spinal cord with spinal nerves branching off from the left and right side of the spinal cord and spreading throughout our body (Striano, 2019). The spine is the structure that is connected to pelvis, skull and shoulder girdle. The spinal column has the shape of a double 'S' and is divided into three major sections: the cervical (neck), the thoracic (sternum and ribs), and the lumbar section, more commonly known as the lower back (McGill, 2018).

The cervical spine (neck) starts immediately below the skull and ends at the first thoracic vertebrae, approximately where the neck and torso meet. The thoracic section starts on an imaginary line running across the upper part of the shoulders and extending all the way down to the end of the ribs. The lower back or lumbar spine is the anatomic region between the lowest rib and the upper part of the buttock, extending to the pelvis, to the tailbone (McGill, 2018). The thoracic section of the spine has a slight curvature which is called kyphosis. Both the cervical and the lumbar spine are slightly curved as well, and this inward curvature is called lordosis (Striano, 2019).

2.1 Physiological body posture

Physiological body posture is a prerequisite for a healthy movement (Knific, Petrič and Backović Juričan, 2016). During intense physical activity and vigorous exercise, all body parts that are in a physiological position should have the optimal load. Otherwise, individual parts of the body may become overloaded and strained, which is likely to increase the risk of injury. In the physiological position, the feet shall be aligned with the hips. The knees are slightly bent. The pelvis in the physiological position provides good support to the spine, lower limbs and internal organs. The spine has a thoracic, lumbar and cervical curve. The physiological position of the chest (thorax) enables the optimal functioning of the respiratory organs, with the head being in an upright position and maintaining its equilibrium, which will prevent excessive neck

strain. The optimal line of gravitational force, which acts on the body in an upright posture, passes through the ankle, knee, hip joint, torso (spinal curves) and head, thus forming the appropriate physiological posture. We talk about the »neutral« spine position when all three curves are present, which is the correct and natural position. In this position, our back is strongest and best supported.

2.2 Risk factors of poor posture in children

There are various internal and external factors affecting the development of the spine in children. Poor posture is associated with many different causes such as exertion in sports, school overload, heavy school bags, inappropriate choice of furniture which is not compatible with a child's anthropometric characteristics, lack of physical activity, etc. The present article is mainly focused on a sedentary lifestyle and students' physical activity as they can both be studied, supervised and managed (Zurc, 2006).

2.3 Research on a sedentary lifestyle in children

Excessive sitting and a lack of physical activity may lead to muscle fatigue and poor physical posture, and in the long run this may also result in a spinal deformity (Zurc, 2006). Poor posture may also be associated with excessive sitting on improper chairs, especially in schools (Gorenšek v Zurc, 2006).

Various researchers (Aaras et al, 1997; Straker et al., 2002; Kremžar, 1978; Vidmar, 1992; Kosinac, 1992; Fošnarič, 2002 in Zurc, 2006) claim that poor posture is linked to schoolwork overload. The risky period for the emergence of poor posture is precisely the early-grade primary school era.

A survey conducted among Slovenian primary-school students shows that students are forced to spend considerable time sitting behind the desks in class and that schooling requires a lot of sitting – more than is recommended for students (Novak, 1995 v Zurc, 2006). The survey results also show that third-graders spend more than 6 hours per day doing schoolwork, including school lessons, while fifth-graders spend more than 7 hours a day doing schoolwork. This means that children also sit for at least as many hours a day as well.

Sedentary lifestyle, however, is not only related to school, but also continues in one's free time. The international HBSC survey results (Jeriček Klanšček idr., 2019), published on the National Institute for Public Health website, illustrate that during the week, 29.6% of adolescents spend daily about 5 hours or more of their free time in a sitting position (e.g., watching TV, using computer or mobile phone, traveling by car or bus, sitting and chatting, eating, studying). The percentage of adolescents with excessive sedentary behaviour increases with age, and it is higher for girls than boys. The data shows that one fifth (20.4%) of adolescents are physically active for at least one hour each day in a week, and that with age this percentage is decreasing. According to the survey, 73.5 % of adolescents are physically active in their free time and involved in some sports activities at least 2–3 times per week. With age, however, the percentage of adolescents who regularly play sports decreases.

According to the World Health Organisation guidelines, children and adolescents aged 5 to 17 should do at least an average of 60 minutes per day of moderate-to-vigorous intensity physical activity, and they should practise vigorous physical activity at least 3 times per week. Sedentary behaviour has a negative impact on our physical and psychosocial health. For the sake of children's and adolescent's health, sedentary behaviour should be limited: they should spend no more than two hours a day sitting in front of screens, seated transport should be reduced,

excessive sitting should be limited (no more than 4 hours per day), and time spent indoors should be reduced.

3. Methods

3.1 Sample

I prepared an online survey using an open source application 1KA. The questionnaire consists of 19 questions (17 multiple choice questions and 2 open ended questions). 138 students were included in the research, attending grades 6 to 9.

3.2 Data analysis

The data were analysed in percentages using the afore mentioned application 1KA.

4. Results: determining facts regarding the posture of students attending our primary school

The survey results showed that:

- 40 % of students play sports every day, e.g., walking, running, cycling, dancing, online exercise classes ...) for at least 60 minutes;
- 21 % of students in their free time usually spend about 5 hours daily in a seated position (e.g., watching TV, using computer or mobile phone, travelling by car or bus, sitting and chatting, eating, studying) from Monday to Friday;
- Students were shown various pictures and 37 % of them have selected the picture which shows the appropriate posture in a sitting position, believing that they sit this way themselves as well;
- 95 % of students identified the correct posture of the boy in the given pictures, with most students spotting at least one of the following differences between the two pictures: chair (chair height, back rest), table (table height, work-surface inclination), body position (head, spine, arms, legs);
- 41 % of students responded that they sometimes experience spinal pain, while 33% of students said that they rarely experience spinal pain, and 24% of students said that they feel pain in the cervical spine;
- 46 % of students are more physically active during the period of distance learning than during the period when they attend on-site classes in school;
- 39 % of students sit more during the period of distance learning than during the period when they attend on-site classes in school;
- 33 % of students sometimes pay attention to a proper posture;
- 79 % of students study at the desk;
- 25 % of students spend on average about 2 hours a day using a (tablet) computer or a mobile phone, and only a percentage less (24 % of students) spend 4 hours or more on those devices;
- 48 % of students spend on average 1-2 hours daily doing some independent schoolwork or studying (Zoom conferences do not count);
- 35 % of students perform various physical exercises (during long-distance or online PE lessons) in order to keep fit and healthy;

- 53 % of students would like to learn more about the healthy spine and proper posture.

4.1 Recommendations for preventing poor posture

On the basis of the results obtained, I formulated three sets of recommendations that I have presented in more detail during the lecture:

- recommendations for posture analysis;
- ergonomic tips and advice for neck, back and better posture;
- exercises which can help improve your child's posture.

5. Conclusion

The information on the number of hours that the students spend sitting in their free time correspond to the HBSC study findings, since about one fifth of children spend their free time doing the activities that require them to sit. Children increasingly replace games in the fresh air and sports activities with virtual sports and similar computer-related games. I believe that by means of this research I have helped to raise the level of student awareness about the impact of excessive sitting on the spinal cord disorders and the importance of properly designed and arranged work space, which shall result in reduced tension in the cervical spine. By introducing special preparatory and relaxation exercises and encouraging active breaks during classes/at home by doing various chest and back exercises and strengthening the abdominal and back muscles, I encourage students to commit to a more active lifestyle and turn their backs on sedentary, inactive lifestyle, thus reducing and doing away with any type of discomfort and pain

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