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Research Results
Резултати от научни изследвания

NECESSITY FOR INCLUSION OF BAD POSTURE CORRECTIVE EXERCISES SETS IN PHYSICAL EDUCATION AND SPORT CLASSES AT BULGARIAN UNIVERSITIES

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Abstract. For the past thirty years, there is a high incidence of postural and spinal disorders among young people worldwide as well as in Bulgaria. Currently, in Bulgaria, there is no legally assigned structure responsible for the regular screening and prevention of these abnormalities in the rising generation. In many Bulgarian universities in PE and Sport classes students practice one kind of sport. There are some sports, which are recommended in postural and early stages of spinal disorders, and others, which could worsen the condition. **The study aimed** to establish university students' awareness of their postural/spinal status, and whether they experience the most common symptoms of postural/spinal disorders – pain, soreness, stiffness in particular parts of the body. **The results** show that almost half of 400 students have never been examined, and nearly 60% experience the typical postural/spinal disorders, symptoms. The authors **recommend** posture corrective exercise sets to be included in PE and Sport classes at universities as well as the reestablishment of legally assigned structure responsible for the regular screening and prevention of postural and spinal distortions.

Keywords: bad posture; spinal disorders; university students; PE and Sport classes; posture corrective exercises

Introduction

Posture is the position in which the body holds while standing, sitting, or lying down. Good posture is the correct alignment of body parts supported by the right amount of muscle tension against gravity. Without posture and the muscles that control it, the body would fall to the ground. Normally the posture is not consciously maintained – several muscle groups, including the hamstrings and large back muscles do that. While the ligaments help to hold the skeleton together, these postural muscles, when functioning properly, prevent the forces of gravity from pushing the body over forward. Postural muscles also maintain posture and balance during movement. Good posture helps us stand, walk, sit, and lie in positions that

place the least strain on supporting muscles and ligaments during movement and weight-bearing activities. It helps to keep the bones and joints in proper alignment so that the muscles are used correctly, thus decreasing the abnormal wearing of joint surfaces. It reduces the stress on the ligaments holding the spinal joints together, minimizing the likelihood of injury. It makes muscles work more efficiently, allowing the body to use less energy and, therefore, preventing muscle fatigue. Maintaining proper posture requires adequate muscle flexibility and strength, normal joint motion in the spine and other body regions, as well as efficient postural muscles that are balanced on both sides of the spine (Sokolov et al. 1991).

It is impossible to escape bad body posture, especially in today's technological age. The typical for today's lifestyle prolonged sitting behind a desk, lack of sufficient movement, continuous staring at phones, laptops, and tablets are essential prerequisites for improper body alignment, which if not corrected could lead to permanent bad posture. Poor posture could lead to significant health problems[1)].

Chronic pain/soreness in the back, shoulders, lower back, hips, knees, feet, wrists;

Spinal disorders;

Cardiovascular and respiratory diseases and breathing difficulties;

Early joints wear;

Cramps and stiffness, imbalance and weakness in the muscles;

Pinched (compressed) nerve;

Chronic headaches;

Easy tiredness;

Sleep deteriorations;

Depressive conditions;

Reduced working capacity.

The development and shaping of the human posture happen since the earliest childhood and is being formed like any motor habit, and therefore must be nurtured during the growth and development of the child. This requires systematic development and strengthening of the muscles that are relevant to keeping the body in good balance: the abdominal and gluteal muscles, upper body and shoulder girdle muscles as well as the legs muscles, which are responsible for keeping the feet in the correct position (Sokolov et al. 1991).

Unfortunately, the typical for modern lifestyle insufficient physical activity significantly reduces children's ability to develop their motor culture and build a proper posture's habit. Insufficient physical activity (hypokinesia) is one of the key problems for the modern way of life. According to many scientists, hypokinesia is the main cause for the development of poor posture and spinal disorders in both, the period of growth and development, and in the later phases of a person's life. According to some studies, globally in over 60% of school-age children and adolescents present postural disorders.

The data about Bulgaria is particularly worrying. For the 2012-2014 period, the campaign "Informed Parents, Healthy Children" held a number of free surveys on the presence of postural and spinal distortions in children from different schools in Sofia. For instance in October 2012 out of 171 students, 77 had lordosis (45%), 16 scoliosis (9%), 43 kyphosis (25%), 63 had a week abdominal muscles and 114 (67%) were with bad posture. In April 2014 out of 338 students, 38 (11%) had scoliosis, 304 (90%) were with poor posture and 174 (51%) had weak abdominal muscles[2)].

During 2012 – 2013 school year, specialists from the Directorate "Prevention of Diseases and Health Promotion" together with kinesi-therapists from the National Sports Academy "Vasil Levski" analyzed the spinal deformities among students from five schools in Sofia, where 689 first grade students were evaluated (Filkova et al. 2013). The researchers reported that 65% of the children (447 pupils) at this early age already have spinal abnormalities. Every second first-grader had a poor posture.

In the period 2008 – 2011, Popova, D, et al. (2013) screened 1343 children and established poor posture in 677 (50,4%) of them, and spinal disorders in 162 (12,1%).

The development of a healthy and strong young generation is an objective necessity for any modern society. Before 1989, when the radical changes in the political system in Bulgaria happened, there used to be legally regulated annual screenings for postural disorders in children and adolescents at the beginning of each school year and in every school. The children with postural disorders were being enlisted in posture corrective gymnastic classes as well as posture corrective exercises were part of the Physical Education classes' content. Currently, in Bulgaria, there is no legally assigned structure responsible for the regular screening and prevention of postural and spinal distortions in the rising generation[3)]. Thus, a spinal disorder in a child can be diagnosed only accidentally – by the family's General Physician (during a checkup for another health issue), by the parents (if they are sufficiently observant and at least partly familiar with this nosology), or if the child complains about having a back pain (when usually the condition has advanced). At the present, there is also no State policy to require posture corrective exercises to be included in Physical Education classes as well as extracurricular corrective gymnastics classes to be organized and held in each school (Belomazheva-Dimitrova et al. 2014).

Due to the highlighted problems and provided that bad posture and spinal disorder in early-stage could be fully reversible, many Bulgarian researchers strongly recommend the inclusion of posture corrective exercises in Physical Education classes at schools, as well as annual professional monitoring of the postural status of the rising generation in Bulgaria. Some even go further and recommend enhancing the competence of the teachers in Physical Education in the

field in order to be able to recognize the symptoms of postural/spinal disorders and inform the parents, and to include the proper corrective exercises in sport classes (Belomazheva-Dimitrova et al. 2014).

The main purpose and objective of the subject Physical Education and Sport in the system for high education is to enhance and/or maintain students' health as well as to create knowledge, skills, and habits for a future healthy lifestyle. Due to many problems in the system of Physical Education in Bulgaria, in recent years there has been a tendency an ever-increasing percentage of the newly admitted university students to have an ever-lower physical activity and low motivation for active exercise and sports activities. In an attempt to increase students' motivation, most Bulgarian universities have adopted the practice to offer the students different kinds of sports, from which they can choose one they like the most. Thus, during the academic year, they practice only this sport in PE and Sport classes. For instance, the Sports Department of the University "St. Kliment Ohridski" of Sofia (which is the oldest and biggest in Bulgaria) offers more than twenty kinds of sports. On the one hand, the latter is wonderful, but on the other hand, considering the high incidence of postural and spinal disorders among young people, it could be dangerous. There are the so-called "symmetrical" sports such as swimming, athletics, etc. which are recommended in postural and early stages of spinal disorders, and "asymmetrical" sports such as tennis, basketball, etc. which primarily develop one half of the body and could worsen the condition. When choosing a sport, the students might not be aware of their condition because they have never been examined.

As professors in the subject Physical Education and Sport at University "St. Kliment Ohridski" of Sofia, and in accordance with the above-mentioned facts, we held the presented study.

Aim of the study

To establish students' awareness of their postural/spinal status, and whether they experience the most common symptoms of postural/spinal disorders – pain/soreness/stiffness in particular parts of the body.

Methods and instruments

For the purpose of our research, we used the questionnaire survey method. The study took place at the beginning of the 2019-2020 academic year. Participants were 400 (200 male and 200 female) Sofia University "St. Kliment Ohridski" students, aged 18-23 years, enrolled in sport classes in different kinds of sports. The questionnaire consisted of four questions, of which 1-3 were of a close-ended type, where the students could point out only one of a distinct set of pre-defined responses, and question 4 was of an open type, where students had to write down their answers. For analyzing the received data, the Frequencies (f) and Percent's (%) analyses have been used.

Results and discussion

Our research's data (Figure 1) shows that 22,22% of male and 6,7% of female students exercise every day (an average of 12,23%), and 56,57% of male and 40,78% of female students do so 2 – 3 times a week (an average of 40,78%). Regarding the World Health Organization's recommendations for a minimum of three workouts per week[4)], we can conclude that an average of 58,63% of the students (78,79% of male and 47,48% of female) lead an active lifestyle, whereas noticeably young men are much more active than young women.

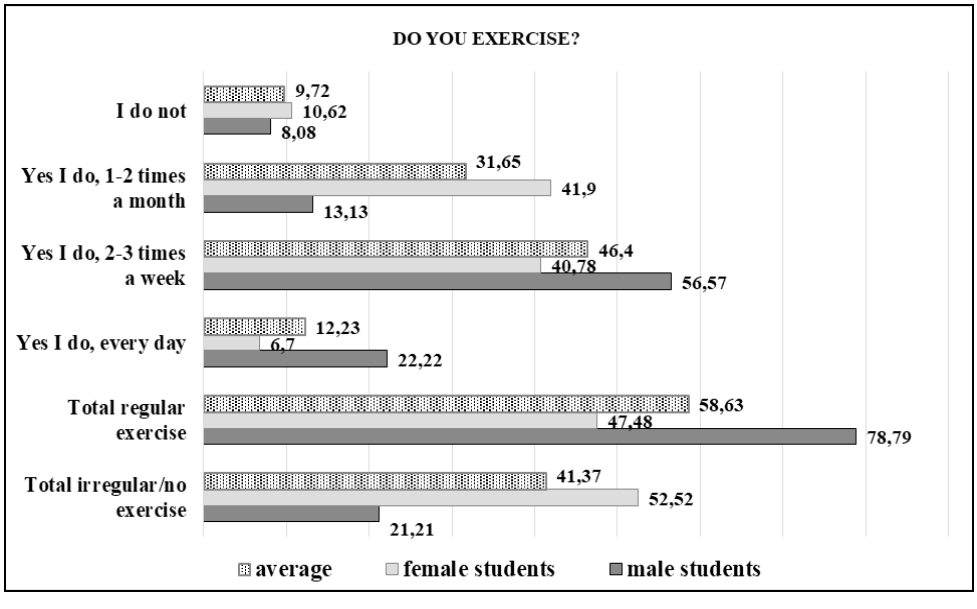

Figure 1. University students' physical activity

Still, many of them do not exercise at all – 8,08% of male and 10,62% of female students (an average of 9,72%), or do so 1 – 2 times a month – 13,13% of male and 41,9% of female students (an average of 31,65%). That means that a total of 41,37% of the researched students (21,21% of male and 52,52% of female) lead a sedentary lifestyle, with the prevalence of young women (Figure 1).

As highlighted above, when not knowing their postural/spinal status, and if they have a disorder, even though exercising regularly, students might worsen their condition.

Our research shows (Figure 2) that out of the 400 students asked, only 8,99% are fully aware of having a spinal/postural disorder, 43,17% declared that they do not have one, but almost half of them (47,84%), have never been examined.

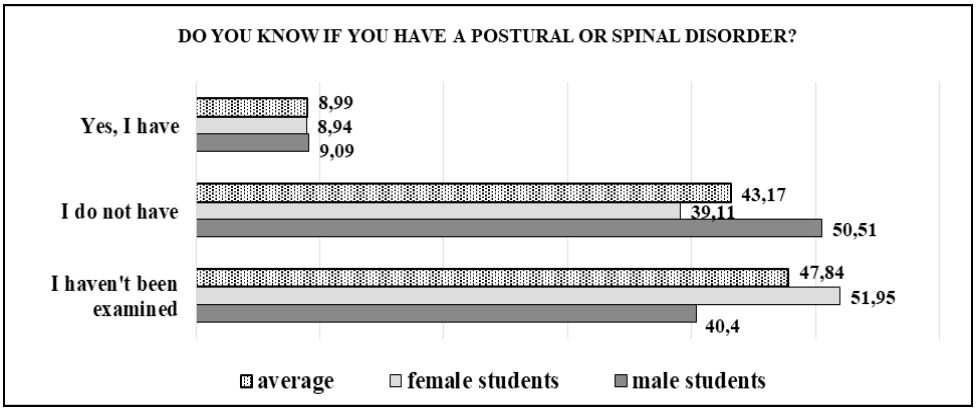

Figure 2. Students' awareness of their postural/spinal condition

The further analysis shows that an average of 57,2% of the students experience constantly (4,68%) or time to time (52,52%) the most common symptoms of postural and spinal disorders – pain/soreness/stiffness in particular parts of the body such as the spine, shoulder/s, neck, lower back, hip/s, knees, feet, wrists (Figure 3):

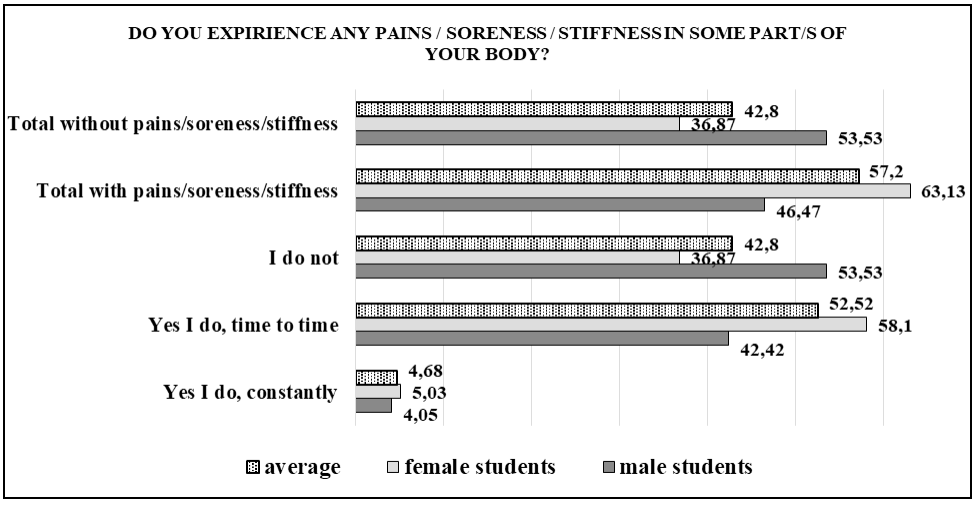

Figure 3. Students' self-perception for constant/temporary pains/soreness/stiffness in particular body parts

Question 4 in our questionnaire was of an open type, where students had to write down their answers. We asked them to point out the body part/s in which they

experience constant or temporary pain/soreness/stiffness. In Figure 4 we present the most often mentioned body parts:

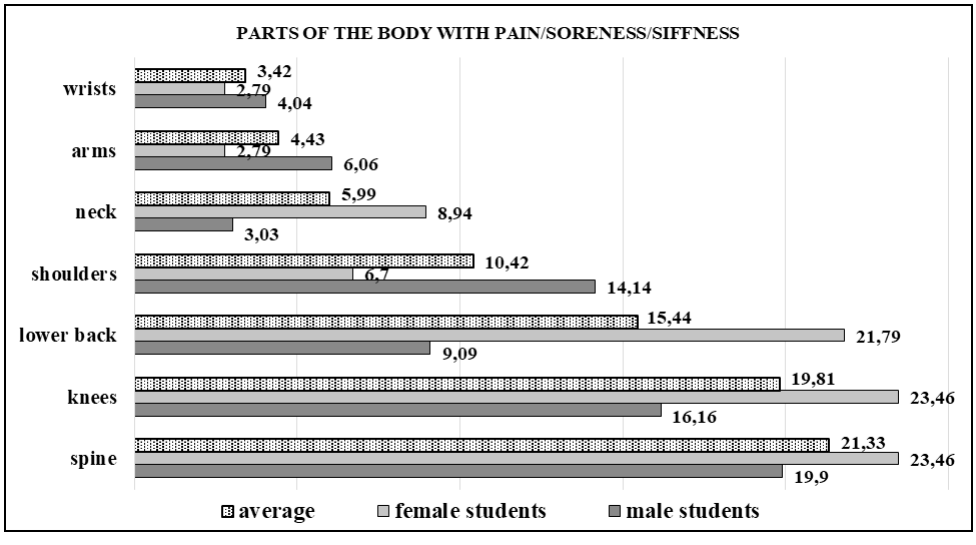

Figure 4. Most often mentioned body parts with constant/temporary pains/soreness/stiffness

Noticeably the students' answers confirmed the common symptoms of postural/spinal disorders. The most often mentioned body parts were the spine (an average of 21,33%), knees (19,81%), lower back (15,44%), shoulders (10,42%), neck (5,66%), arms (4,43%) and wrists (3,42%).

Conclusions

The review of the bibliography shows that there is a high incidence of postural and spinal disorders in the rising generation both worldwide and in Bulgaria. These disorders cause serious health issues, which lead to reduced working capacity.

Currently, in Bulgaria, there is no legally assigned structure responsible for the regular screening and prevention of postural and spinal disorders in the rising generation. There is no State policy for their prevention such as organizing extracurricular corrective gymnastics classes at each school and the inclusion of posture corrective exercises in Physical Education classes.

Many university students in Bulgaria are not aware of their postural/spinal status because they have never been examined. Most of them at this young age, already experience the most common symptoms such as pain, soreness, or stiffness in particular parts of the body.

The well-established practice at most Bulgarian universities, students to play one kind of sport in Physical Education and Sport classes could lead to worsening the condition of the young people with postural or spinal abnormalities if the type of sport is not appropriate for such disorders.

Recommendations

Rising healthy generation is important for the prosperity of any nation. Provided the high incidence of postural and spinal disorders in children and adolescents in Bulgaria, we recommend the reestablishment of a strict State Policy for the prevention of postural and spinal disorders, expressed in:

Designating a particular structure responsible for the annual screening of children and adolescents.

Organizing extracurricular corrective gymnastics classes at both kinder gardens and schools for children with established postural or spinal disorders.

Including posture corrective exercises as a mandatory part of Physical Education classes at schools, provided bad posture and spinal disorder in early-stage could be fully reversible.

Including posture corrective exercises as a mandatory part of Physical Education and Sport classes at universities, thus:

– improving the condition of university students with bad posture or spinal disorder in early stage;

– minimizing the risk of worsening the condition of university students with postural or spinal disorders, if they have chosen to play an inappropriate for such condition, sport.

5. Enhancing the knowledge and competence in the field of the teachers in Physical Education in order to be able to recognize the symptoms of postural/spinal disorders and to include the proper corrective exercises in sport classes.

NOTES

1. https://www.nyp.org/neuro/services/spine-disorders/symptoms-and-diagnosis https://utswmed.org/conditions-treatments/spine-disorders/
2. https://asemgroup.net/статистика/
3. https://www.rzi-vt.bg/zakoni/Naredba8-dipanser.pdf
4. www.who.int/ncds/prevention/physical-activity

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