ORIGINAL ARTICLES. PHYSICAL EDUCATION

Functional condition of students with different types of posture

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Abstract

Purpose: The purpose of the work is to conduct a comparative analysis of the functional state of students with different types of posture.

Material and methods. The study surveyed 222 students (108 boys and 114 girls). The analysis of the obtained data indicates that only 19.4% of boys and 12.3% of girls have a normal posture.

Results. Among students with postural disorders, scoliotic (asymmetric) posture is most common (34.3% of boys and 43.8% of girls), less with stooped (22.2% and 23.7%, respectively), less common with round posture (24.1% and 20.2%). Female students have a lower level of biogeometric posture than boys. The functional state of the level of aerobic productivity, girls, regardless of posture, is higher than boys. Among boys, the level of aerobic performance was not rated higher than "below average", and among girls below "excellent" or "good". According to the standards for assessing the functional readiness of people of different ages in Podilsk region, the "average" level of aerobic productivity of women 20-22 years is much higher than established by GL Apanasenko “safe level of health”, and the value of 38 ml min⁻¹ kg⁻¹ corresponds only "average" level, regardless of posture. It was found that in students with a low level of biogeometric posture profile, the level of aerobic productivity, regardless of gender, is lower than in people with normal posture. Thus, the relationship between the level of biogeometric profile and the level of aerobic productivity, regardless of the type of posture.

Conclusions. The functional state of the level of aerobic productivity, girls, regardless of posture, is higher than boys. Among boys, the level of aerobic performance was not rated higher than "below average", and among girls below "excellent" or "good".

Key words: physical performance, posture disorders, biogeometric profile, assessment standards

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Анотація
Городецька О.О., Куц Б.О. Функціональний стан студентів з різними типами постави.
Мета роботи: провести порівняльний аналіз функціонального стану студентів з різними типами постави.
Матеріал і методи. В ході дослідження обслідувано 222 студента (108 юнаків та 114 дівчат). Для визначення функціонального стану використовували метод викопіювання з медичних карт, велоергометрію. Для визначення типу постави використовували удосконалену карту експрес-контролю біогеометричного профілю постави. Обрахунок проводили за допомогою t-критерію Стьюдента.
Результати. Аналіз отриманих даних вказує на те, що лише 19,4% юнаків та 12,3% дівчат мають нормальну поставу. Серед студентів з порушеннями постави, найбільше зустрічається зі сколіотичною (асиметричною) поставою (34,3% юнаків та 43,8% дівчат), менше із сутулою (22,2% і 23,7% відповідно), рідше із круглою поставою (24,1% та 20,2%). У студенток-дівчат рівень стану біогеометричного профілю постави нижчий, ніж у студентів-юнаків. Функціональний стан за рівнем аеробної продуктивності, дівчат, незалежно від типу постави, вищий, ніж у юнаків. Серед юнаків рівень аеробної продуктивності у жодного не був оцінений вище ніж «ниже посереднього», а серед дівчат нижче «відмінно» чи «добре». Відповідно до стандартів оцінки функціональної підготовленості особи різного віку Подільського регіону «середній» рівень аеробної продуктивності жинок 20-22 років перебуває значно вище від установленого Г. Л. Апанасенком «безпечного рівня здоров'я», а величина 38 мл·кг⁻¹·хв⁻¹ відповідає лише «середньому» рівню, незалежно від стану постави. Встановлено, що у студентів і з низьким рівнем біогеометричного профілю постави, рівень аеробної продуктивності, незалежно від статі, нижчий, ніж у осіб з нормальною поставою. Таким чином, встановлено взаємозв'язок між рівнем біогеометричного профілю та рівнем аеробної продуктивності, незалежно від типу постави.
Висновки. Функціональний стан за рівнем аеробної продуктивності, дівчат, незалежно від типу постави, вищий, ніж у юнаків. Серед юнаків рівень аеробної продуктивності у жодного не був оцінений вище ніж «ниже посереднього», а серед дівчат нижче «відмінно» чи «добре».
Ключові слова: фізична працездатність, порушення постави, біогеометричний профіль, стандарти оцінки

Анотация
Городецкая А.А., Куц Б.А. Функциональное состояние студентов с различными типами осанки.
Цель работы - провести сравнительный анализ функционального состояния студентов с различными типами осанки. Для решения поставленных задач были применены следующие методы исследования: анализ научно-методической литературы, метод выкопирования из медицинских карт, велоэргометрия, для определения типа осанки использовали усовершенствованную карту экспресс-контроля биогеометрического профиля осанки.
Материал и методы. В ходе исследования обследовано 222 студента (108 юношей и 114 девушек). Для определения функционального состояния использовали метод выкопировки из медицинских карт, велоэргометрия. Для определения типа осанки использовали усовершенствованную карту экспресс-контроля биогеометрического профиля осанки. Расчет производили с помощью t-критерия Стьюдента.
Результаты. Анализ полученных данных указывает на то, что лишь 19,4% юношей и 12,3% девушек имеют нормальную осанку. Среди студентов с нарушением осанки, чаще всего встречается сколиотическая асимметричная осанка (34,3% юношей и 43,8% девушек), меньше с сутулая (22,2% и 23,7% соответственно), реже круглая спина (24,1% та 20,2%). У студенток асиметричной осанка (34,3% юношей и 43,8% девушек), меньше с сутулая (22,2% и 23,7% соответственно), реже круглая спина (24,1% та 20,2%). В студентов-девушек уровень состояния биогеометрического профиля осанки ниже, чем у студентов-юношей. Функциональное состояние по уровню аэробной продуктивности, девушек, не зависит от типа осанки, выше, чем у юношей. Среди юношей уровень аэробной производительности ни у одного не был оценен выше «ниже среднего», а среди девушек ниже «отлично» или «хорошо».
Выводы. Функциональное состояние по уровню аэробной продуктивности, девушек, не зависит от типа осанки, выше, чем у юношей. Среди юношей уровень аэробной производительности ни у одного не был оценен выше «ниже среднего», а среди девушек ниже «отлично» или «хорошо».
Ключевые слова: физическая работоспособность, нарушение осанки, биогеометрический профиль, стандарты оценки
Introduction

Much attention has recently been paid to the student health. Health depends on many factors and is determined by a set of interrelated features: primarily physical performance, functional status of organs and systems of the body, physical development, physical fitness of students. An integral indicator of health is considered to be a functional state, which is defined as the level of the resistance of the organism to the action of adverse environmental factors and is determined by physical performance [1-3].

Physical and functional fitness is considered as a result of physical training, which is achieved in the process of mastering motor skills and improving physical qualities while increasing the level of activity of the main functional systems of the body. Moreover, functional fitness is the basic basis for improving physical qualities, the manifestation of which determines physical fitness.

Posture is one of the factors that negatively affect the functional capabilities of the body, and also contributes to the emergence of some chronic diseases [4]. The high prevalence of postural disorders among students is due to many factors, including the complexity of work organization, low motivation of young people to engage in physical education and the lack of optimal methods of physical education in higher education.

It should be noted that the manifestation of certain physical qualities of persons with posture defects depends on the type of posture disorder. Thus, a decrease in general strength qualities is observed most often in young people with asymmetrical posture, and a decrease in flexibility - in people with postural disorders in the sagittal plane with a decrease and increase in curvature of the spine [5].

It has been established that posture disorders affect the activity of the cardiovascular and respiratory systems. Thus, according to some authors, people with postural disorders have significantly reduced Robinson and Rufier indices, which is confirmed by violations of regulation and insufficient level of adaptive reserves of the cardiovascular system [6]. Students with postural impairment after doses exercise have significantly higher heart rate and blood pressure, and the recovery time is longer compared to students with normal posture.

Postural disorders are a common musculoskeletal disorder among young people. Middle and high school students have more postural disorders than preschool children. There is a lack of consensus among scholars on the prevalence and type of postural disorders in students. However, there is evidence that the prevalence of postural disorders among students ranges from 60 to 80%.

According to scientific literature sources, postural disorders are accompanied by a decrease in physical and functional fitness of the body. In children, adolescents and students found posture disorders have a negative impact on the development and improvement of physical qualities: strength, endurance, flexibility, static-strength endurance of the muscles of the back and legs. However, in students, posture disorders are often combined with decreased activity of the cardiovascular and respiratory systems. There are data that indicate a negative impact of posture disorders on energy supply and physical performance.

The relevance of the study is due to the increase in the number of students with postural disorders and persons classified by health status to a special medical group, which is also due to the lack of optimal methods of training [7-9].

Purpose: The purpose of the work is to conduct a comparative analysis of the functional state of students with different types of posture.

Material and methods

Participants

The study involved 222 students (108 boys and 114 girls) 2-4 years of study of Vinnytsia Institute of University 'Ukraine'. All students attended the main medical group and did not play sports.

All participants were aware of the objectives of the study and agreed to participate.

Procedure

For the determination of the posture type used the improved map of rapid control of the biomegometric profile of posture [10].

Initially, the presence of postural disorders in the frontal and sagittal planes was determined in all subjects. Students were divided into groups with and without violation of posture. They studied the level of functional performance. In addition, the level of functional performance of people with posture disorders was determined depending on the plane in which the posture disorder was detected.

The functional state was studied in terms of physical performance (PWC_{170}), maximum oxygen consumption (VO_{2max}). For this purpose, the methods of bicycle ergometry, and heart rate monitor were used. The maximum measure of oxygen consumption (VO_{2 max}) was determined by the...
Karpman method. Investigated person performed two loads on bicycle ergometer by 5 min. The frequency of pedaling was 60 rpm\(^1\) with 3 min interval of rest. Power of the first load was 1 W on 1 kg of body weight. Power of the second load was 2 W on 1 kg of body weight. The heart rate was registered at the end of each load. The value of VO\(_2\)\(_{\text{max}}\) was calculated. The value of VO\(_2\)\(_{\text{max}}\) is calculated in ml∙min\(^{-1}\) [11-13].

Indicators of aerobic productivity of the organism were evaluated by the relative value of maximum oxygen consumption using the criteria of J. Piarnat [11] and standards of aerobic productivity students' of aged 20-22 years old in Podilsk region [11-14]. The relative health of students was also assessed by the relative value of VO\(_2\)\(_{\text{max}}\). Thus, 'safe level of health' for men is characterized by the relative value of maximum oxygen consumption and is not less than 42 ml min\(^{-1}\) kg\(^{-1}\), and for women - 35 ml min\(^{-1}\) kg\(^{-1}\).

The work was performed in accordance with generally accepted bioethical norms in compliance with the relevant principles of Declaration of Helsinki, Council of Europe Convention on Human Rights and Biomedicine and the relevant laws of Ukraine on experimental and clinical research.

**Statistical analysis**

Systematization of the material and primary mathematical processing were performed using a spreadsheet Microsoft \textsuperscript{®} Excel 2010.

Statistical processing was performed applying Student's t-criterion. It was defined as an average mean (X), Student’s t-criterion (t), standard error of the mean (±m), number of degrees of freedom (f), significance value (p). The difference was considered significant at p < 0.05 [10].

**Results**

Copying data from medical records of students, photography with the participation of a doctor - vertebral neurologist allowed to establish that only about 19.4% of men and 12.3% of female students have a normal posture (Table 1). Thus, among students the types of posture disorders were distributed as follows: scoliotic posture in 34.3%, stooped back in 22.2%, round in 24.1%. In female students, scoliotic posture was observed in 43.8%, stooped back in 23.7%, round in 20.2%.

Analyzing the data obtained to determine the state of the biogeometric profile of students’ posture, it was found that 61.9% of students with normal posture have an average level of biogeometric profile of posture and only 38.1% high. The average biogeometric profile of female students was 9.5% more common than that of male students. No students with a low level of biogeometric profile were found among students with normal posture.

*Table 1*

<table>
<thead>
<tr>
<th>Posture type</th>
<th>Sex</th>
<th>Levels of biogeometric posture profile condition, %</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Average</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Normal posture</td>
<td>Boys</td>
<td>0</td>
<td>61.9</td>
<td>38.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>0</td>
<td>71.4</td>
<td>28.6</td>
<td></td>
</tr>
<tr>
<td>Scoliotic posture</td>
<td>Boys</td>
<td>48.6</td>
<td>51.4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>52.0</td>
<td>48.0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Stooped back</td>
<td>Boys</td>
<td>25.0</td>
<td>75.0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>33.3</td>
<td>66.7</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Round back</td>
<td>Boys</td>
<td>26.9</td>
<td>73.1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>30.4</td>
<td>69.6</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
As a result of the study, we found that students with normal posture have a high level of biogeometric profile is 9.5% more common than female students. Male students with scoliotic posture have a low level of biogeometric profile is 4.6% more often than female students. Low-level biogeometric profile is more common in female students with a round and stooped back, 3.5% and 8.3%, respectively, than in female students. Students with a normal posture did not have individuals with a low level of biogeometric posture, and students with scoliotic, round and stooped backs did not show individuals with a high level of biogeometric profile.

Comparative analysis of the data showed that the state of the biogeometric profile of the posture of female students is lower in comparison to boys. According to the results of the study, scoliotic posture is the most common posture disorder regardless of gender.

The study of physical performance and maximum oxygen consumption of students convincingly showed that there are probable differences in aerobic productivity of the body in absolute and relative values of such indicators as PWC_{170} and VO_{2max} in students with different types of posture. Evaluating the aerobic productivity of the body by the relative value of VO_{2max} in students with different types of posture, using the criteria of Ya. Piarnat (1983) we found gender differences in the distribution of the surveyed by the level of aerobic productivity (Table 2-3).

The level of aerobic productivity of female students was much better than the same for young men, regardless of the presence or absence of posture disorders.

### Table 2

Aerobic productivity of boys with different types of posture (n=108)

<table>
<thead>
<tr>
<th>Measures</th>
<th>Normal posture n=21</th>
<th>Postural disorders n=87</th>
<th>Significance of differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWC_{170}, kgm min^{-1}</td>
<td>949.65±17.70</td>
<td>791.72±12.01</td>
<td>&lt;0.001 -7.39</td>
</tr>
<tr>
<td>PWC_{170}, kgm min^{-1} kg^{-1}</td>
<td>13.56±0.18</td>
<td>10.56±0.17</td>
<td>&lt;0.001 -12.50</td>
</tr>
<tr>
<td>VO_{2max}, ml min^{-1}</td>
<td>2854.4±30.08</td>
<td>2585.48±20.41</td>
<td>&lt;0.001 -7.39</td>
</tr>
<tr>
<td>VO_{2max}, ml min^{-1} kg^{-1}</td>
<td>40.87±0.41</td>
<td>34.49±0.52</td>
<td>&lt;0.001 -12.50</td>
</tr>
</tbody>
</table>

Note: *** -significance level p <0.001

### Table 3

Aerobic productivity of girls with different types of posture (n=114)

<table>
<thead>
<tr>
<th>Measures</th>
<th>Normal posture n=14</th>
<th>Postural disorders n=100</th>
<th>Significance of differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWC_{170}, kgm min^{-1}</td>
<td>697.55±21.72</td>
<td>644.87±11.23</td>
<td>&lt;0.05 -2.15</td>
</tr>
<tr>
<td>PWC_{170}, kgm min^{-1} kg^{-1}</td>
<td>12.41±0.26</td>
<td>10.58±0.09</td>
<td>&lt;0.01 -6.78</td>
</tr>
<tr>
<td>VO_{2max}, ml min^{-1}</td>
<td>2425.97±36.92</td>
<td>2336.2±19.09</td>
<td>&lt;0.05 -2.15</td>
</tr>
<tr>
<td>VO_{2max}, ml min^{-1} kg^{-1}</td>
<td>43.33±0.84</td>
<td>38.52±0.30</td>
<td>&lt;0.01 -6.78</td>
</tr>
</tbody>
</table>

Note: * -significance level p <0.05; ** -significance level p <0.01

In boys with impaired posture (scoliotic posture, stooped and round back), the absolute value of PWC_{170} was significantly lower by 16.63% (P <0.01) than in students with normal posture. In terms of relative indicators PWC_{170}, this difference was 22.12% (P <0.01). The absolute and relative VO_{2max} values in young men with postural disorders were also lower than in their yearling with normal posture, respectively, by 9.42% (P <0.01) and 15.61% (P <0.01).

Therefore, significant differences in the aerobic performance of the body in terms of absolute and relative values of indicators such as PWC_{170} and VO_{2max} of students with different types of posture.

The results of the study of physical performance and maximum oxygen consumption of students.

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In girls who had postural disorders, the absolute value of PWC\textsubscript{170} turned out to be significantly less than in girls with normal posture by 7.55\% (P <0.05), and the relative value by 15.55\% (P <0.01). The absolute value of the VO\textsubscript{2max} indicator was recorded among students with postural disorders less than among students without posture disorders, by 3.7\% (P <0.05). At the same time, the relative value of VO\textsubscript{2max} differed more - by 11.15\% (P <0.01).

### Table 4

<table>
<thead>
<tr>
<th>Posture type</th>
<th>Sex</th>
<th>VO\textsubscript{2max}, ml·min\textsuperscript{-1}·kg\textsuperscript{-1}, (\bar{X} \pm m)</th>
<th>Standards of aerobic productivity students'of aged 20-22 years old in Podilsk region</th>
<th>Exception is the evaluation criteria of Piarnat Ia.P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal posture,</td>
<td>Boys n=21</td>
<td>40.87±0.41</td>
<td>Average 43.00 – 38.60</td>
<td>Below average 35-42</td>
</tr>
<tr>
<td></td>
<td>Girls n=14</td>
<td>43.33±0.84</td>
<td>Good 42.10–44.20</td>
<td>Excellent &gt;36</td>
</tr>
<tr>
<td>Scoliotic posture</td>
<td>Boys n=37</td>
<td>34.31±0.51</td>
<td>Low 36.20–31.80</td>
<td>Low &lt;35</td>
</tr>
<tr>
<td></td>
<td>Girls n=50</td>
<td>40.72±0.40</td>
<td>Average 42.00–37.60</td>
<td>Excellent &gt;36</td>
</tr>
<tr>
<td>Stooped posture,</td>
<td>Boys n=21</td>
<td>34.42±0.52</td>
<td>Low 36.2–31.8</td>
<td>Low &lt;35</td>
</tr>
<tr>
<td></td>
<td>Girls n=27</td>
<td>39.12±0.30</td>
<td>Average 42.0–37.6</td>
<td>Excellent &gt;36</td>
</tr>
<tr>
<td>Round back,</td>
<td>Boys n=21</td>
<td>34.49±0.52</td>
<td>Low 36.20–31.80</td>
<td>Low &lt;35</td>
</tr>
<tr>
<td></td>
<td>Girls n=23</td>
<td>40.43±0.30</td>
<td>Average 42.00–37.60</td>
<td>Excellent &gt;36</td>
</tr>
</tbody>
</table>

As noted by the authors Furman, Yu., Miroshnichenko V, Brezdeniuk O [16]. There are no generally accepted criteria for assessing human aerobic capacity. The data by different authors published are somewhat different. The most commonly used evaluation criteria are Piarnat Ia.P. [11]. They cover a wide age range (from 10 to 50 years), but do not take into account the peculiarities of the region.

Therefore, to assess the aerobic capacity of young people with and without postural disorders used "Standards of functional fitness of young people 20-22 years of the Podilsk region," because they are based on modern data, take into account the features.

The data obtained by us confirmed the data that the "average" level of aerobic productivity of women aged 20-22 (see Table 1) is much higher than the "safe level of health" established by GL Apanasenko. According to JP Pernat[11], the "excellent" level of aerobic productivity corresponds to values> 38 ml min\textsuperscript{-1} kg [13-18]. According to Furman Yu, Brezdenyuk O, Miroshnichenko V (2021). Standards for assessing the functional readiness of persons of different ages., Given in table. 1, the value of 38 ml min\textsuperscript{-1} kg corresponds only to the "average" level.

According to scientists of the Podilsk region, the level of aerobic productivity in young people with a normal posture corresponds to the «average», and according to the criteria of the spot «below the average». The girls are respectively above «average» and «excellent».

Students with a normal posture - the majority (72.97\%) had a level of aerobic performance «below average», and the rest (27.03\%) «average». Among the students of this group, none with «good» and «excellent», as well as «low» levels of aerobic performance. Students with postural and «excellent» levels of aerobic performance were also not found in students with postural disorders (scoliotic, stooped, round back).
The ratio of the number of students (%) with different levels of aerobic performance

<table>
<thead>
<tr>
<th>Contingent of students</th>
<th>Quantity of people with different LAP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Boys</td>
<td></td>
</tr>
<tr>
<td>Normal posture, n=21</td>
<td>-</td>
</tr>
<tr>
<td>Scoliotic posture, n=37</td>
<td>48.61</td>
</tr>
<tr>
<td>Stooped posture, n=24</td>
<td>45.83</td>
</tr>
<tr>
<td>Round back, n=26</td>
<td>57.70</td>
</tr>
<tr>
<td>Girls</td>
<td></td>
</tr>
<tr>
<td>Normal posture, n=14</td>
<td>-</td>
</tr>
<tr>
<td>Scoliotic posture, n=50</td>
<td>-</td>
</tr>
<tr>
<td>Stooped posture, n=27</td>
<td>-</td>
</tr>
<tr>
<td>Round posture, n=23</td>
<td>-</td>
</tr>
</tbody>
</table>

It should be noted that most of the young students with a «low» level of aerobic productivity were found people with round (57.70%), scoliotic (48.61%), stooped (45.83%) back. The least among students with «average» level of aerobic productivity were found people with round back (15.38%), scoliotic (18.96%), and stooped back (20.84%).

Among the surveyed girls with normal posture, the majority (96.15%) had an «excellent» level of aerobic performance and only 3.85% «good». Among female students with a stooped back, the most identified (87.48%) were people with an «excellent» level of aerobic performance, with a scoliotic posture - 84.00%, with round one - 21.74%. Girls with round back - 78.26% of people had a «good» level of aerobic performance.

It should be noted that among the students there were no people with «average», «below average» and «low» levels of aerobic performance, regardless of posture.

**Discussion**

Posture disorders among students are a fairly common spinal defect that is more common in girls than in boys, due not only to the lower presence of a muscular component in the body weight of girls compared to boys, but also in our opinion insufficient motivation to exercise.

The study of physical performance and maximum oxygen consumption of young men convincingly showed that there are probable differences in aerobic productivity of the body in absolute and relative values of such indicators as PWC_{170}, and VO_{2max} in persons with and without postural disorders.

Despite the fact that the average value of the absolute VO_{2max} in boys with posture disorders significantly exceeds the average value of this indicator in girls, the average values of the relative VO_{2max} in males and females are almost the same (P <0.05). This phenomenon is explained by a significant difference in body weight in boys and girls, which in students was much smaller.

Evaluating the aerobic productivity of the body by the relative value of VO_{2max}, in students with and without impaired posture, using the criteria of Ya.P. Pjrnata and Standards for assessing the functional readiness of persons of different ages by Furman Yu, we found gender differences in the distribution of the surveyed by the level of aerobic productivity.

Such differences in the level of aerobic productivity of the body relative to the "critical level of health" according to GL Apanasenko in girls and boys coincide with the results of a study by a number of scientists Yu.M. Furman, V.M. Miroshnichenko,
SP Druchuk[18-20]. This suggests that boys should pay more attention to improving the aerobic productivity of the body than girls using the means of physical education.

The study found that the type of posture, in particular posture disorders, determines the functionality of student youth. Students with a low level of biogeometric profile, regardless of gender, had a lower level of aerobic performance than those with a normal posture. Thus, a correlation was established between the level of biogeometric profile and the level of aerobic productivity regardless of the type of posture.

According to research, the level of aerobic productivity in students was lower than the ‘safe level of health’. In girls, regardless of the presence of postural disorders, the level of aerobic productivity of the body corresponded to «high».

As a result of the research, it was established that the type of posture, in particular posture disorders, determines the functional capabilities of student youth. Students with a low level of biogeometric profile, regardless of gender, had a lower level of aerobic productivity than those with normal posture. Thus, the correlation between the level of biogeometric profile and the level of aerobic productivity, regardless of the type of posture was established.

Conclusions

1. Functional posture disorders are a fairly common pathology that occurs in students and adversely affects their functionality.
2. Posture disorders in students cause more significant changes than in female students.
3. Assessing the level of aerobic productivity of students with and without postural disorders, it was found that the level of aerobic productivity in girls is higher than in boys. Such differences in the level of aerobic productivity of the body relative to the "safe level of health" in girls and boys coincide with the results of a study by a number of scientists. This suggests that young men should pay more attention to improving the aerobic productivity of the body than girls using the means of physical education. It should be noted that timely control and assessment of preparedness allows you to rationally build the learning process and determine its effectiveness.

Conflict of interest

The authors declare that there is no conflict of interest.

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