Developing the physical potential in university students through training in specialised sports groups, based on the case study of fitness and sport aerobics (aerobic gymnastics)

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Abstract

The study of physical and psychological profile of students at the stage of their admission to the university with a view to introducing experimental training methods in sports groups, based on the case study of fitness and sport aerobics (aerobic gymnastics). The article studies two first-year students' groups at the beginning and at the end of the academic year. The first group was trained on the standard Physical Education programme (reference group). The second, experimental group, was trained on the specialised Fitness and Sport Aerobic (Aerobic gymnastics) programme. The measurements of physical working capacity test using PWC170 test, the measurement of pulmonary capacity body mass index and the psychological anxiety level test were made.

The obtained data make it possible to prove the effectiveness of physical education classes in specialised sports groups, to perfect the curriculum and raise university students' motivation for physical education, prevent the deterioration of youth health, largely related to the lack of physical activity, to reveal the physical potential of students by taking into account their individual and psychological characteristics and abilities.

Keywords: *Physical education, physical potential, teaching methods in physical education, motivation of students, psychological stability, health improvement, fitness and sport aerobics, aerobic gymnastics.*

Introduction. Recently, experts in the field of physical education have noted the problem of students' losing interest in physical education and the deterioration of students' health. To date, university physical education curriculum does not differ much from the school curriculum on the discipline. The analysis of students' attendance showed that almost half of the students systematically skip scheduled classes. In the survey, the students when asked to give the reason for absences, named mostly "lack of interest in the subject". University curriculum on the subject largely copies the school curriculum. When asked the question "What kind of physical education classes would you like to attend?", almost all the respondents answered that they would like to be trained in a specific sport — basketball, volleyball, aerobics, athletic gymnastics, etc.

For the improvement of health and development of students' physical potential, first of all, their systematic attendance is required, which is impossible without their interest in the subject and intrinsic motivation. Therefore, first and foremost, physical education classes should be interesting for students. One of the possible options is the formation of groups specialising in a particular sport. Students' groups should be formed in accordance with the desire of students to be trained in a particular sport.

Physical education is aimed at developing a holistic personality, harmonising their spiritual and physical forces, activating the readiness to fully realise their essential strengths in a healthy and productive lifestyle, their professional activity in constructing the necessary socio-cultural comfortable environment, and being an integral element of the university edu-

cational space.

Physical Education classes are an integral part of the development of a personality, a future specialist, therefore it is essential to make students interested in the subject, work towards high students' attendance, because it's only through systematic training that high physical, moral and mental results, psychological stability can be achieved and the students' health can be improved. [2,3,4]

Objective of the study was to show the effectiveness of teaching physical education classes to university students in groups specializing in particular sports, based on the case study of fitness and sport aerobics (aerobic gymnastics), its effectiveness being measured by the the high attendance, interest in classes, internal motivation to achieve results, acquisition and improvement of physical skills, general improvement of the body.

Research objectives:

1. To conduct a study on functional indicators (lung vital capacity, body mass, PWC170 test) and to identify the level of general anxiety at the beginning and end of the academic year in two groups: 1) a reference group was trained on the standard Physical Education programme, 2) an experimental group of students was trained on the specialised Fitness and Sport Aerobics (Aerobic gymnastics) programme.

2. To analyse the dynamics of the growth of indicators (pulmonary capacity body mass index, PWC 170, anxiety level) for the year.

3. To conduct a comparative analysis of the study results in two groups from the point of view of the effectiveness of health improvement and unleashing the physical potential of students.

Methods and structure of the study. During the study the method of analysis of scientific and methodological literature, methods of biomedical research (functional tests), medical and statistical analysis were used.

In the practical part of the study, a pedagogical experiment was conducted, in which 48 female students of the 1st year of the SIM RANEPA branch took part. At the beginning of the year, tests and measurements of all female students of the same year were carried out. At the beginning of the academic year two groups were formed: a reference group trained on the standard physical education programme (25 people), and an experimental group trained in groups specializing in fitness and sport aerobics (23 people). Monitoring the current state of students of both groups was carried out at the end of the academic year. The measurements of the following parameters were taken: height-body mass index, lung vital capacity, after which pulmonary capacity body mass index of each student was calculated.

Classes specializing in fitness and sport aerobics as well as other physical education classes were held twice a week and lasted for two academic hours. They included basic elements and jumps of fitness and sport aerobics (M arch, Jog, Skip, Knee Lift, Kick, Jack and Lunge, jog, knee lift, kick, jumping jack) separately, then combined into choreographic connections, where more steps rather than jumps prevailed. Additionally, the connections included a variety of hand movements. The connections were performed to rhythmic music of 128-135 beats per minute on the floor and on a step platform. Also during the lesson, special exercises of fitness and sports aerobics were used for strength and conditional training, for the development of flexibility corresponding to the level of those involved. Classes were conducted by Ekaterina V. Plaksina, trainer-teacher of the Physical Education and Sports Department, Master of sports of Russia in sports aerobics (aerobic gymnastics) and Master of sports of Russia in rhythmic gymnastics.

Measurement of pulmonary capacity body mass index: first, body mass was measured, then the lung vital capacity (LVC) was measured. A dry lung tester was used to determine the LVC. The study was performed 2-3 times with an interval of 30-60 seconds. The best result was recorded (in milliliters).

The PWC170 test was also conducted (a step test), showing the performance of the cardiorespiratory system, which reflects the body aerobic capacity more objectively.

The level of anxiety was measured. Assessment of the level of state and trait anxiety (according to Spielberger - Khanin scale) was made. This test is a reliable informative way of self-assessment of the level of anxiety at the moment (state anxiety) and trait anxiety (as a characteristic of a person).

Qualitative characteristics were evaluated on a 5-level scale using computer software: high level, above average, medium, below average, low. The Monitoring the Students' Health computer software was developed by a team of scientists from Novosibirsk State Pedagogical University. The scale is formed by the average value of the attribute value from the sum of points for completed tasks, and the result is reflected in the corresponding diagrams below. [1]

Results of the study and their discussion. The analysis of indicators of functional fitness and physical development of female students at the beginning of the academic year revealed: in the parameter of the pulmonary capacity body mass index, the number of students with the low level (14%) and the average level of the index prevailed, 7% of students had a below average level, and 25% of students had an average level, the number of students with the above average index was 25%, 30% of students had a high level of pulmonary capacity body mass index. At the end of the year, in the experimental group, 33.5% of students reached the high level of pulmonary capacity body mass index, and the number of students with a low level and below average (4,7%) decreased, which shows a positive trend. In the reference group, the number of students with the low level of pulmonary capacity body mass index decreased by 3,5% compared to the beginning of the academic year, the number of students with the level below average decreased by 0,9%, with the average level increased by 5,4% compared to the beginning of the academic year, the number of students with the level above average increased by 2,2%, with the high level decreased by 2,2%. These indicators are not significant and there is practically no growth in the pulmonary capacity body index of students of the reference group during the year.

We observe these parameters in Figure 1 below:

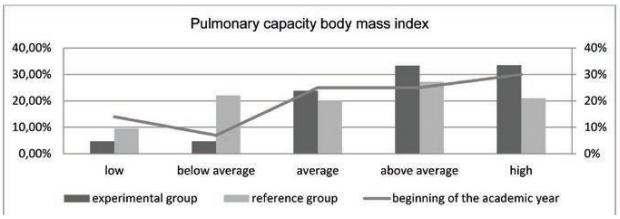

Figure 1.

In Figure 2, the parameters based on the results of the PWC170 test are presented.

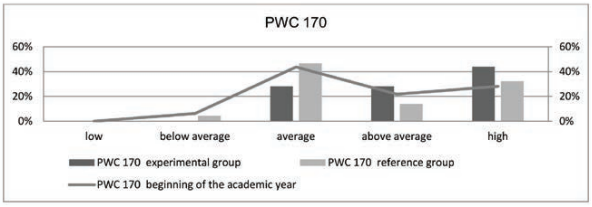

Figure 2.

According to the results of the study, by the end of the academic year in the experimental group, in relation to the beginning of the academic year, the PWC 170 indicators at a low and below-average level did not change and remained at zero, the number of students with the average level decreased by 15,75%, while with the above-average level increased by 6,2%, and the number of students with the high level increased by 15,8%, which proves the effectiveness of the method in the experimental group. This is due to the inclusion of aerobic exercises, complex coordination movements at a high speed.

At the end of the academic year in the reference group, the PWC170 indicators did not significantly change in relation to the measurements of the beginning of the academic year. The number of students with the below-average level decreased by only 1,75%, the indicators of the average level increased by 2,95%. The number of students with the above-average level decreased by 4,8%, while the high-level indicators increased by only 1,1%. Thus, according to the results of the conducted studies, there is no significant improvement in the PWC 170 indicators in the reference group.

The level of anxiety is shown in Figure 3.

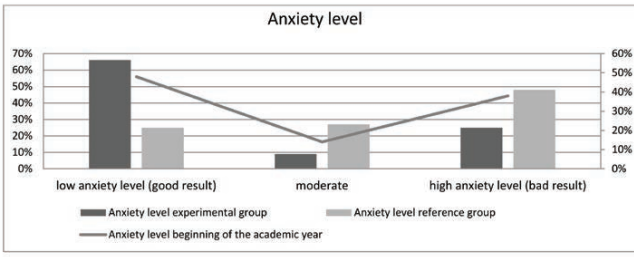

Figure 3.

The assessment of the level of state and trait anxiety in both groups at the beginning of the academic year shows that 48% of students had low anxiety, 14%-moderate, 38% — high.

At the end of the year in the experimental group, the number of students with low anxiety increased by 18%, with the moderate anxiety increased by 5%, while the number of students with the high level of anxiety decreased by 13%. The obtained results of the study in the experimental group show a high level of anxiety reduction in students, and consequently, an improvement in the mental health and emotional state of students.

In the reference group, by the end of the academic year, there were 22% fewer students with the low anxiety level, while indicators of moderate anxiety increased by 13%, and indicators of high anxiety increased by 9%.

Thus, we can conclude that during the year, the first-year students of the reference group, due to the burden of responsibility and an increase in the academic load during the year, acquired a high level of anxiety. Changing the adolescent life perception to a more mature one increased their overall level of anxiety. While the students of the experimental group, thanks to classes in the chosen sport, in the same conditions significantly reduced the level of anxiety, which proves the beneficial effect of fitness and sports aerobics classes.

Conclusions. Classes in specific kinds of sports, in our case in the group of fitness and sport aerobics, can solve the above tasks most beneficially. This study has shown high effectiveness of sports classes. During the year, the students improved not only their physical performance, but also reduced their anxiety levels. Anxiety is a problem of a modern person, and for a young person experiencing the stress of entrance exams, sessions, a new way of life is the most relevant. Physical education classes in specific kinds of sports can solve the problem in the best possible way. Students learn to work in a team, make friends, feel the support of their team, their coach, learn to set goals and achieve them, develop endurance and stamina, increase the level of responsibility to themselves and the team, develop and increase self-esteem. Accordingly, students are emotionally well, stress-resistant, have a high level of self-control, do not suffer from depression and anxiety disorders. Thus, this study shows the importance of the physical education as a discipline and the effectiveness of the methodology of classes in specific kinds of sports.

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