Dynamics identification of the physical fitness level of female students of the humanities

Salman Baisultanovich Eliphanov¹, Tamerlane Danelbekovich Bashkhadzhiev², Petimat Iziyevna Izieva¹, and Madina Alkhazurovna Alieva¹

¹Chechen State Pedagogical University, Subry Kishiev St., 33, Grozny, Russian Federation
²Chechen State University named after A.A. Kadyrov, Aslanbek Sheripov St., 32, Grozny, Russian Federation

Abstract. The outcomes of identifying the dynamics of the physical fitness level of humanitarian profile students are set forth in the research article. The physical fitness level and the growth dynamics of students’ outcomes are determined during the pedagogical experiment. A comparative analysis of the physical fitness level is carried out from the first to the third academic year. The analysis is made following the identification of the physical fitness level, which reveals that the data of the first-year students are higher by the end of the year, and in the second year a decrease in indicators is observed, although indicators are above by the end of the third studying year. The least increase is revealed in terms of the squatting standard (for 30 seconds) from the first to the third course, also lifting the body from a supine position (number of times per 1 minute) does not reach the level of the RLD badge (“Ready for Labor and Defense”). The necessity of search and application of various means and methods in terms of volume and content to improve the quality of physical education in the university is revealed. The created system of physical culture and health improvement process affects the physical education outcomes at the university: the amount of theoretical knowledge, the correct and competent study of the technique of physical exercises, high requirements for discipline in the classroom, sectional work in sports, and performances at mass sports competitions.

Keywords: method, formation, skill, ability, dynamics, analysis

1 Introduction

The objectives of preserving, strengthening and shaping the younger generation health, developing and implementing new health-saving technologies, instilling the healthy lifestyle foundations and theoretical knowledge for the further successful professional activity of specialists are singled out in the national doctrine and the federal program for the education development in Russia as leading, in addition to educational ones. The most significant indicator for the society well-being is the younger generation health, as one of the factors of the state national security [1, 2].

Particular concern is caused by unsatisfactory indicators of children and adolescents’ health studying in educational institutions and a tendency to deteriorate in the conditions of modernization and optimization of higher education, when the volume of academic hours is reduced and the emphasis on self-education is focused.

Acceptance of control standards is provided for the program of organizing the educational process in physical culture and sports to define the physical fitness level of students at higher educational institutions.

2 Problem Statement

“Movement underlies the variety of mental activity,” said the great scientist I.M. Sechenov [3]. The paramount task of “Physical Education” as the university subject is healing, however, various authors indicate low efficiency, arguing that training classes in physical education in the amount of twice a week for two hours do not have a positive effect on the growth of functional and physical readiness.

Therefore, in the conditions of modernization and optimization of higher education, when the volume of teaching hours is reduced and the emphasis is focused on self-education, a sufficient component is the level of students’ health. Consequently, the relevance of diagnosing the physical fitness level for making managerial decisions to enhance the quality of knowledge and motor skills is increasing. A significant pedagogical objective is to find means and methods for the most efficient development of the body, thus, improving the health of students [4].

3 Research Questions
The indicator increase dynamics was revealed by the fourth year on the basis of our research. Moreover, scientists and researchers of the physical fitness level and health [5] dispute about a decrease in the functional abilities of graduate students. The decline in the indicators of first-year students in relation to senior courses, considering the ratio of the hours of practical and theoretical classes, demonstrates a lack of training process and practical load within first years [6, 7].

4 Purpose of the Study

The purpose of the study is to identify the dynamics and conduct a comparative analysis of the outcomes of the physical fitness level of students from the first to the third academic years in order to find means and methods of high-quality teaching of physical education.

Research objectives:
1. Substantiation for conducting a research to determine the physical fitness level of students.
2. Designation of the physical fitness level of students, and the growth dynamics of the outcomes.
3. Comparative analysis of the outcomes’ dynamics of the physical fitness level of students from the first to the third academic year.
4. Rationale of means and methods as another teaching of physical education.

5 Research Methods

In Chechen State Pedagogical University, a pedagogical experiment was conducted in order to reveal the outcomes’ dynamics of the physical fitness level of students from the first to the third academic year. The experiment encompassed students of the “Chechen Language and Literature” training profile in the amount of 60 girls from the first to the third academic year.

The organization and conduct of volumetric testing requires a conscious approach from students and therefore the goal, objectives and planned outcomes are voiced before measurements. Testing is organized during the period of academic lessons with standard tools: a gymnastic bench, a centimeter line, a stopwatch, a roulette for measuring long jump, and a treadmill. Measurements take place at the sports ground in the first half of the educational day. During measurements, the teachers focus on the methodological features of taking the control standards of the RLD Complex. The outcomes of the control standards of the first, second and third year are evaluated in accordance with the requirements of the RLD Complex.

Acceptance of control standards for the physical education of girls was performed in accordance with the requirements of the educational process organization in the ”Elective courses in physical education and sports” subject in groups engaged in general physical training, the “Chechen Language and Literature” training profile: squatting (30 seconds), tilt forward, standing on a gymnastic bench, flexion and extension of hands lying on the floor (number of times), lifting the body from a supine position (number of times per 1 min.). The standards of the All-Russian physical education and sports complex “Ready for Labor and Defense” (RPhES RLD) of the IV stage were the basis for evaluating test outcomes. Methodically justified assessments are: “excellent” – a gold badge, “good” – a silver badge, “satisfactory” – a bronze badge, “unsatisfactory” – below the level of the bronze RLD badge [8].

Control standards were adopted during academic lessons at the beginning of the first semester (September) and the end of the academic year (May).

There are conditions for the acceptance of control standards at the university: regulations requirements, gym, sports ground, and inventory and equipment.

Special attention of the first-year students was paid to the correct technique for performing exercises when checking the initial level: the students were announced the methodological requirements and safety precautions [9, 10].

An increase in all standards is observed among first-year students by the end of the academic year (Table 1, Fig.1).

<p>| Table 1. Outcomes of acceptance of control standards for first-year students |
|-----------------------------|-----------------|-----------------|-----------------|-----------------|</p>
<table>
<thead>
<tr>
<th>Indicators</th>
<th>Squatting (30 s)</th>
<th>Tilt forward, standing on a gymnastic bench (cm)</th>
<th>Flexion and extension of the hands lying on the floor (number of times)</th>
<th>Lifting the body from a supine position (number of times per 1 min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General indicator</td>
<td>501</td>
<td>575</td>
<td>178</td>
<td>247</td>
</tr>
<tr>
<td>Arithmetic mean indicator</td>
<td>26.3</td>
<td>30.3</td>
<td>9.3</td>
<td>13</td>
</tr>
<tr>
<td>Growth</td>
<td>4</td>
<td>3.7</td>
<td>5</td>
<td>6.3</td>
</tr>
</tbody>
</table>
A significant growth in arithmetic mean indicators is observed for all indicators. The increase in the indicator of squatting for 30 seconds is 4 times. The result has improved by 3.7 cm in terms of tilt forward, standing on the gymnastic bench. The difference in the increase in the indicator of flexion and extension of hands lying on the floor (number of times) is 5. The growth in terms of lifting the body from a supine position (number of times per 1 min) is considerable – 6.3.

Second-year students in all four standards indicate the dynamics of a decline in the arithmetic mean data of indicators of the physical fitness level, although an increase is observed by the end of the academic year (Table 2, Fig. 2).

Probably, the decrease in the arithmetic mean data of indicators of the physical fitness level is due to the fact that testing was carried out after a long break (summer holidays) at the semester beginning, in September. An essential factor for students is that certification, but not credit is the form of control this semester.

### Table 2. Outcomes of acceptance of control standards for second-year students

<table>
<thead>
<tr>
<th>№</th>
<th>Indicators</th>
<th>Squatting (30 s)</th>
<th>Tilt forward, standing on a gymnastic bench (cm)</th>
<th>Flexion and extension of the hands lying on the floor (number of times)</th>
<th>Lifting the body from a supine position (number of times per 1 min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>General indicator</td>
<td>499</td>
<td>243</td>
<td>146</td>
<td>307</td>
</tr>
<tr>
<td></td>
<td>Arithmetic mean indicator</td>
<td>26.2</td>
<td>12.7</td>
<td>7.6</td>
<td>16.1</td>
</tr>
<tr>
<td>2</td>
<td>Growth</td>
<td>2.5</td>
<td>2.5</td>
<td>4.2</td>
<td>6.5</td>
</tr>
</tbody>
</table>

Nevertheless, according to the arithmetic mean indicator, the increase in the standard of squatting (30 s) is 2.5 times. In terms of tilt forward, standing on a gymnastic bench, the increase equals to 2.5 cm, in the lifting the body from a supine position (number of times per 1 min) standard, the increase is 6.5. A decrease in the growth of indicators of the physical fitness level is observed for all indicators, with the exception of the lifting the body standard.

Third-year students had a level of indicators higher than those of the first year at the beginning. The physical fitness level turned out to be higher in all indicators compared to the indicators of three courses when the standards were adopted by the end of the academic year (Table 3, Fig. 3).
Table 3. Outcomes of acceptance of control standards for third-year students

<table>
<thead>
<tr>
<th>№</th>
<th>Indicators</th>
<th>Squatting (30 s)</th>
<th>Tilt forward, standing on a gymnastic bench (cm)</th>
<th>Flexion and extension of the hands lying on the floor (number of times)</th>
<th>Lifting the body from a supine position (number of times per 1 min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>General indicator</td>
<td>512</td>
<td>526</td>
<td>200</td>
<td>251</td>
</tr>
<tr>
<td>2</td>
<td>Arithmetic mean indicator</td>
<td>26.9</td>
<td>27.7</td>
<td>10.5</td>
<td>13.2</td>
</tr>
<tr>
<td>3</td>
<td>Growth</td>
<td>0.8</td>
<td>2.7</td>
<td>5.5</td>
<td>6.6</td>
</tr>
</tbody>
</table>

Fig. 3 Outcomes of acceptance of control standards for third-year students

In terms of arithmetic mean data, the lowest growth in squatting (0.8) compared to the two previous courses. The growth is higher in the third year compared to the first year in three main indicators of the physical fitness level.

The data comparative analysis of the first and third courses indicates the growth dynamics in all indicators presented to students for determining the level of physical fitness and the formation of motor skills and abilities (Table 4, Fig. 4).

Table 4. Summary outcomes of acceptance of control standards in students of the first and third courses and compliance with the RLD Complex

<table>
<thead>
<tr>
<th>№</th>
<th>Indicators/course</th>
<th>Squatting</th>
<th>Tilt</th>
<th>Compliance with the RLD badge</th>
<th>Push-up</th>
<th>Compliance with the RLD badge</th>
<th>Raising the body</th>
<th>Compliance with the RLD badge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 course</td>
<td>26.3</td>
<td>9.3</td>
<td>Bronze</td>
<td>14.3</td>
<td>Silver</td>
<td>24.1</td>
<td>below bronze</td>
</tr>
<tr>
<td>2</td>
<td>3 course</td>
<td>27.7</td>
<td>13.2</td>
<td>Silver</td>
<td>17.5</td>
<td>Gold</td>
<td>26.6</td>
<td>below bronze</td>
</tr>
<tr>
<td>3</td>
<td>Growth</td>
<td>1.4</td>
<td>3.9</td>
<td>Bronze</td>
<td>3.2</td>
<td>Silver</td>
<td>2.5</td>
<td>below bronze</td>
</tr>
</tbody>
</table>

Fig. 4 Summary outcomes of acceptance of control standards in students of the first and third courses and compliance with the RLD Complex

The growth is insignificant in terms of squatting and lifting the body, it is required for the teacher to draw attention and apply the means and methods for the strength endurance development. The lifting the body standard is below the RLD badges.
6 Findings

1. Identification of the physical fitness level of students reveal the growth dynamics of all indicators from the first to the third academic year.

2. Every student who has taken part in the standards’ acceptance can be positively attested by the totality of test outcomes.

3. Comparative analysis of the growth dynamics in the physical fitness level of students from the first to the third academic year demonstrate that the teacher needs to apply various means and methods of developing strength endurance in terms of volume and content.

4. Diagnostics, detection, and study of the development of physical qualities during the educational process can positively influence the quality of physical education at a university.

7 Conclusion

The main criteria of physical perfection, the normative base which state physical education programs are guided on, is the RLD Complex. Students from the first to the third year have improved the outcomes in three standards included in the RLD Complex: tilt forward, standing on a gymnastic bench (from “bronze” to “silver”), flexion and extension of the hands lying on the floor (from “silver” to “gold”), and lifting the body from a supine position is close to the “brass” badge.

High growth outcomes in the first year of study can be justified by a number of methodological, organizational, and environmental reasons. The shortcomings of school physical education at the university are beginning to be leveled by teachers: consistency, correct and competent study of technology, high requirements for the discipline. In organizational terms, students begin to attend sectional classes in sports (12 types are cultivated at a university) and perform at mass sports competitions. Finding themselves in an environment where there are pedagogical conditions, students are drawn into the physical culture and health improvement process.

Scientists and researchers of the level of physical fitness and health speak about a decrease in the functional abilities of graduate students across the country. Nevertheless, the growth dynamics in indicators by the fourth year can be traced in the studies conducted at the Department of Physical Education of Chechen State Pedagogical University. We consider that several factors can serve as a substantiation: delayed interest in knowledge, shortcomings of the school educational system, a systematic nature of ongoing sports and recreational activities, the methodological professional level of university teachers.

In this regard, the relevance of diagnosing the physical fitness level for making managerial decisions to improve the quality of knowledge, motor skills, and healthy lifestyle skills is increasing. An essential pedagogical objective is to find means and methods for the most efficient development of the body for the purpose of improving the health of students.

The experiment outcomes can be used both as material for scientific research and practical work in the field of physical education and sports to develop the level of physical qualities and health of students.

References

1. S.B. Elipkhanov, A.A. Batukaev, A.H. Mamadiev, Determination of the level of knowledge on the basic concepts of physical education. Sci. notes of the P.F. Lesgaft Univ. 8(150), 133–136 (2017)


3. I.M. Sechenov, Notes of a Russian professor from medicine (Moscow, AST, 2014)


7. S.B. Elipkhanov, U.B. Akhmadov, M.I. Isaeva, Methods of performing types of tests of the complex “Ready for work and defense” for the population (Grozny, Publ. house of ChSPU, 2020)

