

# Formation of the Students' Volitional Qualities in the Process of Physical Education

Grygoriy Griban<sup>1\*</sup>, Olena Kuznietsova<sup>2</sup>, Pavlo Tkachenko<sup>3</sup>, Dmytro Oleniev<sup>4</sup>, Oksana Khurtenko<sup>5</sup>, Zoia Dikhtiarenko<sup>6</sup>, Eduard Yeromenko<sup>6</sup>, Andrii Lytvynenko<sup>7</sup>, Alla Khatko<sup>8</sup>, Larysa Pustoliakova<sup>9</sup>

<sup>1</sup>Department of Physical Education and Sport Improvement, Zhytomyr Ivan Franko State University, Zhytomyr, 10002, Ukraine

<sup>2</sup>Department of Physical Culture and Sports, Educational Establishment "Polessky State University", Pinsk, 225710, Republic of Belarus

<sup>3</sup>Department of Physical Education, Polissia National University, Zhytomyr, 10002, Ukraine

<sup>4</sup>Department of Theory, Methodology and Organization of Physical Training and Sports, The National Defense University of Ukraine named after Ivan Cherniakhovskiy, Kyiv, 03049, Ukraine

<sup>5</sup>Department of Theory and Methods of Physical Education, Vinnytsia Mykhailo Kotsiubynskiy State Pedagogical University, Vinnytsia, 21000, Ukraine

<sup>6</sup>Department of Horting and Rehabilitation, University of State Fiscal Service of Ukraine, Irpin, 08200, Ukraine

<sup>7</sup>Department of Physical Education, Kharkiv National University of Radio Electronics, Kharkiv, 61000, Ukraine

<sup>8</sup>Department of Computer Technology in Management and Education and Informatics, Berdyansk State Pedagogical University, Berdyansk, 71100, Ukraine

<sup>9</sup>Department of Physical Education and Health, Bogomolets National Medical University, Kyiv, 01601, Ukraine

*Received November 3, 2020; Revised December 2, 2020; Accepted December 29, 2020*

## Cite This Paper in the following Citation Styles

**(a):** [1] Grygoriy Griban, Olena Kuznietsova, Pavlo Tkachenko, Dmytro Oleniev, Oksana Khurtenko, Zoia Dikhtiarenko, Eduard Yeromenko, Andrii Lytvynenko, Alla Khatko, Larysa Pustoliakova, "Formation of the Students' Volitional Qualities in the Process of Physical Education," *International Journal of Human Movement and Sports Sciences*, Vol. 8, No. 6, pp. 505 - 517, 2020. DOI: 10.13189/saj.2020.080625.

**(b):** Grygoriy Griban, Olena Kuznietsova, Pavlo Tkachenko, Dmytro Oleniev, Oksana Khurtenko, Zoia Dikhtiarenko, Eduard Yeromenko, Andrii Lytvynenko, Alla Khatko, Larysa Pustoliakova (2020). *Formation of the Students' Volitional Qualities in the Process of Physical Education. International Journal of Human Movement and Sports Sciences*, 8(6), 505 - 517. DOI: 10.13189/saj.2020.080625.

Copyright©2020 by authors, all rights reserved. Authors agree that this article remains permanently open access under the terms of the Creative Commons Attribution License 4.0 International License

**Abstract** The aim of the study is to investigate the development level of the students' volitional qualities and their impact on physical fitness. The research of the formation of the students' volitional qualities was conducted in 2014-2020 in three stages. At the first stage, the significance of the difficulties that arise in the process of physical education was assessed, and the volitional qualities structure of the students of different genders was determined. At the second stage, the methodology of the volitional qualities assessment was developed and the development level of the students' volitional qualities in the process of physical education was defined. At the third stage, the students' level of physical fitness concerning the level of volitional qualities development was investigated. The study involved 972 students between the ages of 17 and 22. It was found that the main volitional qualities of students are purposefulness, persistence and perseverance,

endurance and self-control, proactivity, and independence. In addition, purposefulness is the leading volitional quality around which other qualities are grouped in a certain system. It was found that 16.2% of male students and 10.1% of female students had a high level of volitional qualities development. 54.7% of male students and 37.6% of female students had a medium level. 29.1% of male students and 52.3% of female students had a low level of volitional qualities development. It was designated that students who were characterized by highly-developed volitional qualities had a high level of physical qualities development.

**Keywords** Volitional Qualities, Physical Qualities, Physical Education, Students

---

## 1. Introduction

One of the difficult problems in the system of physical education of students is the identification of external and internal conditions that determine the conscious, volitional behavior of a student. Not analyzing volitional manifestations, it is impossible to understand the psychological mechanism of the active behavior of a student. Volitional manifestations are a necessary condition for students' activity. They allow regulating the course of all mental processes. Many processes and phenomena that have arisen in physical education and sports have a deep social essence, and some patterns can be transferred to other human activities. Such volitional qualities as purposefulness, endurance and self-control, persistence and perseverance, proactivity and independence, courage and decisiveness, which are shown during physical exercises, are a prerequisite for the professional activity of a pilot, speed driver, operator, dispatcher, doctor, etc. Therefore, the study of volitional manifestations of students in the process of physical education is necessary, as it allows studying the volitional qualities of the student's personality.

The scientific analysis shows that the will, like all other mental processes, arose and was developed in the process of the historical development of a person, one's social relations and it was determined by goals and needs. The will should be considered as a mental process that allows a person to act freely in the environment, to rely on the laws of nature, society, and human development [1].

The problem of the volitional qualities education is most successfully developed in the psychology of sports because it is associated with the conditions and needs of sports activities, which put the maximum demands on the volitional sphere of the individual. Sports activities have their own specific features that significantly affect the students' state of mind, their emotional experience, and condition, and require maximum willpower [2]. The decisive conditions for the students' volitional qualities education are the formation of a scientific worldview, the development of social feelings, duty, and responsibility for their actions [3, 4, 5].

Volitional behavior is a complex conditioned reflex action by its physiological nature. Therefore, in the process of educating the will of students, it must be taken into account that their behavior is influenced by the peculiarities of nervous processes and the human behavior is conditioned not only by innate properties of the nervous system but also those effects that have been acted on the organism during its individual development, i.e. they depend on constant training [6, 7].

Volitional actions of students can have many options for freedom of action. This involves the formation of their capacity for truly free actions. The development of social consciousness plays an important role in the formation of the ability to act freely. The more a student recognizes

oneself as a person, as a subject of social development, the more opportunities one has for self-education and activity development. This allows controlling oneself, to determine one's strengths and weaknesses correctly, to see the prospect of further development and physical improvement [8, 9, 10]. The most expressive description of the will was given by Weinberg and Gould: "The will is not a kind of agent that controls only the movements – it is an active aspect of mind and moral sense, which controls the movements, often against a sense of self-preservation" [2].

According to research conducted so far [11] the will as one of the aspects of human consciousness, which is determined by one's existence, it is a function of a normally functioning brain, a product of its activities, which allows a person to control oneself, especially overcoming difficulties. In this regulation, the multifaceted features and shades of the will of each individual, as well as the strengths and weaknesses of one's volitional training are revealed. Being an active party of the mind and moral sense, the will is manifested in voluntary actions aimed at achieving the set goal. These characteristics are the logical conclusion of the analysis of the will as a mental phenomenon and they allow us to talk about the structure of volitional manifestations of personality. Each volitional manifestation contains intellectual components because the will is the active side of the mind; emotional (motivational) components because the will is the active side of moral feelings; operational components (skills) because the will manifestations are associated with overcoming obstacles [12, 13, 14, 15]. However, despite some developments of specialists in this field, the issues of the students' volitional qualities education in the process of physical education requires further investigation.

### 1.1. The Aim

The aim of the study is to investigate the development level of the students' volitional qualities and their impact on the physical fitness.

## 2. Materials and Methods

The research of the formation of the students' volitional qualities was conducted at Polissya National University and Zhytomyr Ivan Franko State University in 2014-2020 in three stages: at the first stage, the significance of the difficulties that arise in the process of physical education was assessed, and the volitional qualities structure of the students of different genders was determined (it involved 746 students (329 males and 417 females)); at the second stage, the technique of the volitional qualities assessment was developed and the development level of the students' volitional qualities in the process of physical education

was defined; at the third stage, the students' level of physical fitness concerning the level of volitional qualities development was investigated. The second and third stages involved 226 students (117 males, 109 females). In general, the study involved 972 students (446 males and 526 females) of the main department between the ages of 17 and 22 who were studying at different departments of the mentioned higher education institutions (HEI).

The research methods involved the analysis and generalization of literature sources, pedagogical observations, questionnaires, pedagogical testing, pedagogical experiment, methods of mathematical statistics.

The assessment of the significance of difficulties that arise in the process of physical education was carried out on the basis of a specially developed questionnaire, which aims at clarifying the subjective assessment of students on the organization, circumstances and conditions of classes; difficulties associated with an insufficient level of physical fitness, theoretical and methodological training, material and technical equipment, adverse weather and climatic conditions, the consequences of illness and injury, personal attitude to classes.

To find out the structure of students' volitional qualities, we conducted a survey of students of different genders, who had to rank the importance of the following volitional qualities: purposefulness, persistence and perseverance, endurance and self-control, proactivity and independence, courage and decisiveness. This list is the most efficient for many decades in physical education and sports, as each volitional quality has its own specific characteristics, its own features, and, in general, they give a complete picture of the will and volitional preparedness of the individual:

- *purposefulness* is a volitional quality, that characterized by the goals and objectives, orderliness and balance of actions, thoughts, and feelings with a steady movement towards the goal;
- *persistence and perseverance* are the human abilities to storage energy by long-term, to achieve the goal, to overcome the difficulties of varying magnitude;
- *endurance and self-control* are the personality qualities that help maintain the clarity of mind, the ability to control thoughts, feelings, and actions in conditions of emotional arousal or depression, intense stress, fatigue, unexpected obstacles, and the impact of other negative factors;
- *proactivity and independence* are characterized by personal initiative, innovation, creativity, and speed of thinking in actions aimed at achieving the goal, resistance to the influence of others, their actions;
- *courage and decisiveness* contribute to the timely and thoughtful solution of problems that arise in the activity, as well as to implement decisions in practice, to overcome fears, to take responsibility for the decision and for its implementation in conditions of risk and danger.

To study the influence of volitional qualities on the level of physical fitness of students, we studied the development level of the students' physical qualities depending on the level of volitional qualities of students with the help of the following tests: the 3000 m run (males), the 2000 m run (females), the 100 m run, long-standing jump, push-ups, pull-ups (males), bent suspension (females), sit-ups in 1 min, the 4 x 9 m shuttle run, trunk forward bending.

This study complies with the ethical standards of the Act of Ukraine "On Higher Education" No. 1556-VII dated 01.07.2014 and the Letter from the Ministry of Education and Science of Ukraine "On the Academic Plagiarism Prevention" No. 1/11-8681 dated 15.08.2018. Also, this study followed the regulations of the World Medical Association Declaration of Helsinki – ethical principles for medical research involving human subjects. Informed consent was received from all individuals who took part in this research.

### 3. Results

The process of forming the necessary volitional qualities of a student can be revealed only on the basis of studying and resolving internal contradictions caused by one's activity and external contradictions that arise between the student's personality, environment, and laws of physical development and improvement.

The process of the student's personality development is a continuous process of solving the internal contradictions between the achieved level of the physical possibilities, the desirable level, and program requirements. Thus, the main contradiction for students in the process of physical education is the contradiction between the desire to show the best result possible and the ability to do so at this stage. Therefore, a student strives for a new level of physical achievement, and as a result of these aspirations, new sources of development appear. It should also be noted that the driving forces of the development of the student's will are the contradictions caused by the activity of one's personality. Therefore, overcoming external difficulties appearing during physical improvement and counter internal difficulties in the process of physical exercises leads to a high development of volitional qualities.

To carry out the process of volitional qualities education, first of all, it is necessary to identify and systematize the difficulties that occur during preparation for classes and classes themselves, and to find out how they affect the condition of the student. The study of the difficulties of the physical education process showed that the difficulties can be divided into two groups: objective and subjective.

The objective difficulties should be understood as those that are determined by a particular type of exercise, without which a student can not master a certain level of

physical or technical fitness. The peculiarity of these difficulties is that they have the same psychological content for all students of a certain group, but may vary depending on the year of study or faculty, etc. Therefore, every student in a certain group must go through these difficulties.

The subjective difficulties are of a different nature. They are based on the personal attitude of a student to the objective features of physical education, the conditions of training, their content, the supply of technical equipment, the authority of a teacher, and so on. Subjective difficulties depend on the individual characteristics of the student's personality, one's physical development and physical fitness, consciousness and discipline, etc. Therefore, they have a pronounced individual character and are usually different in the same group of students.

Depending on the origin, we identified 7 groups of difficulties:

- 1) difficulties related to the organization, circumstances, and conditions of the classes include the lack of locker rooms, wearing a sports uniform, conditions and time of taking a shower after classes, the content of classes, the professionalism of a teacher, and one's attitude to students, program requirements, etc;
- 2) difficulties conditioned by an insufficient level of physical development and physical fitness of students arise against the backdrop of the relative inconsistency of physical qualities (power, endurance, speed, flexibility, agility, and coordination) to the requirements of the educational process and tests, assessing physical fitness, as well as the peculiarities of the organism (fatigue, pain, etc.);
- 3) difficulties associated with an insufficient level of theoretical and methodological readiness of students appear because of the lack of knowledge to overcome difficulties in the process of physical exercises, the methodology for tools and methods of training selection, basic knowledge in anatomy, physiology, psychology, and physical education theory;
- 4) difficulties associated with insufficient material and technical equipment of classes arise owing to the lack of necessary sports equipment, their breakdown, bad selection of shoes and sports uniforms, the lack of the training place, etc.;
- 5) difficulties associated with adverse weather and climatic conditions occur during classes at low or high temperatures and humidity, rain, snow, wind, etc.;
- 6) difficulties arising from diseases, injuries, and their consequences imply that illnesses and injuries cause a number of additional difficulties, which are associated with skipping classes, the loss of physical shape, health deterioration, and insecurity;
- 7) difficulties related to the student's personal attitude to physical exercises include the lack of discipline and healthy lifestyle, a low level of motivation and interest in physical culture and sports, laziness, shame for one's own physical development and physical fitness, the monotony of classes, insufficient development of psychomotor, volitional, and emotional qualities, insecurity, the location of classes, and many other obstacles related to the personal experiences of a student, which prevent the successful attendance of classes.

The survey of students showed that the difficulties of the physical education process differ from the ones arising during independent physical exercises in terms of the content and significance of their occurrence (Table 1). The most significant difficulties in the physical education process were those associated with overcoming students' low physical development and physical fitness for males (52 %) and females (64 %). In the process of independent exercises, the significance of these difficulties for many students decreased (28% and 35.7% respectively). But our observations showed that this was a subjective assessment of students because in the process of independent training, many students set easy tasks, avoiding difficulties that require great willpower. Only 5.1% of males and 1.7% of females had a high level of physical fitness and easily overcame difficulties in the process of physical education.

**Table 1.** The students' subjective assessment of the difficulties significance in the process of physical education (n=746), %

The difficulties, arising in the process of physical education	Educational process						Independent training					
	Males (n=329)			Females (n=417)			Males (n=329)			Females (n=417)		
	significant	insignificant	absent	significant	insignificant	absent	significant	insignificant	absent	significant	insignificant	absent
Related to the organization, circumstances, and conditions of the classes	24.6	68.4	7.0	33.1	64.7	2.2	10.3	69.6	20.1	14.9	74.8	10.3
Related to the lack of physical fitness	52.0	42.9	5.1	64.0	34.3	1.7	28.0	63.5	8.5	35.7	61.2	3.1
Related to insufficient material and technical equipment of classes	9.4	22.5	68.1	6.9	17.3	75.8	44.4	40.1	15.5	17.8	28.5	53.7
Related to adverse weather and climatic conditions	34.3	45.3	20.4	61.4	35.5	3.1	47.4	45.0	7.6	65.0	34.1	0.9
Related to the effects of illness and injury	19.5	66.0	14.5	41.5	54.9	3.6	23.4	55.9	20.7	23.5	67.1	9.4
Related to personal attitude to classes	23.1	70.2	6.7	33.3	61.2	5.5	27.1	61.7	11.2	36.9	51.6	11.5

Meteorological and climatic conditions have a negative impact on the process of conducting both educational (34.3% and 61.4 %) and independent (47.4% and 65 %) classes. The students do not want to study outdoors in winter, in cold, rainy, snowy, and windy weather. Quite a lot of students do not have the appropriate shoes and clothes, skills to perform exercises in different weather conditions. Authoritarian classes on the street during bad weather cause a number of complaints from students, leading to low test performance, and ultimately to an increase in disease rate.

The material and technical equipment is of great importance for attracting students to independent physical exercises (sports ground covers, gym machines, and modern equipment, music, the ability to take a shower after class, etc.), as indicated by 44.4% of males.

The difference in the content of difficulties requires a different direction of volitional qualities education to successfully overcome them. Without knowledge of the peculiarities of their origin and the attitude of students to them, it is impossible to properly build the process of physical education, independent physical improvement of students, including the process of volitional qualities education.

Considering the process of overcoming difficulties in physical education, we can say that the object of teachers' influence is the students' psychics, and the volitional qualities education acts as a purposeful pedagogical process of the student's psychic development and improvement in accordance with educational conditions. The unity of the psychics and activity means that each mental process takes place in some more or less complex activity, is a part of this activity, and depends on it, its goals and motives, methods of implementation. However, the mental process itself, aimed at achieving a certain goal, is carried out in different ways or techniques, goes through certain phases or stages of execution, and, thus, acts as a mental activity.

**Table 2.** The significance of volitional qualities in the structure of the students' act of will in the physical education process (n=226), %

Volitional qualities	Educational process		Independent training	
	Males	Females	Males	Females
Purposefulness	32.3	35.2	38.7	33.5
Perseverance and persistence	30.6	24.6	18.9	20.1
Endurance and self-control	29.9	29.8	14.8	18.3
Proactivity and independence	4.7	3.8	26.2	28.1
Courage and decisiveness	2.5	6.6	1.4	0.7

The questionnaire of students, carried out in order to clarify the structure of their volitional qualities (ranking the importance of volitional qualities), showed that the leading volitional quality of students was purposefulness, its importance for males accounted for 32.3% in the

physical education process, and 38.7% in independent physical training; for females – 35.2 and 33.5% respectively (Table 2).

In the structure of the students' act of will, purposefulness was the main volitional quality, connecting the manifestations of all other volitional qualities into a single system and directing them to achieve the goal. The next place for males was occupied by persistence and perseverance in the process of physical education – 30.6 %, and proactivity and independence during independent physical training – 26.2 %. In the process of independent training, proactivity and independence are especially needed because such situations when a student must make decisions, understand and choose the most effective way to achieve the goal based on one's own capabilities, and decide whether to exercise or not, happen quite often. The third position in the educational process was occupied by endurance and self-control (29.9 %), and perseverance and persistence during independent exercises, which are necessary for students throughout the process of physical improvement. The fourth position in the educational process belonged to proactivity and independence for males (4.7 %), these qualities occupy the last position for females – 3.8 %. In the process of training, proactivity and independence are manifested in the student's ability to determine the objectives of the class, the choice of means and methods to achieve them, finding ways to improve physically, the desire to creatively implement plans in partnership with a teacher, the motivation for hard systematic work. At the same time, the low manifestation of these qualities in the process of physical education showed that mainly a directive one-sided approach is implemented in classes – a teacher sets tasks and requires them, and proactivity and independence of students are not encouraged. Endurance and self-control were in fourth place during independent training for both males (14.8 %) and females (18.3 %). This indicates that in the process of independent training, students perform exercises to the best of their ability, and they do not show maximum willpower. The last places in the structure of the act of will for males were occupied by courage and determination: 2.5% – in the educational process and 1.4% – during independent exercises. These qualities are needed by students in order to make unusual, risky, and very difficult decisions without hesitation. This indicates that in the process of physical education, there are no such means of physical education as lift jumps, acrobatic exercises, high jump, wrestling, and others that require a high development of courage and decisiveness. Slightly different results were obtained for females: the second place in the educational process was endurance and self-control – 29.8 %, and during independent training – proactivity and independence – 28.1 %. The third position in the educational process, as well as during independent exercises was occupied by persistence and perseverance –

24.6% and 20.1% respectively. This helped to establish the leading volitional qualities of students, which are necessary for the process of physical improvement, to find their dynamic structures in both educational classes and independent training, to make adjustments and changes to the means of physical improvement, to promote the proper organization of volitional qualities that will positively affect the state of physical development, physical fitness, and health of young students.

To implement the individualization and differentiation of the educational process on the basis of volitional manifestations, the question of creating a method of assessing the volitional qualities of students arose. Before starting to develop a methodology for assessing the volitional qualities of students, we note that:

- volitional qualities are relatively stable and constant manifestations of will in certain conditions of activity, which allow a student to regulate the behavior effectively;
- experimental circumstances do not always allow to assess the volitional qualities of a student, as a rule, there are indirect signs that characterize the parameters of the volitional qualities;
- direct questionnaire, in which a student must evaluate oneself, does not give true results owing to the insufficient objectivity of self-assessment or inability to apply the proposed questionnaire;
- each volitional action of a student takes place against the background of high psychological stress and does not reflect the real psychological state;
- the manifestation of volitional qualities should be sought in the peculiarities of their actions and deeds in the natural conditions of the educational process but not in the diagnosis of the neuropsychiatric condition;
- the attitude of students to the educational process is not always positive, there is often no desire to achieve maximum results on the basis of their capabilities and abilities;
- it is necessary to take into account the level of knowledge, skills, and individual abilities of a student;
- the volitional actions of each student can be divided into three stages: the first stage of volitional action is preparatory, characterized by realizing the goal, its preliminary considering, planning, decision-making, and identifying ways and means to achieve it; the second stage is executive, and consists of the implementation of the decision taken directly in the training process; the third stage is evaluation, characterized by the evaluation and analysis of performance.

We developed criteria for assessing the volitional qualities of students, taking into account the fact that each volitional quality is characterized by certain manifestations and the specifics of the process of physical

education at HEI.

Thus, *purposefulness* was assessed in terms of 13 features:

- 1) a clear long-term goal, plan and means to achieve it;
- 2) an intermediate goal, plan and means to achieve it;
- 3) confidence in achieving long-term and intermediate goals;
- 4) the ability to provide for the ways, methods and means to achieve the goal;
- 5) the theoretical knowledge and practical skills to build the process of the physical and health improvement and improvement;
- 6) the ability to make a plan of the physical improvement and development;
- 7) the ability to subordinate all the efforts and opportunities to achieve the goal;
- 8) purposefulness and constant readiness to overcome the difficulties of the educational process and those arising while performing physical exercises;
- 9) constant and steady aspirations, achieving the goal;
- 10) the ability to complete the plan of tasks;
- 11) the ability to compare the achieved result with the set goal and give it a correct assessment;
- 12) independent analysis of the effectiveness and efficiency of individual exercises and means of physical improvement;
- 13) the ability to make adjustments and adopt a new plan for physical improvement.

*Persistence and perseverance* was evaluated by 11 features:

- 1) the capacity for a long-term preservation of the goal and active desire to achieve it;
- 2) the ability to mobilize all efforts to achieve the goal;
- 3) constant readiness to achieve the goal;
- 4) confidence in personal capabilities on the way to the goal;
- 5) regular attendance of classes and additional independent physical exercises;
- 6) systematic performance of all educational and additional tasks and homework;
- 7) the repetition of uninteresting but necessary exercises;
- 8) maintaining a high level of activity in all physical education classes;
- 9) an active desire to overcome shortcomings in the physical training;
- 10) the ability to evenly distribute volitional efforts in the process of achieving the goal for a long time;
- 11) persistent desire to acquire new knowledge, skills, and abilities aimed at further physical improvement.

*Endurance and self-control* was assessed in terms of 5 features:

- 1) the ability to control oneself in the negative conditions of training;
- 2) the ability to control various states, desires, and skills;

- 3) the ability to control feelings, emotions in different conditions;
- 4) the ability to overcome negative feelings, fatigue, and internal states;
- 5) the ability to keep oneself from harmful actions, habits, and misdemeanors (ceasing tasks performance, skipping classes, bad habits, etc.).

*Proactivity and independence* was assessed in terms of 9 features:

- 1) critical attitude to the advice, decisions, and actions of the colleagues;
- 2) the lack of inclination to take over the authorities;
- 3) independent preparation for tests on physical education;
- 4) independent drawing up of plans for additional physical exercises;
- 5) independent analysis of the actions, deeds, state of physical fitness;
- 6) independent search for new tools and techniques of physical improvement;
- 7) independent changes and additions in the performance of tasks;
- 8) rapid change of behavior and actions in the event of an unexpected change in the conditions of classes (weather, health, the purpose of the class, etc.);
- 9) independent summing up when performing tests on physical education.

*Decisiveness and courage* was assessed in terms of 8 features:

- 1) timely decisions on the use of new exercises, tools, methods and activities for physical improvement;
- 2) timely decisions on the necessary actions in terms of responsibility to the group, team, teacher;
- 3) timely adoption of new methods to achieve the goal in extreme conditions;
- 4) decisions implementation in risk and danger;
- 5) conscious implementation of actions related to risk;
- 6) persistent and complete implementation of decisions;
- 7) self-criticism, assessing the results of the activities;
- 8) resolute search for ways to eliminate identified shortcomings in the physical fitness.

Rationally selected features met the following conditions:

- 1) reflected the content of each volitional manifestation in the process of physical education quite accurately and comprehensively in the complex;
- 2) were understandable to teachers and students;
- 3) naturally reflected the learning process, the organization, and implementation of test requirements and standards, the reaction of the psychics and functional systems.

The essence of the methodology for assessing volitional qualities by characteristics was that modeling the appropriate conditions and situations for the manifestation of the studied qualities or observing the actions of a student in the class, you can assess the qualitative manifestations of each feature. All signs were evaluated on a 5-point system at each observation. A full and clear manifestation of the sign was assessed by 5 points; a full and clear manifestation of the sign with the help of friends or a teacher was evaluated by 4 points; partially manifested sign – 3 points; slightly manifested – 2 points; no sign at all – 1 point. Using the assessment methodology, we identified three groups of students: those with a high level of volitional development, medium, and low. The first group included the students with an average score  $> 4.3$ , the second –  $> 3.7$ , the third –  $< 3.7$  (Table 3). A high level of volitional development is characteristic of students who are active, determined, and confident in themselves and their abilities. They have a great desire to exercise and play sports, responsibility for attending classes and fulfilling the requirements of a teacher. These students are characterized by a belief in the need to overcome the difficulties of the educational process, concentration, organization, purposeful behavior, meaningful decisions, and actions, and they are clearly aware of the importance of regular physical education. In extreme conditions, they are not afraid of responsibility, like risk; do not get confused when faced with unforeseen difficulties and circumstances. It should also be noted that some students with a high level of development of volitional qualities lack a) a critical attitude to their actions and shortcomings; b) self-analysis of their actions and behavior; c) the desire to understand the essence of the motives of their activities; d) the desire to actively change their negative traits.

**Table 3.** The indicators of the volitional qualities development of students in the process of physical education (n=226), points

Levels of volitional qualities development	n	Volitional qualities					General volitional preparedness
		Purposefulness	Perseverance and persistence	Endurance and self-control	Courage and decisiveness	Proactivity and independence	
Males							
High	19	4.4	4.5	4.2	4.4	4.1	4.42
Medium	64	3.6	3.8	3.8	3.8	3.0	3.74
Low	34	3.0	2.9	3.2	3.4	2.5	3.02
Females							
High	11	4.3	4.3	4.2	4.6	4.1	4.33
Medium	41	4.0	3.6	3.7	4.0	3.4	3.81
Low	57	2.4	2.3	2.5	2.6	1.9	2.39

The medium level of volitional qualities development is manifested in the understanding of the importance of physical exercises. However, students of this group may miss classes, retreat from difficulties, and often change the purpose of exercises. They work persistently and fiercely in the process of training under favorable conditions (interesting classes, musical accompaniment, the praise of a teacher, etc.). Almost all of their volitional qualities are less developed that reduces the effectiveness of regulating their mental state when performing an intense activity. Purposeful, systematic, and productive work on the improvement of their physical preparedness requires a teacher to have an interesting organization and a variety of training sessions.

The low level of the students' volitional development is characterized by indecision, the lack of persistence, and perseverance performing tasks and requirements of the program. Students of this group are aware of the difficulties of the educational process, but do not want to overcome them, and do not know how to choose techniques and tools to overcome them. These students are characterized, in most cases, by low physical fitness, disorganization, the lack of concentration, independence and proactivity in finding means of physical improvement. A positive result depends to some extent on the psychological climate in classes, the support of a teacher and peers.

The general assessment of the volitional qualities development of students showed that 16.2% of males and 10.1% of females had a high level of development, 54.7% and 37.6% – medium respectively, 29.1% and 52.3% – low respectively. This state of volitional qualities development affects the physical fitness of students negatively.

The analysis of the results in the test on physical fitness in terms of the students' level of volitional development showed a clear pattern, which indicated that students who are characterized by a high level of volitional qualities development have a high level of physical qualities development. The lower the level of volitional qualities is, the worse the performance of students (both male and female) in the tests in physical fitness is (Tables 4, 5). Conversely, the higher the indicators of physical fitness

are, the more purposeful, persistent, determined, and courageous students behave in physical education classes, and the more actively participate in independent physical exercises.

**Table 4.** The physical fitness indicators of male students depending on the level of their volitional qualities development (n=117), Mean±SD

Tests	The level of volitional development		
	High (n=34)	Medium (n=64)	Low (n=19)
3000 m run (min, s)	12.49.00 ± 2.41	13.23.00 ± 2.03	15.29.00 ± 2.57
100 m run (s)	13.9 ± 0.39	14.6 ± 0.49	15.3 ± 1.19
Long standing jump (cm)	239.0 ± 2.17	229.0 ± 2.43	217.0 ± 2.27
Push-ups (reps)	47.7 ± 3.31	34.6 ± 2.74	25.1 ± 3.14
Pull-ups (reps)	13.9 ± 0.31	9.8 ± 0.51	7.4 ± 0.93
Sit-ups in 1 min (reps)	51.3 ± 2.25	40.8 ± 2.63	32.4 ± 2.41
4 x 9 m shuttle run (s)	9.0 ± 0.31	9.9 ± 0.67	10.5 ± 1.27
Trunk forward bending (cm)	15.7 ± 0.78	12.3 ± 0.38	7.6 ± 0.46

**Table 5.** The physical fitness indicators of female students depending on the level of their volitional qualities development (n=109), Mean±SD

Tests	The level of volitional development		
	High (n=11)	Medium (n=41)	Low (n=57)
2000 m run (min, s)	10.21.00 ± 2.39	11.17.00 ± 1.56	12.14 ± 2.24
100 m run (s)	17.1 ± 0.47	18.3 ± 0.92	18.9 ± 1.4
Long standing jump (cm)	189.0 ± 1.74	176.0 ± 1.22	168.0 ± 1.13
Push-ups (reps)	19.4 ± 1.47	14.3 ± 1.86	7.1 ± 1.93
Bent suspension (s)	16.7 ± 0.34	10.9 ± 0.20	3.7 ± 0.89
Sit-ups in 1 min (reps)	40.2 ± 1.52	30.6 ± 1.14	19.8 ± 1.68
4 x 9 m shuttle run (s)	10.7 ± 0.43	11.4 ± 0.61	11.9 ± 0.86
Trunk forward bending (cm)	17.6 ± 0.76	13.7 ± 0.89	9.9 ± 0.83

## 4. Discussion

A deep understanding of the will as a mental process makes it possible to consider the formation of the students' volitional qualities as an important integral part of their physical improvement and the whole process of physical education. Therefore, the following theoretical provisions are important for the development of the issues of volitional qualities formation in the process of physical education.

1. Will is an independent side of consciousness, a product of the conditioned reflex activity of the brain, which is not limited to the emotional and intellectual side of personality. The specificity of the will of each person is manifested in the conscious regulation of behavior in difficult conditions.
2. The detection and development of will are determined by specific conditions of life and activity of a student. As there is a great variety of physical exercises and types of motor activity, there are various manifestations of will.
3. Will is manifested through volitional efforts, which are characterized by the amount of energy expended to perform a purposeful action or refrain from it. Volitional efforts are controlled by consciousness, starting with setting a goal and finishing with its achievement. The goal is a necessary component of volitional activity, which determines the direction, method, and nature of the student's actions.
4. Overcoming the difficulties of the training process is associated with the identification of volitional efforts, which are always accompanied by volitional actions. Volitional action is always motivated, but the final result depends not only on motivational factors but also on the ability to consciously mobilize mental and physical capabilities with the help of volitional efforts. The unity of motivation and mobilization of mental and physical capabilities is the strength of the student's activity.
5. Volitional activity of students is manifested in the specific conditions of educational activities, the study of which makes it possible to correctly understand the mechanisms of overcoming difficulties and contradictions and to cultivate the volitional qualities of students on this basis.

Physical education classes at HEI have their own specific features that significantly affect the psychics of students, their emotional experiences and condition, and require maximum willpower. They are designed to develop the student's personality harmoniously and comprehensively, to provide one not only with knowledge, skills, and abilities but also with a high level of physical and psychological readiness. Performing physical exercises, on the one hand, requires the manifestation of volitional qualities, and on the other hand, is a significant means of their formation and development [16, 17, 18,

19].

The manifestation of volitional qualities occurs only in those actions that are associated with the need to overcome difficulties and obstacles on the way to the goal, and require students to make physical and volitional efforts. In volitional actions and deeds, students have to overcome such internal difficulties as laziness, fatigue, pain, fear, shame. Therefore, the education of volitional qualities in the process of training requires the master of sports, technical and tactical skills and abilities, general and special physical fitness, high efficiency, and discipline. All of the above requires the development of the volitional qualities of students as a prerequisite for physical education classes [20, 21, 22].

The study of the structure of volitional qualities of students suggests that the importance of the volitional qualities manifestation in the physical education process and in the process of independent training is different and may vary depending on the type of exercises, emotional background, psychological climate in class, the quality of the study group, the methods of conducting classes by a teacher, etc. Purposefulness occupies a leading place and plays a crucial role in the structure of the volitional act of both male and female students in all cases, regardless of the occupation nature. This means that this quality unites the structure in all cases. Its absence destroys the integrity of the entire structure of volitional qualities. Therefore, purposefulness is the leading volitional quality around which other qualities are grouped in a certain system. The obtained data show that the structure of students' volitional qualities in the educational process differs from their structure during independent physical exercises. This is especially evident in the manifestation of persistence and perseverance, proactivity, and independence.

A methodology for assessing the students' volitional qualities was developed. It consisted in the fact that modeling the appropriate conditions and situations for the manifestation of the studied qualities of a student in the class, you can assess the qualitative manifestations of volitional qualities signs. The developed methodology allowed identifying strengths and weaknesses in the development of volitional qualities and gaining specific data on the degree of their expression; identifying the relationship of volitional qualities with indicators of physical fitness; predicting and planning the education of volitional qualities in the process of physical education. In order to give a teacher the opportunity to easily determine the development level of volitional qualities of students in practice, we developed general features that characterize the levels of volitional development (Table 6). Knowing these signs, a teacher can use observation in physical education classes and assess each sign to determine the development level of volitional qualities of students, and correctly use the methods and psychological and pedagogical tools that are aimed at the activation of volitional activity.

**Table 6.** General signs of the students' volitional qualities manifestation in the process of physical education

Volitional qualities manifestation levels		
High	Medium	Low
1. A clear goal in improving one's own health and physical well-being.	1. Understanding the importance of improving one's own health and physical well-being, but lacking a clear goal to achieve them.	1. The lack of understanding of the importance of improving health and physical improvement.
2. A constant desire to attend classes and independent training sessions.	2. Occasional desire to attend classes and additional training sessions.	2. Complete lack of desire to attend physical education classes.
3. Constant and steady desire to achieve the goal while maintaining a high level of energy and activity.	3. Episodic desire to increase the level of physical fitness, insufficient activity.	3. The lack of desire for physical improvement, complete passivity against sports.
4. A lasting interest in various educational and training works.	4. The interest in certain classes, tools, methods, and exercises.	4. The lack of interest in physical education classes.
5. Active desire to overcome difficulties in classes.	5. Overcoming difficulties requires stimulation from a teacher.	5. Constant passivity in the face of difficulties in the training process.
6. High self-regulation of the actions and behavior in critical moments of sports activities.	6. Weak self-regulation of the actions and behavior in critical moments of sports activities.	6. The lack of self-regulation of the actions and behavior in sports.

The analysis of the assessment of the volitional qualities development of students showed that they are much better developed and manifested in males in the process of physical education. This confirms the fact that males are more engaged in exercises and various sports. Male students do not react so sharply to their physical defects and poor physical development; they are more active in choosing exercises [23, 24, 25].

The data obtained confirm the conclusions of scientific research, which indicate that physical education is one of the means of forming the volitional sphere of students, that the improvement of physical abilities reveals and develops volitional qualities [26, 27, 28, 29].

## 5. Conclusion

As a result of the research we came to the following conclusions.

1. The assessment of the difficulties that students face in the process of physical education shows that the most significant difficulties are those associated with overcoming students' low level of physical fitness. Meteorological and climatic conditions, material and technical equipment, consequences of the illnesses and traumas also influence the process of physical training negatively. Volitional qualities are educated in the process of resolving internal contradictions that arise when overcoming the difficulties of the educational process, performing physical exercises, meeting test requirements, and standards. Formed on the basis of repeated volitional efforts, the volitional qualities of a student affect the success of resolving internal contradictions and the identification of volitional efforts when achieving the goal of physical improvement. The correct organization of the educational process, the active attitude of a student to it with a clear long-term goal, plan, and means to

achieve it are prerequisites for the development of the volitional qualities of students.

2. The structure of volitional qualities of students in the process of physical education was determined and it was found that the main volitional qualities of both males and females were purposefulness, persistence and perseverance, endurance and self-control, proactivity and independence. Purposefulness is the leading volitional quality around which other qualities are grouped in a certain system.
3. A methodology for assessing the volitional qualities of students was developed. It allowed identifying strengths and weaknesses in the development of volitional qualities of students and gaining specific data on the degree of their expression; identifying the relationship of volitional qualities with indicators of physical fitness of a student; predicting and planning the education of volitional qualities in the process of physical education. According to the developed methodology, the level of students' volitional qualities development in the process of physical education was studied and it was found that 16.2% of male students and 10.1% of female ones had a high level of volitional qualities, 54.7% of male students and 37.6% of females students had a medium level, and 29.1% of male students 52.3% of female ones had a low level of development.
4. The level of physical fitness of students depending on the level of the volitional qualities development was investigated and it was found that students who are characterized by a high level of volitional qualities development have a high level of development and physical qualities. Conversely, the higher the level of physical fitness of students is, the higher the level of their volitional qualities development is. This indicates that exercises are an excellent means of developing students' willpower.

The prospects for further research are aimed at studying

the level of development of the students' volitional qualities in the process of various sports.

## Disclosure Statement

No author has any financial interest or received any financial benefit from this research.

## Conflict of Interest

The authors state no conflict of interest.

## REFERENCES

- [1] J. Hoffman. "Physiological aspects of sport training and performance". 2nd edition, Human Kinetics, 2014.
- [2] R. S. Weinberg, D. Gould. "Foundations of sport and exercise psychology". 3rd edition, Human Kinetics, 1998.
- [3] V. Chernii, O. Shevchenko, O. Nievorova, A. Melnyk, A. Kramarenko, T. Nikonenko. "Development of professionally important physical qualities in engineering students", *Revista Romaneasca Pentru Educatie Multidimensionala*, Vol.12, No.1Sup1, pp. 93-105, 2020. <https://doi.org/10.18662/rrem/12.1sup1/225>.
- [4] O. Mozolev, O. Halus, I. Bloshchynskiy, R. Kovalchuk. "Human resources management of educational development in sphere of physical culture and sports in Ukraine: comparative analysis (1992-2016)", *Journal of Physical Education and Sport*, Vol.19, No.Suppl.1, pp. 185-192, 2019. doi: 10.7752/jpes.2019.s1028.
- [5] K. Prontenko, G. Griban, T. Liudovyk, L. Kozibroda, P. Tkachenko, Yu. Kostyuk, Ye. Zhukovskiy. "Influence of kettlebell lifting classes on the level of professionally important psychological qualities and the emotional state of cadets from higher military educational institutions", *Journal of Physical Education and Sport*, Vol.18, No.Suppl.2, pp. 1055-1059, 2018. doi:10.7752/jpes.2018.s2157.
- [6] A. Kovalenko, E. Grishchuk, N. Rogal, V. Potop, G. Korobeynikov, I. Glazyrin, V. Glazyrina, A. Gorascenco, L. Korobeynikova, O. Dudnyk. "The influence of physical activity on students' psychological well-being", *Revista Romaneasca Pentru Educatie Multidimensionala*, Vol.12, No.2, pp. 86-96, 2020. <https://doi.org/10.18662/rrem/12.2/67>.
- [7] K. Prontenko, I. Bloshchynskiy, G. Griban, Ye. Zhukovskiy, T. Yavorska, P. Tkachenko, D. Dzenzeliuk, N. Dovgan, S. Bezpalii, V. Andreychuk. "Formation of readiness of future physical culture teachers for professional activity", *Universal Journal of Educational Research*. Vol.7, No.9, 1860-1868, 2019. doi: 10.13189/ujer.2019.070903.
- [8] M.A. Solomchenko, O.A. Gorbacheva, E.V. Sorokina, M.P. Shekotikhin, D.S. Uchasov, V.V. Boyko. "Spiritual-moral education of students by means of physical culture", *International Journal of Applied Exercise Physiology*, Vol.8, No.2, pp. 1-10, 2019. <https://doi.org/10.30472/ijaep.v8i2.579>.
- [9] S. Prysiazhniuk, V. Tolubko, D. Oleniev, Yu. Parczevskyy, K. Prontenko, G. Griban, O. Zhyrnov. "The influence of physical activities on biological age parameters of the first-year female students from the special medical department", *Journal of Physical Education and Sport*, Vol.18, No.2, pp. 561-564, 2018. doi: 10.7752/jpes.2018.02081.
- [10] K. Prontenko, G. Griban, A. Alohyna, S. Bezpalii, T. Yavorska, S. Hryshchuk, P. Tkachenko, D. Dzenzeliuk, I. Bloshchynskiy. "The physical development and functional state as the important components of the students' health", *Wiadomości Lekarskie*, Vol.72 No.12, part 1, pp. 2348-2353, 2019. doi: 10.36740/WLek201912115.
- [11] O. Tsilmak, I. Okhrimenko, V. Barko, O. Protsenko, O. Gerashchenko. "Psychological profile of unsuccessful university students", *Revista Romaneasca Pentru Educatie Multidimensionala*, Vol.12, No.2, pp. 267-289, 2020. <https://doi.org/10.18662/rrem/12.2/278>.
- [12] M. Kryshchanovych, S. Kryshchanovych, O. Stechkevych, O. Ivanytska, I. Huzii. "Prospects for the development of inclusive education using scientific and mentoring methods under the conditions of post-pandemic society", *Postmodern Openings*, Vol.11, No.2, pp. 73-88, 2020. <https://doi.org/10.18662/po/11.2/160>.
- [13] A. Bliznevsky, M. Kudryavtsev, V. Kuzmin, I. Tolstopyatov, O. Ionova, T. Yermakova. "Influence of personal characteristics of pupils and students on the effectiveness of the relationship to the specific physical activities", *Journal of Physical Education and Sport*, Vol.16, No.2, pp. 424-432, 2016. doi:10.7752/jpes.2016.02066.
- [14] O. Mozolev, I. Bloshchynskiy, O. Aliksieiev, L. Romanyshyna, L. Zdanevych, I. Melnychuk, K. Prontenko, V. Prontenko. "Influence of modern fitness technologies on the state of health and development of motor abilities of 17-19-year-old female students", *Journal of Physical Education and Sport*, Vol.19, (Supplement issue 3), 917-924, 2019. doi: 10.7752/jpes.2019.s3132.
- [15] G. Griban, O. Kobernyk, N. Terentieva, O. Shkola, Z. Dikhtiarenko, I. Mychka, E. Yeromenko, L. Savchenko, A. Lytvynenko, K. Prontenko. "Formation of health and fitness competencies of students in the process of physical education", *Sport Mont*, Vol.18, No.3, pp. 73-78, 2020. doi 10.26773/smj.201008.
- [16] E. Akseonova, O. Varetska, R. Klopov, O. Bida. "Efficiency of social and educational experimental training "New physical culture for the new Ukrainian school", *Revista Romaneasca Pentru Educatie Multidimensionala*, Vol.12, No.1Sup1, pp. 1-18, 2020. <https://doi.org/10.18662/rrem/12.1sup1/220>.
- [17] A. Bolotin, V. Bakayev. "Structure and content of the educational technology of managing students' healthy lifestyle". *Journal of Physical Education and Sport*, Vol.15, No.3, pp. 362-364, 2015. doi:10.7752/jpes.2015.03054.
- [18] O. Azhyppo, V. Pavlenko, V. Mulyk, K. Mulyk, L. Karpets, T. Grynova, M. Sannikova. "Direction of teaching the subject of physical education by taking into account opportunities of institution of higher education and interests of student youth", *Journal of Physical Education and Sport*,

- Vol.18, No.1, pp. 222-229, 2018. doi:10.7752/jpes.2018.01029.
- [19] K. Prontenko, G. Griban, N. Dovgan, O. Loiko, V. Andreychuk, P. Tkachenko, D. Dzenzeliuk, I. Bloshchynskiy. "Students' health and its interrelation with physical fitness level", *Sport Mont*, Vol. 17, No.3, pp. 41-46, 2019. doi 10.26773/smj.191018.
- [20] O. Kokun, Y. Imas, A. Vovkohon, V. Potop, G. Korobeynikov, L. Korobeynikova, A. Gorashchenko, A. Polevaya-Secaryanu. "Physical education and sports as a tool for formation of students' psychophysiological readiness to their professional work", *Journal of Physical Education and Sport*, Vol.18, No.2, pp. 966-971, 2018. <https://dx.doi.org/10.7752/jpes.2018.02143>.
- [21] S. Kryshchanovych, O. Bilostotska, V. Ulianova, N. Tkachova, A. Tkachov. "Experience in the application of cognitive techniques in the field of physical education and sports", *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, Vol.11, No.2, pp. 147-159, 2020. <https://doi.org/10.18662/brain/11.2/79>.
- [22] V. Manolachi, N. Vizitei. "Psychology of sport: The need for modernization and the ways of its implementation", *Revista Romaneasca Pentru Educatie Multidimensionala*, Vol.10, No.2, pp. 58-68, 2018. <https://doi.org/10.18662/rrem/46>.
- [23] Yu. Melnyk. "The influence of educational, physical cultural and healthy work on the formation of the health culture of master's students". *Journal of Physical Education and Sport*, Vol.19, Supplement issue No.1, pp. 219-226, 2019. doi:10.7752/jpes.2019.s1033.
- [24] D. Kyslenko, K. Prontenko, V. Bondarenko, Iu. Iukhno, R. Radzievskii, V. Prontenko, O. Kizyun. "Development of the physical qualities of future specialists in protective activities due to the use of the kettlebell sport during studies", *Journal of Physical Education and Sport*. Vol.17, No.2, pp. 789-794, 2017. doi: 10.7752/jpes.2017.02120.
- [25] V. Plisko, T. Doroshenko, A. Minenok A. Sikura, V. Oleshko, G. Griban, K. Prontenko, V. Bondarenko. "Informational indicators of functional capacities of the body for teaching cadets from higher military educational institutions power types of sports", *Journal of Physical Education and Sport*. Vol.18, No.Suppl.2, pp. 1050-1054, 2018. doi: 10.7752/jpes.2018.s2156.
- [26] P. Montesano, F. Mazzeo. "Sports activities in obese teenagers improve social inclusion and health", *Sport Mont*, Vol.17, No.1, pp. 55-60, 2019. doi 10.26773/smj.190210.
- [27] A. I. Bosenco, I. I. Samokih, S. V. Strashko, N. A. Orlik, E. P. Petrovsky. "Evaluation of junior courses students' level of mobilization of functional backlogs at the dosed physical activities at the pedagogical university", *Pedagogics, Psychology, Medical-biological Problems of Physical Training and Sports*, Vol.11, pp. 3-8, 2013. doi:10.6084/m9.figshare.815867.
- [28] O. Mozolev, M. Khmara, I. Shorobura, I. Bloshchynskiy, K. Prontenko, O. Polishchuk, L. Zdanevych, K. Krutii. "Comparative analysis of the effectiveness of Polish and Ukrainian basic training programs in physical education for 9-10-year-old pupils", *Universal Journal of Educational Research*, Vol.7, No.11, pp. 2345-2351, 2019. doi: 10.13189/ujer.2019.071112.
- [29] Yu. Sukarmin, J. Ndayisenga. "Evaluation of Burundi physical education teachers, coaches, and athletes' sport nutrition, massage, and physiotherapeutic exercises knowledge", *International Journal of Human Movement and Sports Sciences*, Vol. 8, No. 4, pp. 154-159, 2020. doi: 10.13189/saj.2020.080408.