

# Psychophysiological aspects of formation students' willingness for wellness by means of physical education

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## ABSTRACT

The theoretical aspects of willingness to wellness in the process of physical education are analyzed in the article. Psycho-pedagogical and personal components of willingness to wellness by means of physical culture were outlined. For psychophysiological aspects of willingness to wellness improvement of students 16-18 years old by means of physical culture, 30 teachers of physical culture and 80 students of 9-11 classes were examined. Value orientations, self-assessment of mental state, quality of life, and functional state of the central nervous system were diagnosed.

The obtained results characterize the optimal functional state of the central nervous system, acting as a good predictor for the formation of students' willingness to wellness promotion by means of physical education. However, the study of the psychological component of the respondents reflects unsatisfactory indicators. Low motivational values for health-improving activities by means of physical culture, high combined anxiety, frustration, and aggressiveness in teachers and students create a problem for the formation of students' willingness to wellness by means of physical culture.

**Keywords:** Willingness to wellness, Personal characteristics, Psychophysiological features, High school students, Physical education

## Introduction

The current system of physical education for high school students is focused on preparing them to meet physical fitness standards. The interests and needs of students and their willingness for wellness are not always taken into account within the framework of the subject "Physical Education". The

problem of arranging and conducting Physical Education classes at school was studied in detail by Russian scientists V.K. Balsevich, N.V. Barysheva, E.P. Ilyin, E.P. Korolkov, I.S. Osipova, V.I. Lyakh, O.N. Makusev, G.M. Solovyov, etc. [1-3]. However, teachers of physical education pay insufficient attention to the formation of health and wellness in the learning process. Therefore, many students and especially high school students develop an indifferent or negative attitude towards physical education activities [4, 5].

In many scientific works by S.T. Aslaev, S.I. Grigorovich, A.S. Ptushkin, R. Ziong, K.K. Kardialis, T.A. Sapagina, O.B. Seregina, D. Felker, D. Hellison, S.T. Shatsky, T. Schlan, and E.N. Shiyanov, the concept of "attitude towards physical culture" and its structural elements is revealed [6-8]. As noted by researchers L.V. Blagonadezhina, A. Maslow, T.A. Mathis, V.A. Pitkin, L.A. Kholodnaya, E.V. Romanova, A.S. Sedova, O.R. Shefer, S.V. Kraineva, T.N. Lebedeva, etc. [9-12] an

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important element is to form a motivational-value attitude of students of different ages to learning activities. S.I. Zizikova notes that: "willingness to engage in physical education for the purpose of health improvement should be studied as a certain sphere of life, as a subject activity in which students and teachers are included" [4].

Our survey is based on the understanding of health as a system quality of human life activity, due to its objective and subjective bases [13]. At the same time, the solution to the complex problem of health involves the use of an adequate system methodology of wellness in the practice of school physical education [14]. Willingness for health improvement by means of physical culture is manifested in different ways: as a worldview in the social system, as a mental state in the system of personal relations, as psychophysical wellbeing, and as an individuality [15].

Willingness for wellness by means of physical culture is a state of psychological and psychophysiological characteristics of the subject of wellness, providing expansion of adaptation possibilities based on wellness technologies in education, which allows creating favorable conditions for the development of students. The basis of health-improving technologies of physical culture are conceptually interrelated tasks, content, forms, methods, and tools, focused on the expansion of adaptive capabilities of the person [16-18].

The psychological willingness of wellness by means of physical culture functions as psychosomatic integrity, the physical expression of which is an instinctive action, reaction, or behavior. A prerequisite for the effective formation of readiness as an acquired behavioral property of the individual is an optimal psychophysiological functional state conditioned by the functioning of the CNS and the level of cognitive performance [19, 20].

## Materials and Methods

The aim was to study the psycho-physiological aspects of the formation of willingness for wellness by means of physical culture in students aged 16-18 years old. We surveyed 30 physical education teachers (women 30-60 years old) and their students in grades 9-11: 36 boys and 44 girls (16-18 years old). Written consent to participate in the study was obtained from all participants, following the fundamentals of the legislation of the Russian Federation "On protection of citizens' health, rules of clinical practice in the Russian Federation" (Order No. 266 of the RF Ministry of Health from 19.07.03; Order No. 2325-Pr/06 of Roszdravnadzor from 17.10.06). All school children participating in the study were healthy and admitted to physical education classes in the main medical group.

In the course of the study we used mental state self-assessment techniques (according to Eysenck) [21]; the value orientations technique (M. Rokklich) aimed at identifying the terminal values - subjectively important goals and instrumental values [22]. The Kondash Anxiety Scale (1973) was used to assess the level of anxiety [21]. Teachers were asked to answer the SF-36 questionnaire which characterized their quality of life at the time

of the survey. The questionnaire consists of 11 sections and results are presented as scores on 8 scales, so that a higher score indicates a better quality of life. There are specific scales in this questionnaire, with scores ranging from 0 to 100 (where 100 represents good health). The physical component of health consists of the following scales: physical functioning, physical role functioning, pain intensity, and general health. The psychological component of health consists of the following scales: mental health, role functioning due to emotional state, social functioning, and vitality [23, 24].

The diagnostics of psychophysiological features of students was carried out with the help of hardware-software complex "Bio mouse". The method of express-evaluation of the functional state of the central nervous system and the level of mental performance was carried out using the parameters of simple visual-motor reaction.

Statistical processing of the study results was performed using Excel 2010 and Statistica 8.0 software using Student's t-criterion.

## Results and Discussion

The hierarchy of values forms the basis of a person's orientation and relations with the surrounding world and other people, and the basis of the life concept. Following the objectives of the study, we identified groups of values related to different levels of psychological willingness to engage in physical culture for health improvement. To the formed level we have attributed:

Values-goals-development, creativity, self-confidence, the happiness of others, health, love,

Values-means-sensitivity, cheerfulness, responsibility, open-mindedness, honesty, and tolerance for others' shortcomings.

To the unexpressed level:

Values-objectives-an active life, interesting work, wisdom, a social vocation, cognition, making the most of one's abilities, strengths, and skills,

Values-means-education, efficiency in affairs, self-control, independence, rationality, strong will.

Unformed psychological readiness includes:

Values-goals-a materially secure life, the presence of good and faithful friends, the beauty of nature and art, entertainment, freedom, a happy family life,

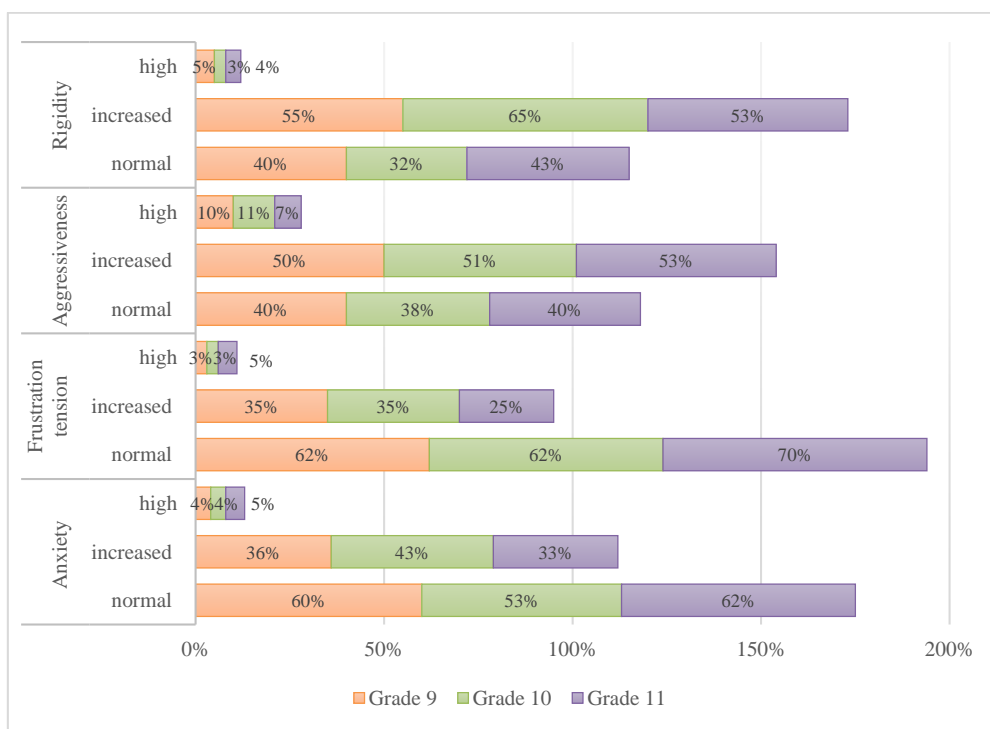
Values-means-diligence, neatness, politeness, high demands, intransigence towards shortcomings in oneself and others, courage in asserting one's opinion.

The results of the study have shown that in the practice of modern school teaching of the subject "Physical Education" the students have a weak idea of health activities and physical culture. In particular, the state of health that needs tension is not expressed in 18% of students and is not formed in 82% of ninth-grade students. In the tenth and eleventh grades, it is already formed in 3% of pupils, not expressed in 17% of pupils, and not formed in 80% of pupils.

The level of formation of values-goals concerning health

improvement is not expressed by the majority of the studied high school adolescents, half of them do not express the level of formation of values-means, and the majority (over 76%) have a low level of formation of the idea of health-improvement activities. The majority of pupils (70%) are dissatisfied with their psycho-emotional state and do not see recreational activities within the framework of physical education as relevant to them. The same problems are characteristic of teachers in general education institutions, which suggest that non-constructive ways of adaptation are being perpetuated. Analysis of the data shows that 33% of ninth-graders complain about increased fatigue; by tenth grade, the number of such students increases significantly, and by the end of eleventh

grade it decreases to the level of ninth-graders. On the contrary, the number of pupils dissatisfied with their well-being increases. According to the analysis of diagnostic data on the physical well-being of general school teachers, more than a third of them complain about increased exhaustion, and more than half of them are not satisfied with their state of health. The method of self-assessment of mental state (according to Eysenck) allows us to conduct a self-study of the subject of recreational activity through such states as aggressiveness, anxiety, frustration, rigidity, as well as diagnostics of the psychological level of personality. **Figure 1** shows the data on the level of self-esteem of the psycho-emotional state of students in grades 9-11.



**Figure 1.** Level of Expression of Students' Self-assessment of Mental State (according to Eysenck)

Studies of the psycho-emotional state of students have shown that high and increased frustration tension is experienced by 30% to 38% of students in grades 9-10, the number of which decreases by grade 11. Between 38% and 47% of students, experience high and increased anxiety. High and increased rigidity is experienced by 57% to 68% of students. The number of students experiencing high and increased anxiety and rigidity increases by tenth grade and decreases by eleventh grade. Between 60 and 62 percent of students experience high and increased aggression. Between 86% and 96% of pupils were in a state of high and increased stress tension. A study of teachers' psycho-emotional state showed that 40% of respondents were experiencing high levels of aggression as well as frustration. 72% of the physical education teachers who participated in the study are in a state of high anxiety in the background of high-stress tension and rigidity. Another aspect that affects the formation of students' willingness to wellness is the quality of studied teachers' life.

The data obtained based on the SF-36 questionnaire [25], are presented in **Table 1**.

№	Indicators	Value, points
1	Average of the physical functioning scales	31,2
2	Impact of physical fitness on role functioning	2,9
3	General health status	36,2
4	Vitality	16,9
5	Social functioning	43,1
6	Impact of emotional state on role functioning	5,2
7	Self-assessment of mental health	30,2
8	Physical health component	361,2
9	Mental health component	452,2

The tabulated data shows that physical education teachers in the baseline study showed low scores on the scales of physical functioning and role functioning, which were due to poor physical and mental well-being. The indicators of general health

and vitality were reduced. This indicates fatigue, a decrease in their vitality, which is consistent with the presence of anxiety, depressive shades of behavior, and mental ill-being.

The functional state of the CNS of the studied students was assessed using the criteria of simple visual-motor reaction: Functional Level of the System (FLS), Stability of Reaction (SR), and Level of Functional Capabilities (LPC). The results are summarized in **Table 2**.

**Table 2. Average Indicators of Functional State of Students, (M±m)**

Indicators	Group 1 Grade 9, 10 students (n=43)	Group 2 Grade 11 students (n=37)	Total sample (n=80)
Functional level of the system, units	5,1±0,07	4,9±0,08	5,0±0,05
Stability of reaction, units	2,6±0,10	2,4±0,10	2,5±0,07
Level of functional capabilities, units	5,3±0,11	5,0±0,11	5,2±0,08

The analysis of the data in **Table 2** shows high indices of general functional condition (the average FLS criterion is 5,0±0,05 conventional units) and the level of functional capabilities (the average LPC value is 5,2±0,08 conventional units) with the average level of stability of reaction (the average SD value is 2,5±0,07 conventional units) which reflects the rather high functional condition of the CNS of students. At the same time, high average values of FLS and LPC of the students of both groups reflect the prevalence of excitatory processes in the CNS, which agrees with the researches by M.P. Moroz [26]. High group average values of FLS and LPC of students in both groups are a confirmation of the prevalence of excitatory processes in the central nervous system. The frequency distribution of the studied index of SD corresponds to the law of normal distribution and states the prevalence of individuals with average values of the index (46.5%) with relatively equal frequency distributions with low and high values (24.6% and 28.9% respectively). No significant differences were found between the survey groups.

The obtained results characterize the adaptive mechanisms of the central nervous system response and testify to the optimal functional level of the CNS of the trainees who took part in the study, adequate for normal cognitive activity. Thus, the learners have predominantly excitatory processes, the average level of the functional state of the CNS is revealed, which is a good predictor for the formation of learners' readiness for health improvement by means of physical culture. The readiness for wellness is based on the students' understanding of the hierarchy of values in general and wellness in particular, which is formed by teachers by means of the subject "Physical Education".

The psychological status of the teacher is important in shaping students' readiness for wellness through physical education. Negative indicators of the psychological state of teachers, high anxiety on the background of high stress tension and rigidity, creates a problem for their professional implementation in general and in particular the formation of students' readiness for

recreational activities.

The results of the study indicate that students and teachers are much more aware of dissatisfaction with their mental state than dissatisfaction with physical well-being. A person's physical well-being also influences emotional patterns of behavior. All of the above suggest that the main emphasis in the implementation of wellness by means of physical education should be on the psychological component. About a third of the teachers consider physical education activities for the purpose of health improvement to be necessary and relevant, which is insufficient for the implementation of health protection in the educational space and improvement of the quality of life.

In the process of human life, there is a constant interaction between the physical and emotional states of a person. A person's emotional behavior pattern transforms the perception of organic states. Each physical state is accompanied by subjective emotional perception, and their summation determines the expression of subjective ailments. Thus, the individual always brings an emotional psychosomatic background to everyday interactions with others [27]. Tense behavior loses plasticity, attention span is reduced, perception and thinking processes are impaired, unnecessary undirected actions appear, memory and elementary thought operations are reduced [28, 29].

The low level of awareness of the values of goals and means concerning health saving creates a problem both for their professional implementation and for carrying out health-improvement activities. In addition, there is a need for wellness and psychological counseling for teachers.

Unsatisfactory indicators of physical and mental health and vitality of the teachers of the survey cohort indicate fatigue, decreased vitality, which is consistent with the presence of anxiety, depressed tones of behavior, and mental ill-health. These facts also hurt the formation of students' readiness for recreational activities.

## Conclusion

The study revealed that many students have internal barriers to the development of readiness to engage in physical culture in order to improve health, associated with high rates of frustration, aggressiveness, and anxiety, increased exhaustion, low level of formation of "need tension" in relation to health in the process of physical education and the concept of it, as well as the insufficient formation of the value attitude to health (value-target). The study showed that the need for physical culture in order to improve health depends only indirectly on the dissatisfaction with their health and requires special psychological and pedagogical conditions for development. The number of students who have one or another current level of subjective health characteristics varies insignificantly from grade 9 to 11. In order to create stable ideas about health-improving activity at physical education classes it is necessary to reflect psychophysical and psychoemotional state, needs and ideas about health-improving activity, values of students, prediction and modeling of own health-improving activity in the process of

physical education classes.

Thus, it is relevant to identify the psychophysiological characteristics of the personality of students and teachers, influencing the formation of willingness to engage in physical culture in order to improve health, improve the quality of life of participants in the educational process, which will be the subject of our further research.

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