

## Influence of physical activity on students' life quality

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### Abstract

**Purpose:** influence of students' targeted and regular physical activity on their life quality.

**Material:** in the research students (n=325, age 18-21 years) participated. Students' life quality was studied with the help of questionnaire "MOS SF-36" (J.E.Ware). We determined students' physical workability and physical fitness.

**Results:** formation of students' physical activity was based on the worked out technology: 1) motor functioning for general endurance; 2) accent on speed-power training was made in second half of semester; 3) training of dexterity and flexibility was realized considering certain kind of academic material and future professional activity; 4) the structure of trainings in academic year included 3 stages. At first stage (September, October) 70% of time was spent for endurance, 15% - for quickness and 15% for strength. At second stage (November, March) 50% was assigned for endurance, 30% - for quickness and 20% - for strength. At third stage (April, May) 40% of time was assigned for quickness, 40% - for strength and 30% - for endurance. As a result of realization of the worked out technology for students' physical activity their individual health improved and became the factor of students' life quality perfection.

**Conclusions:** targeted and regular physical activity of students confidently influences on their individual health by all indicators: organism's functional reserves; physical workability and fitness, way of life and organism's resistance. Targeted and regular physical activity of students facilitates improvement of students' life quality.

**Keywords:** activity, physical, health, life quality, students.

### Introduction

In period of any society's gradual development humanistic values and rising of life qualities are very important. Life quality of man to large extent is determined by human physical activity and health. In new conditions of development of Russia social component of physical activity in society increases and its role in formation of healthy life style and quality increase.

Students are main subject of educational process in HEE. In "Strategy of state youth policy in Russian Federation to 2016" youth's quality is defined as resulting systemic indicator of youth policy's effectiveness and its interconnection with development of country. Improvement of youth's life quality and development of country are defined as strategic task [1]. All efforts of science and education shall be directed at improvement of life quality. In this aspect higher educational establishments' students are themselves interested in rising of their life quality, from position of active life, receiving good professional education, reaching proper professional fitness and so on.

Great number of scientific works is devoted to human physical activity. Physical activity is understood as targeted and regular motor functioning. This functioning is directed at improvement of physical condition, functional state and health. In this process motor functioning plays important role [2].

V.K. Balsevich thought that the most substantial manifestation of personality's physical culture is physical activity as special form of human functioning [3]. N.I. Ponomarev says that human physical activity contains a system of ideas about main laws of controlled development of human potential; ways and means of personality's active attitude to physical perfection; its forms and organization [4].

Thus, students' physical activity we understand as students' targeted and regular motor functioning, directed

at their physical condition's improvement as well as organism's functional state and health [5].

Reduction of human physical activity, with simultaneous increase of nervous emotional tension, results in health worsening [6]. Such tendency is relevant both for adult and young population of Russia [7].

The work of N.V. Sokolova is devoted to study of hygienic factors' role in formation of girl pedagogic HEE students' life quality [8]. In work of S.I. Kartysheva there is analysis of formation of boy students' life quality. The author found that formation of students' life quality is influenced by such factors as: health, material conditions. Correct eating; high personal anxiety; relations in academic group; behavior risk factors [9]. The problem of students' life quality were continued by N.V. Mukhina. She studied gender peculiarities of formation of students' life quality and dynamic of studying in pedagogic HEE [10].

Recent years in scientific literature there have been appeared the works on physical culture means usage for rising human life qualities. Ye.V. Tokar and A.M. Koechevskiy regarded factors influencing on life quality of higher education establishments' teachers [11]. In their research they showed that main factor was physical activity of teachers. I.V. Samsonenko showed positive influence of athletic gymnastic and information technologies on quality of students' life [12].

Formation of students' positive attitude to own health is influenced by the following: optimal physical loads [13, 14]; application of modern and attractive training forms [15, 16]; individual approach to training [17]; physical fitness [18]; possibility to choose kind of sports in compliance with own abilities [19, 20].

V.A. Orynychuk found interactions between physical, psychic and social components of student's life quality and his/her way of life, educational medium of HEE [21]. I.A. Sviridova assessed system of vocational training and students' medical aid organization. Such system

socially determines students' health and raise life quality of Kemerovskaya region students [22]. Social principles of students' physical activity's formation and life quality rising are also regarded in other works [23, 24].

A number of foreign works was devoted to indicators of health and life quality: attributes and criteria of assessment [25]. In the study of Harris J. physical culture education of students, propaganda of healthy and active way of life was regarded [26]. In opinion of many authors life quality is subjective assessment of satisfaction with different aspects of life; the felt life quality, subjective feelings of individual, formed on the base of certain life conditions and emotional state [27]. Life quality can be regarded from the following positions: healthy way of life in regress of sub-optimal health state [28]; volume and social context of physical activity [29]; importance of physical activity and sleep [30]; control of physical load [31, 32]; satisfaction with trainings' organization [33].

Thus, students' life quality is understood by us as system of life values, which characterize the following: students' educational and future professional activity; satisfaction of demands; personal development in aspect of satisfaction with life, social relations and surrounding, educational and personal medium. Great importance in its increasing has health, healthy life style, targeted and regular physical activity [12]. Conception "system" in definition of life quality shows that main method of assessment and study of life quality components are systemic analysis, combination of scientific methods and practical techniques of the problem's solution on the base of systemic approach and regarding the object of the research as a system.

*The purpose of the research* is substantiation of physical activity's technologies in higher educational establishment and their influence on students' life quality.

### Material and methods

*Participants:* students of Amur State University, (n=325, возраст 18-21 год).

Assessment of students' individual health was based on approach of V.I. Bielov [34], which permits to assess main systems of organism's life provisioning (cardio-vascular, respiratory), physical condition, physical workability, way of life. Such methodic was supplemented by us by a number of informative indicators, permitting to assess physical workability and physical fitness. Health ranging was fulfilled by 4 levels.

Students' life quality was assessed with the help of questionnaire "MOS SF-36" (Russian version of J.E.Ware, 1992) [35].

#### *Organization of the research*

Pedagogic experiment was built on the base of longitudinal research, starting from first year and up to the forth, inclusive (2012-2013 -2015-2016 academic years). As a result technology of students' physical activity was worked out, which included:

1. Motor activity was directed at increase of general endurance at the account of volume and intensity of load. Trainings for endurance were concentrated by us at the

beginning of academic year during 1,5-2 months before starting of "geographic zone" (in Far East it is beginning of November) and were conducted in the fresh air. It increased resistance of organism to unfavorable climatic conditions. The achieved general endurance sustained during all academic year with aerobic cyclic exercises.

2. Accent on speed power training was made in second half of every semester. It included physical exercises with weights, different jumps, games in the fresh year and relay races.

3. Training of dexterity and flexibility was realized as per academic material, considering future professional activity.

4. The structure of trainings in academic year consisted of three stages. At first stage (September, October) 70% of time was devoted to training of endurance, 15%- quickness and 15% - strength. We used uniform method and different variants of alternative method. At second stage (November, March) – 50% were assigned for endurance, 30% - for quickness and 20% - for strength. We used uniform, alternative, repeated, interval and competition training methods. At third stage (April, May) 40% of time was spent for quickness, 40% - for strength and 30% - for endurance. Repeated, interval and competition training methods were used.

#### *Statistical analysis*

Student's t-test was found by table of bordering values at confident level 95, 99, 99,9% of null hypothesis probability and number of degrees of freedom  $f = n - 1$ .

For determination of confidence of differences between mean values of compared parameters we used pair and not pair criterion t as well as non parametric criterion U (Wilcoxon-Manna-Whitney). When using not pair criterion the number of freedom degrees was found as  $f = n_1 + n_2 - 2$ , for pair -  $f = 2n - 1$ . We considered significance levels of differences (p) 0,05; 0,01; 0,001. Differences considered to be confident at  $p < 0,05$ .

With the help of computer program Deductor (Base Group) [36] we simulated indicators of physical condition: determined significance of a number of factors' influence on final result and prediction.

### Results

Results of the researches showed that by all indicators there happened confident changes (at  $p < 0,05$ ) (See table 1).

In the process of experiment integral indicator confidently changed from  $2,7 \pm 0,28$  points in first year (2<sup>nd</sup> level) to  $4,3 \pm 0,34$  in forth year (4<sup>th</sup> level). Indicators of functional reserves confidently increased from  $2,9 \pm 0,44$  points in first year to  $4,4 \pm 0,42$  – in forth. Physical workability and physical fitness indicators increased from  $2,4 \pm 0,22$  and  $2,7 \pm 0,32$  points in first year (2<sup>nd</sup> level) to  $4,4 \pm 0,22$  and  $4,6 \pm 0,38$  points in forth (4<sup>th</sup> level). In forth year we observed a tendency to insignificant reduction of physical fitness indicators. It can be connected with insignificant weakening of physical activity. Indicators of students' way of life and organism's resistance (by frequency of diseases per year) changed, during

experiment, from 2,7±0,21 and 2,9±0,24 points in first year (2<sup>nd</sup> level) to 4,3±0,24 – in fourth year (3<sup>rd</sup> level and 4<sup>th</sup> levels).

Results of study of experimental group students' life quality (see table 2) show that in first and second years physical and psychic components of life quality are at low level (47±4,3 points), at (p<0,05).

Low indicators of physical components show that physical state restricts fulfillment of physical loads and physical activity. It influences on state of health. Low

indicators of psychic component witness about presence of depressive, troublesome feelings, psychic troubles. In second year we also observed low (close to average) level of students' life quality (60±6,3 points, p<0,05). Results of our research show that third year students have average and above average levels of life quality (73±6,4 points, p<0,05). Fourth year has the highest indicators of life quality (89±7,4 points, p<0,05). Students of this group are well adapted to university conditions. They have high physical and life activity and low anxiety.

**Table 1.** Dynamic of changes of students' individual health in points

Indicators	Group	1 year M±m	2 year M±m	3 year M±m	4 year M±m
Functional reserves of organism	EG CG	2,9±0,44	3,0±0,42	3,7±0,33	4,4±0,42
	p	3,0±0,40	3,1±0,44	3,5±0,38	3,5±0,38
		>0,05	>0,05	>0,05	<0,05
Physical workability	EG CG	2,4±0,22	3,4±0,34	3,7±0,26	4,6±0,38
	p	2,5±0,26	3,3±0,32	3,4±0,30	3,4±0,22
		>0,05	>0,05	>0,05	<0,05
Physical fitness	EG CG	2,7±0,32	3,4±0,35	3,9±0,41	4,5±0,42
	p	2,7±0,26	3,3±0,30	3,6±0,36	3,6±0,40
		>0,05	>0,05	>0,05	<0,05
Way of life	EG CG	2,7±0,21	3,2±0,21	3,3±0,24	4,0±0,38
	p	2,6±0,20	3,1±0,18	3,4±0,22	3,6±0,20
		>0,05	>0,05	>0,05	<0,05
Resistance of organism	EG CG	2,9±0,24	3,3±0,19	3,7±0,21	4,3±0,24
	p	2,9±0,22	3,3±0,20	3,5±0,24	3,5±0,23
		>0,05	>0,05	>0,05	<0,05
Integral indicator	EG CG	2,7±0,28	3,3±0,30	3,7±0,29	4,3±0,34
	p	2,7±0,26	3,2±0,29	3,5±0,28	3,5±0,27
		>0,05	>0,05	>0,05	<0,05
Level	EG CG	II (crit.) II (crit.)	II (crit.) II (crit.)	III (adm) III(adm)	IV (proper) III (adm.)

Notes: EG – experimental group; CG-control group; Level of significance (p) was 0,05 and t > t cr. Of deviation H<sub>0</sub>, t < t cr. Not deviation H<sub>0</sub>; crit – critical level. Adm – admissible level; proper – proper level; M – mean arithmetic; m – standard error of mean arithmetic.

**Table 2.** Change of students' life quality

Components	1 year x±m	2 year x±m	3 year x±m	4 year x±m	p
Physical component of health, points	48±5,3	58±4,7	75±7,2	84±8,1	<0,05
Physical functioning, points	45±5,1	50±4,1	77±7,2	83±6,0	<0,05
Role functioning, points	46±4,9	56±6,5	74±6,7	83±6,1	<0,05
Intensity of pain, points	49±3,6	59±4,4	76±6,1	80±8,0	<0,05
General state of health	56±6,5	58±5,9	75±6,1	84±9,5	<0,05
2. Psychological component of health, points	47±4,8	63±5,3	72±7,6	86±9,9	<0,05
Psychic health, points	44±5,6	62±6,1	77±6,4	85±7,0	<0,05
Role functioning, conditioned by emotional state, points	50±5,4	66±6,6	72±6,3	89±8,5	<0,05
Social functioning, points	56±4,1	61±5,5	78±8,5	90±8,6	<0,05
Life activity, points	44±4,8	59±5,1	79±6,3	81±7,7	<0,05

Notes: x±m, (x – mean arithmetic, m – standard error of mean arithmetic)

## Discussion

Many specialists note that physical activity is directed at strengthening of human physical condition, organism's functional state and health. [3, 5, 6]. However, as on to day physical activity has not become a demand of students. Analysis of works, devoted to formation of students' physical activity [6, 7, 26] shows that most of recommendations of scientists are not paid attention to by higher educational teachers and coaches. In our opinion the reasons are as follows:

1) Intensive engagement of students (academic, scientific, social). Not formed motives and demands in targeted and regular physical activity;

2) Low professional-pedagogic level of teachers, who, by a number of reasons, do not see potential of students' physical activity and not overstep the frames of "Physical culture" discipline. For increasing of organism's functional potentials, physical fitness and health strengthening discipline "Physical culture" is not sufficient;

3) Insufficient material-technical provisioning of training sites;

4) Insufficient financing of students' physical culture and sports.

The received results proved that the worked our technology of physical activity influences on increasing of HEE students' life quality. In our opinion the researches of such kind it is necessary to regard:

1) As substantiation of new modern technologies, built

on the base of innovative and information approaches;

2) As substantiation of physical activity technologies and their influence on life quality in main, special and preparatory groups;

3) Objects of physical activity's influence studying shall be all subjects of educational process (students and teachers).

## Conclusions

1. The worked out technology of physical activity influences on students' individual health by all indicators: organism's functional reserves, physical workability, physical fitness, way of life and organism's resistance.

2. Technology of physical activity is a factor, facilitating rising of HEE students' life quality: physical and psychological components of health.

3. It is necessary to note that as a result of application of required physical activity means with usage of intensive physical loads in experimental group we found expressed positive changes.

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## Conflict of interests

The authors declare that there is no conflict of interests.

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