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**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.1490479>Available online at: <http://www.iajps.com>**Research Article****ESTIMATION OF QUALITY OF LIFE AND PSYCHOLOGICAL  
CONDITION IN PERSONS, WITH DIFFERENT TOLERANCE  
TO PHYSICAL LOAD, TRANSFERRED BY THE OPERATION  
OF AORTOCORONARY HEART SHUNTING****Irina N. Gernet<sup>1</sup>, Valentina N. Pushkina<sup>2</sup>, Galina A. Yamaletdinova<sup>3</sup>, Nina B. Serova<sup>4</sup>,  
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**Abstract:**

*This article discusses the quality of life and psychological state in persons undergoing a coronary artery bypass surgery (CABG), in the dynamics of physical rehabilitation. We study the interrelationships of quality of life, psychological state with the level of tolerance to physical activity. The analysis of indicators of quality of life in the main areas and psychological state, taking into account personal and situational anxiety, in patients at different stages of rehabilitation, which allowed to identify the characteristics of the dynamics of the studied parameters in groups of people with different tolerance to physical activity. The novelty lies in the fact that direct relationships have been found between the level of exercise tolerance and the quality of life, the psychological state of those who have undergone CABG surgery.*

**Methods.** *Evaluation of the quality of life of the surveyed was carried out using the Russian version of the World Health Organization questionnaire WHOQOL-100 (100 questions), designed to assess the quality of life (QOL) of the adult Russian-speaking population in Russia and other countries (WHOQOL Group, 1993) [1]. The level of situational and personal anxiety was assessed using the Spielberger-Khanin questionnaire. Exercise tolerance was assessed using a Six Minute Walk Test (SMWT). **Results.** *The study involved men (n = 60) who underwent CABG surgery. It has been established that in patients with a decrease in exercise tolerance, the overall indicator of quality of life decreases and situational and personal anxiety increases. **The discussion of the results.** It is concluded that it is necessary to create individual approaches in physical and psychological rehabilitation for people with different levels of exercise tolerance at all stages of rehabilitation.**

**Keywords:** *coronary artery bypass surgery, rehabilitation, quality of life, situational and personal anxiety, exercise tolerance*

**Main provisions:** ► *Assessment of the quality of life and psychological state is a necessary tool for diagnosing the condition of patients undergoing CABG surgery; ► In patients who have undergone CABG surgery, there are direct correlations of exercise tolerance indicators with indicators of quality of life and anxiety level; ► There is a need to create individual approaches in physical and psychological rehabilitation for people with different levels of exercise tolerance at all stages of rehabilitation; ► Long-term, individually selected, regular exercise, improve the quality of life of patients and reduce anxiety.*

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## INTRODUCTION:

Coronary artery bypass surgery (CABG), restoring adequate coronary blood flow, eliminates or reduces myocardial hypoxia, which causes coronary insufficiency, improves myocardial contractile function, psychological state and quality of life of operated patients [2]. Phenomena of postoperative maladjustment of the cardiorespiratory system, most pronounced in the early stages, can persist up to 6 months after surgery.

To optimize rehabilitation measures, it is necessary to take into account the individual socio-psychological and physiological status of persons undergoing CABG surgery. The patient's subjective perception is a sensitive indicator of the effectiveness of the intervention [3]. The results of many studies indicate that, despite the objective improvement in the clinical status of the majority of the operated patients, the quality of life and performance indicators after CABG in some patients do not improve [4]. In the literature there is no evidence of the relationship of indicators of quality of life and the level of situational and personal anxiety, especially among people with different tolerance to physical exertion, in the process of rehabilitation measures. These data could be useful in the individualization of rehabilitation programs for these groups of people. In this regard, the **purpose** of the study was to assess the quality of life and psychological state in individuals with different tolerance to physical activity, who underwent CABG surgery in the dynamics of physical rehabilitation. Objectives of the study:

1. To assess the quality of life in individuals with different tolerance to physical exertion, undergoing the operation of coronary artery bypass surgery in the dynamics of rehabilitation.
2. To study the level of situational and personal anxiety at different stages of rehabilitation in the examined persons in accordance with their tolerance to physical exertion.
3. To establish the relationship of indicators of quality of life and psychological status with the level of tolerance to physical activity in persons who have undergone surgery CABG.

## METHODS:

### Sample

We examined people after a coronary artery bypass surgery performed at the MUZ First City Clinical Hospital, Arkhangelsk. After the operation, a comprehensive examination of individuals was carried out on the basis of the Regional Hospital for Rehabilitation, the city of Arkhangelsk.

We have formed three groups of the examined individuals (n = 60, men) who do not have significant

differences in age and sex: group 1 (n = 11) consists of patients corresponding to 3 FC CHF in the 6-minute walk test, passing a distance of  $290 \pm 9.05$  m, group 2 (n = 29) - persons of 2FC CHF passing a distance of  $377 \pm 3.87$  m and Group 3 (n = 20) - people of 1 FC CHF passing a distance of  $441 \pm 4.93$  m. All patients three groups in history had data for the presence of arterial hypertension of 2–3 degrees of IV degree of risk.

## METHODS

The level of exercise tolerance was assessed using the 6-min test Noah walk. There are numerous data from a number of studies that compared the test results with FC NYNA (according to the New York classification of patients with chronic heart failure), ejection fraction rates, peak oxygen uptake, and an inverse correlation between the walking distance and the NYNA class was found [5]. During the 6-minute walk test, the results are evaluated by comparing the distance travelled in meters and the functional class of heart failure (FC): IV functional class of chronic heart failure (FC CHF) corresponds to the distance travelled in 6 minutes less than 150 m, FC III CHF - 151-300 m, II FC CHF - 301-425 m, I FC CHF - 426-550 m, absence of CHF - more than 551 m distance travelled by the patient.

The study used the Russian version of the World Health Organization questionnaire WHOQOL -100 (100 questions), designed to assess the quality of life (QOL) of the adult Russian-speaking population in Russia and other countries (WHOQOL Group, 1993) [1]. The questionnaire was used to evaluate six major areas of QOL: physical functions, psychological functions, level of independence, social relations, the environment and the spiritual sphere, and the respondent's perception of his quality of life and health in general is measured directly. The level of situational and personal anxiety was assessed using the Spielberger-Khanin questionnaire.

The examination was performed at the beginning of rehabilitation treatment (at 3 weeks after surgery), followed by: at the end of rehabilitation (at 6 weeks after surgery) and 8 months after surgery.

The date of the final examination was established on the basis of data from literary sources, which indicate that by 5–8 months after revascularization the reduction of contractility of the affected myocardial segments occurs [6].

Mathematical-statistical processing of the survey results was carried out using Microsoft Excel 2010 and SPSS software (version 19.0 for Windows). The level of significance of differences in the studied

parameters was determined using the Mann – Whitney test. The results were considered statistically significant at  $p \leq 0.05$ . A correlation analysis was carried out with the determination of the Pearson linear correlation coefficient and the Spearman rank correlation at a significance level of 95% ( $p < 0.05$ ). The value of the correlation coefficient  $r$  (interpretation):  $0 < r \leq 0.2$  - very weak correlation,  $0.2 < r \leq 0.5$  - weak correlation,  $0.5 < r \leq 0.7$ , average correlation,  $0.7 < r \leq 0.9$  - strong correlation,  $0.9 < r \leq 1$  - very strong correlation.

### RESULTS:

After completing a comprehensive rehabilitation program in group 1, the number of patients with 2 FC CHF - 82% prevailed, 18% met 1 FC CHF. In groups 2 and 3, the majority of patients belonged to 1 FC CHF, respectively in 52% and 95% of cases. In group 2, patients with 2 FC were also observed in 48% of cases, and in group 3, in 5% of cases there was no data on the presence of CHF. This fact indicates an increase in functional capabilities and a decrease in the functional class of CHF after undergoing a rehabilitation program in patients of all groups.

By the 8-th months after surgery in some patients of groups 2 and 3 there is a lack of CHF. In the 2nd group of such patients, 17% were observed, and in the 3rd group there were more of them - 40%. In

group 1, individuals with 2 FC CHF (70% of cases) predominated, and 1 FC CHF was observed in 30% of patients. In group 2, in 66% of cases, 1 FC CHF was observed, and 2 FC - in 17%. In group 3, the majority of patients belonged to 1 FC CHF (in 60% of cases). By the 8th month after surgery, a number of patients, regardless of FC CHF, had angina pectoris pains. However, in 1 group of such patients there were 40%, in group 2 - 28%, and in group 3 - 25%. This fact suggests that in patients with low exercise tolerance, angina recurrence occurs more often.

However, patients in all three groups note that bouts of anginous pain occur in a milder form than before the operation. After surgery, in patients of all three groups, the motor mode was limited and significantly differed between groups ( $p < 0.01$ ) (Table 1).

After going through the rehabilitation program in patients of group 1, the exercise tolerance index increased by 29% ( $p < 0.01$ ); in group 2 - by 13% ( $p < 0.01$ ); in patients of group 3 - by 11% ( $p < 0.01$ ). At the same time, no significant differences were observed between group 1 and 2. By week 6, patients in group 3 covered a distance of 49% more ( $p < 0.01$ ) than patients in group 1 and 23% more ( $p < 0.01$ ) than patients in group 2.

Table 1. Dynamics of physical tolerance in patients after AKSH ( $M \pm m$ )

Indicator	Groups	Week 3 (1)	Week 6 (2)	8 months (3)	Significance of differences within groups, p
The distance travelled by patients in 6 minutes	Group 1 (1)	300,91±10,35	378,73±11,24	418,50±10,85	1-2**,1-3**,2-3**
	Group 2 (2)	377,31±3,88	427,59±5,97	491,86±10,43	1-2**,1-3**,2-3**
	Group 3 (3)	441,00±4,93	489,25±9,24	546,50±13,58	1-2**,1-3**,2-3**
Significance of differences between groups, p		1-2**, 1-3**, 2-3**	1-3**, 2-3**	1-2**, 1-3**, 2-3*	

Note: \* -  $p < 0,05$ , \*\* -  $p < 0,01$

By the 8-th month, the distance travelled by patients of all groups significantly increased by another 2 times. The indicators of exercise tolerance in patients of group 1 were the lowest, compared with groups 2 and 3 (table 1). Between 1 and 2 groups there were significant (in 25%) differences in exercise tolerance ( $p < 0.01$ ), and between 1 and 3 groups, this difference reached 47% ( $p < 0.01$ ). The smallest difference in exercise tolerance was observed between groups 2 and 3 - by 17% ( $p < 0.05$ ).

In dynamics, we observe an increase in exercise tolerance in patients of all three groups, which indicates a positive effect of CABG operation and rehabilitation measures carried out after it on the physical condition of patients, which is consistent with studies by other authors [7].

Quality of life is considered as a multidimensional, complex structure, including the individual's perception of his physical and psychological state, his level of independence, his relationships with other

people and personal convictions, as well as his attitude to the significant characteristics of his environment. At week 3 after undergoing CABG surgery, the standard of living was significantly higher in group 3 versus group 1 ( $p < 0.05$ ), there were no statistical differences between groups 1 and 2, 2 and 3 ( $p > 0.05$ ) (table 2). At week 6 after undergoing a rehabilitation program at the base of the hospital for rehabilitation, there was a significant increase in the quality of life in only group 3 ( $p < 0.05$ ), while a significantly higher quality of life indicator was recorded in group 3 relative to group 1

( $p < 0, 05$ ). At 8-th months after surgery, a significantly significant increase in the quality of life was observed in the examined individuals of groups 1 and 2 ( $p < 0.05$ ), in individuals of group 1 there was a tendency to increase in the index ( $p > 0.05$ ). This indicates a positive impact of the rehabilitation program on the quality of life of the studied individuals with different levels of exercise tolerance - the higher the exercise tolerance, the faster the quality of life of patients in rehabilitation is improved, the lower the tolerance to exercise, the slower the quality of life improves.

Table 2. Dynamics of the indicator of quality of life in individuals with different levels of exercise tolerance in the dynamics of rehabilitation ( $M \pm m$ )

Indicator	Groups	Week 3 (1)	Week 6 (2)	8 months (3)	Significance of differences within groups, p
Quality of life	Group 1 (1)	72,65±3,28	75,49±2,75	80,18±3,21	1-3*
	Group 2 (2)	78,64±2,10	81,75±2,01	85,15±2,01	1-3**, 2-3*
	Group 3 (3)	80,54±1,47	85,44±1,64	86,62±1,66	1-2*, 1-3*
Significance of differences between groups, p		1-3*	1-3*	1-3**	

Note: \* -  $p < 0,05$ , \*\* -  $p < 0,01$

Within the framework of physical functioning, if we consider it holistically, the life of an individual may deteriorate due to problems caused by physical pain or physical discomfort, fatigue and lack of energy and strength, as well as the inability to adequately recover and rest through sleep. We analysed the physical sphere of their quality of life with a view to a more detailed assessment of the quality of life of people who underwent CABG surgery.

Analysing the indicators of the physical sphere of quality of life in the studied groups, we observed the following dynamics. At 3 weeks after undergoing

CABG surgery in patients of all groups, the level of the physical sphere was at an average level and was not statistically different ( $p > 0.05$ ), although in patients of group 3 it was slightly higher (Table 3). At week 6, after undergoing a rehabilitation program at the base of the hospital for rehabilitation, there was a significant increase in the indicator of the physical sphere of quality of life in groups 2 and 3 ( $p < 0.05$ ) and statistically significant differences between indicators 1 and 3 groups ( $p < 0.05$ ). In group 3, the indicator rose to a good level of quality of life, for individuals in groups 1 and 2 remained at a good level.

Table 3. Dynamics of the indicator of the physical sphere of quality of life in people with different levels of exercise tolerance in the dynamics of rehabilitation.

Indicator	Groups	Week 3 (1)	Week 6 (2)	8 months (3)	Significance of differences within groups, p
Physical sphere of quality of life	Group 1 (1)	11,58±0,90	12,21±0,89	13,333±0,38	1-3*
	Group 2 (2)	12,23±0,43	13,69±0,37	14,35±0,37	1-2*, 1-3**
	Group 3 (3)	12,69±0,38	14,09±0,41	14,40±0,38	1-2*, 1-3**
Significance of differences between groups, p			1-3*	1-3**	

Note: \* -  $p < 0,05$ , \*\* -  $p < 0,01$



By the 8-th month after the operation, we observe a further significantly significant increase in the indicator of the physical sphere of quality of life in individuals of group 1 ( $p < 0.05$ ), and a tendency to an increase in the indicator in individuals of groups 2 and 3 ( $p > 0.05$ ). The indicator of the physical sphere of quality of life in individuals of the 1st group remained at an average level, and among individuals of the 2nd group reached a good level (above 14). This indicates a positive impact of the rehabilitation program on the indicator of the physical sphere of the quality of life of the studied individuals with different levels of exercise tolerance at all its stages, but in individuals with FC I and II CHF a significant increase in the indicator is observed after 3 weeks of rehabilitation, and in patients with III FC CHF - only to 8 months after surgery.

We also conducted an analysis of the psychological sphere of the quality of life of the studied persons in the dynamics of rehabilitation. At week 3 after undergoing CABG surgery in patients of groups 1 and 2, the level of the psychological sphere was at an average level and was not statistically different ( $p > 0.05$ ), in patients of group 3 it was at a good level and had significant differences with indicators of group 1 ( $p < 0.05$ ) (table 4). At week 6 after the rehabilitation program, there was a significant increase in the quality of life in group 3 ( $p < 0.05$ ), and statistically significant differences between groups 1 and 3 ( $p < 0.05$ ). In group 2, the indicator reached a good level of quality of life; among people in group 1, it remained at an average level.

Table 4. Dynamics of the indicator of the psychological sphere of quality of life in people with different levels of exercise tolerance in the dynamics of rehabilitation.

Indicator	Groups	Week 3 (1)	Week 6 (2)	8 months (3)	Significance of differences within groups, p
Psychological sphere of quality of life	Group 1 (1)	12,89+0,53	13,42+0,38	14,26+0,50	1-3*
	Group 2 (2)	13,67+0,40	14,19+0,43	14,60+0,45	1-3*
	Group 3 (3)	14,04+0,37	14,93+0,29	14,81+0,29	1-2*
Significance of differences between groups, p		1-3*	1-3*		

Note: \* -  $p < 0,05$ , \*\* -  $p < 0,01$

By the 8-th month after surgery, we observe a significantly significant increase in the indicator of the mental sphere of the quality of life in individuals of groups 2 and 3 ( $p < 0.05$ ), and a slight tendency to an increase in the indicator in persons of group 3 ( $p > 0.05$ ). The indicator of the mental sphere in persons of the 1st group at this stage also began to correspond to a good level (above 14). This indicates a positive impact of the rehabilitation program on the indicator of the psychological sphere of the quality of life of the studied people with different tolerance to physical exertion at all its stages, but the higher the tolerance - the faster the improvement of the psychological sphere of the quality of life in patients undergoing CABG surgery occurs.

We analysed the dynamics of the level of independence in both groups. The level of independence, that is, the ability to lead an autonomous existence, to provide and maintain oneself independently, is determined primarily by the individual's ability to move and move, to cope with their daily activities and work, regardless of

medication or other types of treatment. At week 3 after undergoing CABG surgery, the level of independence in patients of all groups was at an average level, there were statistical differences between the indicators of groups 1 and 3 ( $p < 0.05$ ) (Table 5). Indicators of all three groups were on the average level of quality of life. At week 6 after undergoing the rehabilitation program at the base of the hospital for rehabilitation treatment, a significant increase in the level of independence was observed in group 3 ( $p < 0.01$ ), and statistical differences between indicators of groups 1 and 3 ( $p < 0.05$ ) remained. In patients of group 3, the indicator of the level of independence reached a good level of quality of life. In groups 1 and 2, indicators remained at an average level. At 8 months after surgery, we observe a significantly significant increase in the level of independence in individuals of groups 1 and 2 ( $p < 0.05$ ), and a tendency to an increase in the index in individuals of group 3 ( $p > 0.05$ ). The indicator of the level of independence of persons of group 2 began to correspond to a good level (above 14).

Table 5. Dynamics of the level of independence of the quality of life in people with different levels of exercise tolerance in the dynamics of rehabilitation.

Indicator	Groups	Week 3 (1)	Week 6 (2)	8 months (3)	Significance of differences within groups, p
Level of independence	Group 1 (1)	11,30±0,73	12,11±0,79	13,45±0,66	1-3*
	Group 2 (2)	12,30±0,43	13,17±0,46	14,37±0,49	1-3**, 2-3*
	Group 3 (3)	12,83±0,55	14,21±0,58	14,55±0,50	1-2**, 1-3**
Significance of differences between groups, p		1-3*	1-3*		

Note: \* -  $p < 0,05$ , \*\* -  $p < 0,01$

In patients of group 1, the indicator remained at an average level (from 11 to 13). This indicates the positive impact of the rehabilitation program on the level of independence of the studied individuals with different levels of exercise tolerance at all its stages, but in individuals with higher rates of exercise tolerance, the quality of life reaches a good level of quality of life in less time. The dynamics of the indicator of the level of independence within the studied groups corresponds to the dynamics of the indicators of the physical sphere of the quality of life, which indicates the interrelation of these two spheres of the quality of life.

The analysis of social functioning includes the close personal relationships of the individual, the ability to provide support to other people and receive support from them, as well as the ability to meet sexual needs. At week 3 after undergoing CABG surgery in patients of groups 2 and 3, the level of social

relationships was at a good level and did not differ statistically ( $p > 0.05$ ), and in patients of group 1 was at an average level during the entire study period (table 6). At week 6 after undergoing the rehabilitation program at the base of the hospital for rehabilitative treatment, there was a tendency to an increase in the social relations index in all three groups ( $p > 0.05$ ), there were statistical differences between 1 and 3, 2 and 3 groups ( $p < 0.05$ ).

By the 8-th month after the operation, we observe a further tendency towards an increase in the indicator of social relations in individuals of groups 1 and 2 ( $p < 0.05$ ).

This indicates the insignificant impact of rehabilitation measures on the level of social relationships in individuals with different tolerance to physical exertion at all its stages of rehabilitation.

Table 6. The dynamics of the indicator of social relationships quality of life in individuals with different levels of exercise tolerance in the dynamics of rehabilitation.

Indicator	Groups	Week 3 (1)	Week 6 (2)	8 months (3)	Significance of differences within groups, p
Level of social relationships	Group 1 (1)	12,91±0,59	13,52±0,60	13,93±0,84	
	Group 2 (2)	14,35±0,47	14,49±0,42	15,04±0,48	
	Group 3 (3)	14,95±0,36	15,56±0,27	15,51±0,26	
Significance of differences between groups, p		1-3*	1-3*, 2-3*	1-2*, 1-3*	

Note: \* -  $p < 0,05$ , \*\* -  $p < 0,01$

The largest sphere - "Environment" - includes the external (material and other) living conditions of the individual. This area includes personal freedom, physical safety and a sense of security. The second sub-sphere is his living conditions and the environment in his house. An important role is played by financial security, which allows an individual to satisfy his various needs, to obtain high-quality medical or social assistance, to acquire new information and skills, for recreation, relaxation and

free time. Climatic, ecological and aesthetic features of the environment are also capable of improving or worsening life due to the state of health, and, moreover, the presence or absence of necessary transport. At week 3 after undergoing CABG surgery in patients of both groups, the "environment" indicator was at an average level and there were statistically significant differences between groups 1 and 2, group 1 and 3 ( $p < 0.05$ ) (Table 7).

Table 7. Dynamics of the indicator of the quality of life environment in individuals with different levels of exercise tolerance in the dynamics of rehabilitation.

Indicator	Groups	Week 3 (1)	Week 6 (2)	8 months (3)	Significance of differences within groups, p
Environment of quality of life	Group 1 (1)	11,68±0,59	11,88±0,59	12,52±0,64	
	Group 2 (2)	12,75±0,46	12,87±0,42	13,48±0,47	
	Group 3 (3)	12,79±0,27	13,23±0,26	13,41±0,34	
Significance of differences between groups, p		1-2*,1-3*	1-3*		

Note: \* -  $p < 0,05$ , \*\* -  $p < 0,01$

At week 6 after undergoing the rehabilitation program, there was a tendency to a slight increase in the "environment" indicator in the studied groups ( $p > 0.05$ ), statistically significant differences were observed between groups 1 and 3 ( $p < 0.05$ ). At 8 months after the operation, we observe a more pronounced increase in the environmental index in the studied individuals ( $p > 0.05$ ). In all groups, the level of quality of life "Environment" remains at an average level, but with an increase in exercise tolerance, this indicator becomes significantly higher.

In both groups, the levels of reactive and personal anxiety were investigated in the dynamics of rehabilitation. After surgery, patients in group 1 showed a high level of personal and situational anxiety, in patients of groups 2 and 3 - an average level of anxiety. After going through the rehabilitation program, there was a significant decrease in situational and personal anxiety to an average level in individuals of the 1st group ( $p < 0.01$ ) (Table 8).

Table 8. Dynamics of reactive and personal anxiety in individuals with different levels of exercise tolerance in the dynamics of rehabilitation.

Indicator	Groups	Week 3 (1)	Week 6 (2)	8 months (3)	Significance of differences within groups, p
Situational anxiety	Group 1 (1)	48,09±2,20	40,64±1,53	40,60±2,86	1-2**, 1-3*
	Group 2 (2)	41,69±1,85	40,30±1,84	37±1,63	1-3*, 2-3*
	Group 3 (3)	41,35±1,82	38,05±0,87	37,85±1,31	1-3*
Significance of differences between groups, p		1-2**,1-3**	-	-	
Personal anxiety	Group 1 (1)	47,82±3,05	45,82±2,85	43,6±2,43	1-2**
	Group 2 (2)	44,03±1,81	42,40±1,53	39,89±1,55	1-3*
	Group 3 (3)	42,90±1,87	39,26±1,41	40,35±1,15	
Significance of differences between groups, p		1-3*	1-3*	-	

Note: \* -  $p < 0,05$ , \*\* -  $p < 0,01$



In groups 2 and 3 there was a tendency to decrease in the index ( $p > 0.05$ ). By the 8th month after the operation, a significant decrease in situational anxiety was observed in individuals of groups 2 and 3, and a significant decrease in personal anxiety was observed in individuals of group 2 ( $p < 0.05$ ).

### THE DISCUSSION OF THE RESULTS

Indicators of quality of life and psychological state, complementing the picture of the disease, are a multifactorial criterion for assessing the condition of patients suffering from coronary heart disease and undergoing CABG surgery, which is consistent with research by other authors [8]. The quality of life is not constant and varies depending on the patient's condition, therefore, it is necessary to monitor the quality of life and psychological state throughout the entire study period. Data on the quality of life allows you to monitor the patient's condition [9].

Analysing the dynamics of quality of life, situational and personal anxiety, it attracts the fact that with a decrease in exercise tolerance, the general indicator of quality of life decreases and situational and personal anxiety increases. This is confirmed by the presence of a weak correlation of TLC indicators with levels of quality of life and an average negative correlation with situational anxiety at all stages of the study.

In the dynamics of rehabilitation, the most rapid improvement in the quality of life and psychological state is observed in individuals with a higher level of exercise tolerance. The lower the exercise tolerance, the longer it takes to improve the quality of life and reduce anxiety. This indicates that improving the quality of life and psychological state in people undergoing CABG surgery is impossible without including long-term, metered, individually selected physical activities in the program, which, in the dynamics of rehabilitation, will contribute to an increase in patient tolerance to physical activity. A number of authors investigating the psychological status and condition of patients undergoing CABG surgery suggest focusing on the use of psychological programs to improve the psychological status of patients [10]. We believe that it is necessary to create individual approaches in physical and psychological rehabilitation for people with different levels of exercise tolerance at all stages of rehabilitation, which is consistent with the results of other authors [11, 12, 13]. In this case, we would put the physical aspect in the first place, since we found a direct connection of the psychological state and quality of life of patients with the level of exercise tolerance. Long-term, individually selected regular exercise,

based on our results, improve the quality of life of patients and reduce anxiety. With the help of specialists (cardiac surgeons, cardiologists, psychologists and psychotherapists), it is necessary to increase patient motivation to participate in comprehensive cardiac rehabilitation programs, where physical rehabilitation plays a leading role in recovering from surgery, improving the quality of life and psychological state in people who have had CABG surgery.

### REFERENCES:

1. The use of the questionnaire of quality of life / version of WHO / in psychiatric practice: a manual for doctors and psychologists / ed. M.M. Kabanova. - SPb.: St. Petersburg Research Psychoneurological Institute n.a. V.M. Bekhterev, 1998 – 33 p.
2. Demchenko E.A. Quality of life in patients with coronary heart disease: prognostic value and dynamics in the process of rehabilitation after coronary artery bypass surgery / E. A. Demchenko, N. E. Kruglova, O. Yu. Schelkova // Bulletin of St. Petersburg University. - 2014. - Series 12, Sociology, Vol.3. - p. 69-78.
3. Kots Ya.I. Quality of life in patients with cardiovascular diseases / Ya.I. Kots, R.A. Libis // Cardiology. - 1993. – No. 5. - C. 66–71.
4. Zaitsev V.P. Factors affecting the quality of life after coronary artery bypass surgery / V.P. Zaitsev, T.A. Ayvazyan // Mental disorders and cardiovascular pathology. - M., 1994. - p. 154–163.
5. Roul G. Does a chronic heart failure test predict prognosis in patients with NYHA class II or III? / G. Roul, P. Germain, P. Bareiss // Am. Heart. J. 1998. Vol. 136. - p. 449-457.
6. Belov Yu.V. Features of structural and functional changes in myocardial shunting in patients with post-infarction left ventricular remodeling / Yu.V. Belov, V.A. Varaksin // Cardiology. - 2003. - No. 2. - p. 7–11.
7. Landyr A.P. Controlled movement therapy of patients after surgical myocardial revascularization in the early stage of rehabilitation treatment. / A.P. Landyr, A.Kh. Luckmann, M.E. Musstimets // Therapeutic Archive. - 2002. - No.8. - p.21-24.
8. Baleva E.S. Assessment of the quality of life relevant to health in patients with coronary heart disease / Ye.S. Baleva, I.L. Krom, O. Yu. Aleshkina // Saratov Journal of Medical Scientific Research. 2013. V. 9, No. 1. P. 145–147.
9. Novik A. A., Ionova T. I. Rukovodstvo po issledovaniju kachestva zhizni v medicene. 2-nd

- ed. / edited by Academician of RAMS Ju. L. Shevchenko. M.: "OLMA Media Group" CJSC, 2007. p. 19
10. Belan I.A., Lozhnikova L.E., Barbukhatti K.O. Anxiety as a risk factor for the unfavourable course of coronary heart disease after coronary artery bypass surgery // *Clinical and medical psychology: research, training, practice: web scientific journal* - 2015. – No. 2 (8) [Web source]. - URL: <http://medpsy.ru/climp> (access date: 07/30/2018).
  11. Kamilova, U.K. The impact of a complex of physical training on the quality of life and exercise tolerance in patients with chronic heart failure / V.K. Kamilova, Z.D. Rasulova, D.R. Tagaeva *et al.* // *Cardiovascular therapy and prevention*. - 2017. - T.16, No. S. - p. 62b-63a.
  12. Gernet I.N. Physiological mechanisms of adaptation of persons undergoing coronary artery bypass surgery in the dynamics of physical rehabilitation / dissertation for the degree of medical sciences // State Educational Institution of Higher Professional Education "Northern State Medical University", Arkhangelsk, 2007. - 146 p.
  13. Goruleva M.V. Quality of life and psychocognitive status of patients undergoing coronary artery bypass surgery / M.V. Gorulev, O.S. Ganenko, R.S. Kovaltsova *et al.* // *Russian Journal of Cardiology*, No. 9 (113), 2014. - p. 68-71.