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CHANGES IN THE FUNCTIONAL STATE OF CARDIOVASCULAR SYSTEM IN PATIENTS WITH ISCHEMIC HEART DISEASE BY MEANS OF PHYSICAL REHABILITATION

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ЗМІНИ ФУНКЦІОНАЛЬНОГО СТАНУ СЕРЦЕВО-СУДИННОЇ СИСТЕМИ В ОСІБ З ІШЕМІЧНОЮ ХВОРОБОЮ СЕРЦЯ ПІД ВПЛИВОМ ЗАСОБІВ ФІЗИЧНОЇ РЕАБІЛІТАЦІЇ. Наталія ЖАРСЬКА.
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Анотація. Більшість наукових праць присвячено застосуванню окремих засобів фізичної реабілітації без врахування особливостей адаптаційних перебудов, що відбуваються в осіб з ішемічною хворобою серця під впливом дозованих фізичних навантажень.

Мета: визначити вплив засобів фізичної реабілітації на функціональний стан серцево-судинної системи в осіб другого зрілого віку з ішемічною хворобою серця: стабільна стенокардія, II функціональний клас у післялікарняний період.

Дослідження проводилося на базі кардіо-пульмонологічного відділення Клінічної лікарні Львівської залізниці смт Брюховичі. У дослідженні брало участь 50 пацієнтів віком 50 – 60 років, з яких формувалися дві однорідні групи чоловіків і жінок.

У результаті проведення комплексу реабілітаційних заходів, що передбачали використання модифікованої методики лікувальної гімнастики, дозованої ходьби, теренкуру, масажу та фізіотерапевтичних процедур, досягнуто достовірне ($p<0,05$) зростання показників фізичної працездатності та поліпшення функціонального стану серцево-судинної системи за умов розширення та розвитку колатералей як на периферії, так і в міокарді.

Ключові слова: серце, стенокардія, реабілітація.

Introduction. Heart and blood-vessel diseases occupy the first place on the list of illnesses which lead to reduction in working capacity and human mortality [2, 3, 8]. The main preventive measures for people with diseases of the cardiovascular system are correct diet, body mass index, blood pressure, cholesterol, and also increasing of physical activity, which reduce risk of cardiovascular disease [1, 5, 7]. Necessity of physical rehabilitation means application in the complex recovery of patients with cardiovascular diseases has been proved by theory and practice. For people who suffer from ischemic heart disease, scientific publications offer to use physical training program consisting of intensive physical exercises, dosed walking, massage and physiotherapy [4, 6, 8]. The topicality of the question lies in individual selection with clearly defined sequence usage of physical rehabilitation means, taking into account features of adaptive rearrangements that occur under the influence of dosed physical loads for people suffering from ischemic heart disease. Research in this area contributes to further choice of the right combination of physical rehabilitation means to accelerate patients' recovery with this pathology.

How to work with academic programs, plans, themes. The research carried is carried out in accordance with 4.1.2 of the theme. "Physical rehabilitation for disabled people with motor dysfunctions" Consolidated Plan research in the field of physical culture and sports in 2006 – 2010.

The **purpose** is to determine the effect of physical rehabilitation on functional state of health of people suffering from ischemic heart disease (stable angina pectoris second functional group) during the post - hospital period.

The **object** of the research is:

1. To establish a differential application program of physical rehabilitation means for people

2. suffering from ischemic heart disease (stable angina pectoris second functional group) during the post - hospital period.

3. To determine the efficiency of physical rehabilitation means for people suffering from ischemic heart disease (stable angina pectoris second functional group) during the post-hospital period.

The methodology of the research comprises, in particular, analysis of scientific and technical literature, pedagogical experiment, methods of medical and biological sciences (determination of heart rate, tonometry, the calculation of indexes of central hemodynamic), instrumental methods of analysis (electrocardiography, echocardiography, biochemical analysis of blood), mathematical methods of statistics.

The organization of research. The study was conducted at cardio-pulmonological department of Clinical Hospital of the Lviv Railway in Bryukhovychi. 50 patients aged 50 - 60 were involved into the research. Both men and women, were distributed into two homogeneous groups.

The main group was engaged in program of physical rehabilitation, which included the use of a modified health-related fitness, dosed walking, health path, massage and physiotherapy. In the other group physical rehabilitation was carried out according to general methods, which provided therapeutic exercises, massage and physiotherapy procedures.

Results of the research. The functional state of persons with stable angina pectoris second functional group differs a lot from normal indices and were characterized by raising indices of heart rate, blood pressure, peripheral vascular resistance, total cholesterol level range and also sings of myocardial hypoxia and reduced total myocardial contractility [1, 5, 6].

The results of research were taken into consideration while developing a physical rehabilitation program for people suffering from ischemic heart disease (stable angina pectoris second functional group). The program contained besides general physical rehabilitation means differential ones, such as: tools that facilitate the normalization of muscle tone of cervico-thoracic spine (special exercises for back muscles, segmental-reflex massage combined with massage of the neck area, physiotherapy) and dosed walking technique.

The structure of physical rehabilitation program for people suffering from ischemic heart disease (stable angina pectoris second functional group) provides initial examination, determination of the main functional disorders of the cardiovascular system, formation of the tasks of physical rehabilitation, choice of the appropriate means of physical rehabilitation and the development of evaluation criteria.

The main task of our research was to show the effectiveness of physical rehabilitation means during the rehabilitation process of people with ischemic heart disease at the sanatorium stage depending on the clinical state of health of individuals.

Data analysis of the central hemodynamic showed a high efficiency of physical rehabilitation program, which is affirmed by the normalization of most of these indicators.

As a result of the physical rehabilitation program application the average systolic blood pressure in the main group decreased significantly by 11,92% and amounted to 143,4 ± 3,7 mmHg and diastolic respectively 15.18%, which corresponds to 81.6 ± 0,9 mmHg ($p < 0,05$). The significant changes in blood pressure reduction were observed in the second group, but they were not as great as in the main group.

Systolic blood volume increased in both groups, however significant changes of indices occurred only to members of the main group, where it increased by 12.9% and amounted to 46,8 ± 2,1 ml ($p < 0,05$).

The same trend is observed with percussive index. It increased significantly by 16.6% and amounted to 24,3 ± 1,6 ml/m2 ($p < 0,05$)in the main group, that explains the improvement of myocardial contraction ability [3, 6].

In the main group the average peripheral vascular resistance component authentically decreased by 15.7% and amounted to 3697,5 ± 176,9 din./s/sm-5 ($p < 0,05$), indicating the importance of peripheral circulatory component in improving hemodynamic after physical training for people suffering with stable angina pectoris [6, 7].

Under the influence of the proposed program, improvements are observed in bioelectric processes in the myocardium. This is confirmed by a decrease in signs of myocardial hypoxia (depression segment S - T significantly decreased in the main group by 0.6 mm, which is 0,7 ± 0,2 mm in the comparison group is only 0.2 mm, which is 1,1 ± 0.1 mm at ($p < 0,05$)) and improving processes in the myocardial repolarization (T wave amplitude in the major group rose in 2 mm, which corresponds to 5,0 ± 0,4 mm ($p < 0,05$), in comparative group only 0.9 mm, which is 4,1 ± 0,6 mm ($p > 0,05$)).

The results of total left ventricular contractility in the main group under the influence of the developed physical rehabilitation program increased in 7.4%, which is 57,2 ± 1,7 ($p < 0,05$), and in the comparison group significant changes were not observed, ($p > 0.05$).

Our research showed that under the influence of the proposed program of physical rehabilitation, positive changes in biochemical blood tests have occured, they consist in reducing total cholesterol level range (in the main group - by 0.8 mmol / liter. That is 5 , 7 ± 0,2 mmol / l, in the comparison group - by 0.2 mmol / liter. and is 6,5 ± 0,2 mmol / l ($p < 0,05$)), indicating the deceleration of progression of atherosclerotic process in patients with ischemic heart disease. Changes in blood lipid spectrum in patients with ischemic heart disease are confirmed by literature sources [4.7].

Conclusions:

1. Physical rehabilitation program for people aged 50 – 60 suffering from ischemic heart disease (stable angina pectoris second functional group) has been developed, which included the differential application of health-related fitness with emphasis on special exercises for back muscles and lower extremities, in combination with segmental-reflex massage and massage in neck area, upper and lower extremities, and also dosed walking and physiotherapy.

2. The implementation of rehabilitation program developed by the author promoted authentically the improved functional state indices of the cardiovascular system and reduces risk factors of the ischemic heart disease progression.

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ИЗМЕНЕНИЯ ФУНКЦИОНАЛЬНОГО СОСТОЯНИЯ СЕРДЕЧНО-СОСУДИСТОЙ СИСТЕМЫ У ЛИЦ С ИШЕМИЧЕСКОЙ БОЛЕЗНЬЮ СЕРДЦА ПОД ВЛИЯНИЕМ СРЕДСТВ ФИЗИЧЕСКОЙ РЕАБИЛИТАЦИИ

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Аннотация. Большинство научных работ посвящено применению отдельных средств физической реабилитации без учета особенностей адаптационных перестроек, происходящих у лиц с ишемической болезнью сердца под влиянием дозированных физических нагрузок.

Цель: определить влияние средств физической реабилитации на функциональное состояние сердечно-сосудистой системы у лиц второго зрелого возраста с ишемической болезнью сердца: стабильная стенокардия, II в функциональный класс в послебольничный период.

Исследование проводилось на базе кардио-пульмонологического отделения Клинической больницы Львовской железной дороги смт Брюховичи.

В исследовании принимало участие 50 пациентов в возрасте 50 – 60 лет, из которых формировались две однородные группы, в которые входили как мужчины, так и женщины.

В результате проведения комплекса реабилитационных мероприятий, которые предусматривали использование модифицированной методики лечебной гимнастики, дозированной ходьбы, терренкура, массажа и физиотерапевтических процедур, достигнуты достоверные ($p<0,05$) рост показателей физической работоспособности и улучшения функционального состояния сердечно-сосудистой системы при условии расширения и развития коллатералей как на периферии, так и в миокарде.

Ключевые слова: сердце, стенокардия, реабилитация.

CHANGES IN THE FUNCTIONAL STATE OF CARDIOVASCULAR SYSTEM IN PATIENTS WITH ISCHEMIC HEART DISEASE BY MEANS OF PHYSICAL REHABILITATION

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Annotation. The majority of scientific papers devoted to the use of certain means of physical rehabilitation, do not deal with adaptive rearrangements for people suffering from ischemic heart disease that occur under the influence of dosed physical loadings.

The purpose is to determine the effect of physical rehabilitation on functional state of cardiovascular system of people suffering from ischemic heart disease (stable angina pectoris second functional group) during the post-hospital period.

The study was conducted in cardio-pulmonological department of Clinical Hospital of the Lviv Railway in Bryukhovychi. 50 patients aged 50 – 60 were involved into the research. Both men and women were distributed into two homogeneous groups.

As a result of the rehabilitation process, which included the use of a modified health-related fitness, dosed walking, health path, massage and physiotherapy, there was improvement of physical capacity and cardio-vascular system functioning state caused by widening and developing of peripheral vessels and myocardium ones as well.

Key words: cardio, angina pectoris, rehabilitation.

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