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Zhdan V. M., Kitura Ye. M., Babanina M. Yu., Kitura O. Ye., Tkachenko M. V., Kyrian O.A., Ivanytskyi I. V.

**MEDICAL REHABILITATION OF PATIENTS WITH ARTERIAL HYPERTENSION  
IN GENERAL MEDICAL PRACTICE**

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*The paper was aimed at the analysis of the data from the publications on medical rehabilitation of patients with arterial hypertension. This type of rehabilitation includes: drug therapy, physiotherapy, therapeutic exercises, sanatorium-resort treatment.*

*The paper discusses the therapeutic strategy of managing patients with arterial hypertension, which includes: change of lifestyle, lowering blood pressure to the target level, effective treatment of other risk factors to reduce residual cardiovascular risk. The choice of the strategy on prescribing antihypertensive drugs, as well as the timely start of therapy is crucial. The algorithm of drug therapy for arterial hypertension is provided according to the European recommendations of 2018.*

*Physical rehabilitation for arterial hypertension includes numerous means of active influence on the functional systems of the patient body: therapeutic exercise, occupational therapy, therapeutic massage, physiotherapy.*

*Many publications have reported the positive effect of physical exercises on BP regulation mechanisms and modified risk factors. Regular dosed moderate-intensity cardio training contributes to increase in tolerance to physical load, body weight loss, blood pressure, accompanied by improvement in the elasticity of blood vessels, the functional state of the cardiovascular system and the quality of life. Cohort studies have shown that even regular physical activity of lower and moderate intensity and duration is associated with approximately 20% reduction in mortality. The findings of the scientific research proved the effectiveness of physical exercises in the rehabilitation of patients with hypertension, while the most pronounced positive progress was observed during cardio training with the use of cyclic training equipment.*

**Key words:** arterial hypertension, rehabilitation, risk factors, antihypertensive drugs, therapeutic exercise.

**Connection of the publication with planned research works.**

The paper has been written within the research scientific work, entitled "The features of the course, prognosis and treatment of comorbid diseases in the internal organs pathology in respect of genetic, age and gender aspects" (state registration number 0118U004461).

**Introduction.**

Currently, arterial hypertension (AH) is considered the most common non-communicable disease worldwide, regardless of the status of the country or the income level of its citizens. Globally, cardiovascular morbidity and mortality is associated with the above pathology, which is facilitated by the high prevalence of AH and the lack of adequate control in a large part of the population. The overall prevalence of AH in adults in 2015 was about 30-45% with a standardized global prevalence of 24% and 20% in men and women, respectively. In people over 60 years of age, the prevalence of AH exceeds 60%. According to the expert prognosis, the number of patients with AH is tending to grow, reaching about 1.5 billion people in 2025.

**The aim of the study.**

The analysis of the data from the publications on medical rehabilitation of patients with arterial hypertension.

**Main part.**

The WHO defines cardiac rehabilitation as a system of measures that is necessary both for a favorable effect on the cause of the disease and for maximum adaptation of a patient to the conditions of physical, mental and social activity, which creates a sense of confidence in the own strength and the ability to preserve or restore the vital status. Rehabilitation in a broader sense is a

process aimed at prevention of disability during the treatment of the disease and to a large extent to prevent complications and deterioration of health. The need to develop a rehabilitation strategy is supported by the worsening of the demographic situation that persists in a country with negative population growth and its aging, the absence of a tendency of lowering the mortality rate, especially in working age, environmental pressure, the constant presence of psycho-emotional tension in the society, which contributes to the chronicity of the pathology [1, 2].

Medical rehabilitation includes a set of measures that contribute to the transition of the disease to the stage of compensation or its complete elimination. This type of rehabilitation includes drug therapy, physiotherapy, therapeutic exercise, sanatorium-resort treatment [3, 4]. For patients with cardiovascular diseases, in particular, arterial hypertension, comprehensive medical rehabilitation/secondary prevention should include the following elements:

- evaluation of a patient's clinical condition;
- optimization of pharmacological treatment;
- physical rehabilitation, namely, stepwise and controlled. This refers to the increase in physical activity adapted to the individual capabilities of a person;
- psychosocial rehabilitation, the purpose of patient's awareness in how to cope with stressful situations, emotional states, such as anxiety and/or depression, to develop the ability to psychological adaptation to the consequences of the disease;
- diagnosis and fight against the so-called "risk factors" of the development of AH;
- change of the lifestyle;
- awareness of patients and their relatives;

-adherence to recommendations;

Comprehensive cardiac rehabilitation is a process that should be:

- started immediately;
- lifelong;
- stepwise;
- based on the individual features of a patient;
- adequate for a patient and his/her relatives [2].

Office blood pressure (BP) measurement is most often the basis for the diagnosis of AH and follow-up patient supervision. According to the most international recommendations, the recommended level for establishing a diagnosis of AH is a level of systolic blood pressure (SBP)  $\geq 140$  mm Hg and/or diastolic blood pressure (DBP)  $\geq 90$  mm Hg. If possible, it is not recommended to establish a diagnosis of AH in one visit to a medical facility. Generally, 2-3 visits with an interval of 1-4 weeks are necessary to confirm the diagnosis of AH (depending on the BP level). The diagnosis of AH can be made in one visit if the BP reading is  $\geq 180/110$  mm Hg and official medical records on concomitant CVDs and home monitoring of BP.

According to the office measurements, BP is classified as optimal, normal, high normal BP, or AH stage I-III.

More than 50% of patients with AH have additional cardiovascular risk factors. The most common additional risk factors are diabetes mellitus (15-20%), dyslipidemia (increased low-density lipoprotein cholesterol (LDL-C) and triglycerides (30%)), overweight (40%), hyperuricemia (25%) and metabolic syndrome (40%), as well as unhealthy lifestyle (smoking, alcohol abuse, sedentary lifestyle) [5]. The presence of one or more additional cardiovascular risk factors proportionally increases the risk for coronary, cerebrovascular diseases and kidney damage.

The top-priority task of the primary care physician is the timely identification of people at high cardiovascular risk to develop and implement individual prophylaxis. Evaluation of additional risk factors should be a part of the diagnostic examination of a patient with AH, especially in case of complicated family medical history. Cardiovascular risk should be evaluated in all patients with AH using simple scoring systems based on BP level and the presence of additional risk factors according to the simplified version of the scoring system proposed by the European Society of Cardiology/European Society of Arterial Hypertension [6, 7].

According to the Framingham criteria, the terms "low", "moderate" "high" and "very high" risk mean a 10-year probability of cardiovascular complications (fatal and nonfatal)  $<15\%$ ;  $15-20\%$ ;  $20-30\%$  and  $>30\%$ , respectively.

The therapeutic strategy of managing patients with AH should include:

- lifestyle changes;
- reduction of BP to the target level;
- effective treatment of other risk factors to reduce the residual cardiovascular risk.

*Lifestyle changes.* The onset and course of AH are closely related to the presence of risk factors [8]. Lifestyle changes are the cornerstone of arterial hypertension prevention and can safely and effectively delay the development of AH or prevents it in people without arterial hypertension, delay the start of drug therapy or prevent the need for it in patients with AH stage I, as

well as contribute to the BP lowering in patients with AH who has been receiving drug therapy, which allows to reduce the amount and dosage of antihypertensive drugs. However, the lifestyle changes should not delay initiation of drug therapy in high-risk patients. Clinical trials show that lifestyle changes can low BP and be equivalent [9] to drug monotherapy, although the main disadvantage is inability for long-term adherence to the lifestyle changes, which requires special measures. In addition to BP lowering, lifestyle changes promote the control over other cardiovascular risk factors and clinical conditions [9].

*Reduced salt intake.* A cause-and-effect relationship between salt intake and BP level has been proven, and excessive salt intake may be the cause of the resistant arterial hypertension. It has been shown that reducing salt intake to 5 g/day has a moderate (by 1-2 mmHg) effect on lowering of systolic BP in people with normal blood pressure, and somewhat more apparent (by 4-5 mmHg) in patients with arterial hypertension [6, 10, 11]. Daily consumption of 5-6 g of salt is recommended for the general population. The effect of lowering salt intake is more noticeable in people of Negroid race, the elderly people, as well as in people with diabetes mellitus, metabolic syndrome, or CKD; reducing salt intake allows to reduce the amount and dosage of antihypertensive drugs.

When counseling the patient, it should be pointed out the need to avoid additional consumption of salt and food products with a significant salt content (bread, ready-made meat products, cheese, margarine and cereal flakes).

*Moderate alcohol consumption.* The relationship between alcohol consumption, BP level and the prevalence of hypertension is linear: regular alcohol consumption increases BP in treated patients with arterial hypertension. While moderate consumption may not be harmful, transitioning from moderate to excessive alcohol use is associated with both elevated BP and an increased risk of stroke. The PATHS study investigated the effect of alcohol restriction on BP level. At the end of the 6-month period in the study group, BP was lowered by 1.2/0.7 mm Hg compared to the controls. No studies, evaluating the effect of alcohol restriction on the lowering the risk for the development of cardiovascular endpoints have been conducted. Hypertensive men who drink alcohol should be advised to limit its consumption to 20-30 g of ethanol per day, and hypertensive women to 10-20 g of ethanol per day. Total alcohol consumption should not exceed 140 g per week for men and 80 g per week for women.

*Eating habits changes.* Eating a diet rich in whole grains, fruits, vegetables, polyunsaturated fats, and dairy products and limiting foods high in sugar, saturated fat, and trans fat, such as the DASH-diet is advisable. Consumption of more vegetables high in nitrate compounds known to lower blood pressure, such as leafy greens and beetroot is recommended. Other healthy foods and nutrients should also be consumed, including those containing magnesium, calcium, and potassium, such as avocados, nuts, seeds, legumes, and tofu [12]. The following are the main principles of basic therapeutic nutrition in hypertension:

- the daily caloric content of the diet is 2300-2500 kcal/day. Protein/fat/carbohydrate content is 70-90

g / 70-80 g / 300-400 g. For patients with obesity (metabolic syndrome), the calorie content is reduced to 2100 kcal/day;

- the diet should be accompanied by other lifestyle changes. In patients with elevated BP, the combination of a special DASH-diet with physical exercises and weight loss resulted in more pronounced lowering of BP and left ventricular myocardial mass (LVM) compared with DAS- diet alone. Moderate consumption of coffee, green and black tea is reasonable [12]. Other healthy drinks include karkade (hibiscus) tea, pomegranate juice, beet juice and cocoa.

**Weight loss.** AH is closely related to overweight, whereas weight loss is accompanied by lowering of BP. Cardiovascular risk is significantly increased in the presence of abdominal (visceral) obesity, which is determined by waist circumference (WCI) and is not directly related to BMI.

**Regular physical exercises.** The studies show that regular cardio and strength training can be useful both for the prevention and treatment of arterial hypertension [13]. Moderate-intensity cardio training (walking, jogging, cycling, yoga, or swimming) for 30 minutes 5-7 days a week or high-intensity interval training, which involves alternating short intervals of high intensity with subsequent recovery periods of lower intensity. Strength training can also promote BP lowering. Physical exercises with resistance/strength loads are recommended 2-3 times a week [14].

**Quitting smoking.** Smoking causes a dramatic elevation of BP and an increase in heart rate (HR), which persists for more than 15 minutes after smoking one cigarette, resulting in stimulation of the sympathetic nervous system at the central level and at the level of nerve endings [15]. Therefore, the smoking status should be assessed and recommendations to give up smoking should be given to patients with AH.

- Tobacco smoking should be quit, as tobacco use is a strong and independent cause of CVD.

- Nicotine replacement therapy (varenicline and bupropion alone or in combination) is advisable for smokers.

- In any case, it is recommended to quit smoking, even if you gain weight, because weight gain does not reduce the benefits of smoking cessation in reducing the risk of CVD.

**The algorithm of drug therapy for AH.**

In addition to the change of a patient’s lifestyle, it is important to decide on a strategy for prescribing antihypertensive drugs. In the management of patients with AH, it is extremely important to choose an effective treatment strategy, since the patient’s prognosis also depends on the initial treatment.

It is important to decide on the start of therapy. Importantly, in patients with AH of I degree with low and moderate risk without a diagnosed asymptomatic

**Table – Start of antihypertensive therapy (lifestyle change and drug therapy) depending on the initial levels of the office BP (2018 ESC/ESH)**

High normal: BP 130-139/85-89	AH stage I: 140-159/90-99	AH stage II: 160-179/100-110	AH stage III: ≥180/110
Recommendations regarding the change of lifestyle	Recommendations regarding the change of lifestyle	Recommendations regarding the change of lifestyle	Recommendations regarding the change of lifestyle
Drug therapy for very high-risk patients with cardiovascular disease, especially ischemic heart disease, is advocated.	Immediate start of drug therapy for high-risk and very high-risk patients; patients with cardiovascular disease, CKD or target organs’ lesions.	Immediate start of drug therapy for all patients.	Immediate start of drug therapy for all patients.
	Start of drug therapy for low-moderate-risk patients without cardiovascular diseases, CKD or target organs’ lesions within 3-6 months after the lifestyle has been changed and absence of BP control.	Objective: BP control during 3 months.	Objective: BP control during 3 months.

hypertensive target organ damage (AHTOD) it is recommended to start antihypertensive therapy within 3-6 months after their lifestyle has been changed, if it was not possible to achieve the target BP level. In patients with AH stage I with a high risk or diagnosed AHTOD, drug therapy should also be started immediately and simultaneously with the lifestyle change [16].

Antihypertensive therapy should be started immediately in patients with AH of II-III degree, regardless of the level of cardiovascular risk, simultaneously with the initiation of lifestyle changes (table) [17].

The main task remains to achieve the target BP level and, most importantly, to maintain it in the patients.

In the European recommendations of 2018, more strict criteria for BP reduction are established. At the first stage, the purpose of antihypertensive therapy should be to reduce BP to the levels <140/90 mm Hg in all patients. Provided that the treatment is well tolerated, BP can be lowered to 130/80 mm Hg and lower in most patients, except for the elderly. In patients over 65 years of age, SBP should be 130-140 mm Hg, and DBP <80 mm Hg. It is not advisable to reduce SBP <120 mm Hg in the course of treatment.

In the new recommendations, ESC/ESH experts recommend the same main classes of drugs as in the previous recommendations as the basic antihypertensive therapy: blockers of the renin-angiotensin system (RAS) (angiotensin-converting enzyme (ACE) inhibitors and angiotensin II receptor blockers (ARBs)), calcium channel blockers (CCB), thiazide/thiazide-like diuretics (including chlorthalidone and indapamide), B-adrenoblockers (B-AB). Among other antihypertensive drugs, experts highlight α-blockers, which can be used in the presence of specific indications (for example, for the treatment of symptomatic hypertrophy of the prostate gland). Antihypertensive drugs of other classes, in addition to those listed above, are no longer recommended for long-term treatment of AH, and can only be prescribed as additional therapy in rare cases of resistant AH when the basic therapy is ineffective.

*The algorithm of drug antihypertensive therapy is based on several essential recommendations:*

The optimal measures declared in the ISH 2020 guidelines are similar to the ESC 2018 recommendations, but have some differences. The basis of the pharmacotherapy strategy is the prescription of hypotensive drugs, which consists of four stages.

**Step 1.** The therapy starts with a double combination in one tablet: angiotensin-converting enzyme inhibitors (ACEIs) or angiotensin II receptor blockers (ARBs) + a thiazide-like diuretic in post-stroke, elderly patients with existing heart failure or intolerance to calcium channel blockers (CCBs).

**Step 2.** The use of a double combination in the maximum tolerated dose of the abovementioned drugs in one tablet.

**Step 3.** Prescribing a triple fixed combination of antihypertensive drugs, namely the groups of drugs indicated above + CCBs + thiazide-like diuretic.

**Step 4.** In the case of the development of resistant AH (office and 24-hour ambulatory BP remain higher than the target level despite the continuing use of a triple fixed combination), spironolactone (12.5-25 mg/day) or other potassium-sparing diuretics should be prescribed; these drugs should be carefully prescribed if the glomerular filtration rate (GFR) is  $<45$  ml/min/1.73 m<sup>2</sup> or the level of K<sup>+</sup> is  $>4.5$  mmol/l.

$\beta$ -blockers should be considered at any stage of therapy in the presence of specific indications for their prescription, such as HF, angina pectoris, the condition after myocardial infarction, atrial fibrillation, young women who are pregnant or those who are planning to become pregnant [6, 17].

The use of the combination therapy, compared to monotherapy, reduces the risk of treatment discontinuation by 71%, which is explained by a greater efficacy, which is positively evaluated by a patient and maintains compliance. The trial, conducted in 26 countries in Europe, the Middle East, and Asia, which included more than 18,000 AH patients in primary care, investigated the need for combination therapy. It has been revealed that 30% of respondents were sufficient with monotherapy, 40% achieved the target level of BP with a double combination, and 30% needed treatment with three or more drugs [18]. The findings of the study show that combination therapy with two drugs can control BP in approximately 2/3 of patients. If BP cannot be controlled with two-drug combination therapy, three-drug combination therapy is a logical option. This is usually a combination of an RAS blocker with a calcium antagonist and a diuretic, which can control BP in  $>80\%$  of patients, according to the findings of the study. However, it is not recommended to start treatment with a combination of three drugs.

In addition to BP control, the therapeutic strategy should include lifestyle changes, body weight control, and effective treatment of other risk factors to reduce residual CV risk [17].

1. Optimal methods of lifestyle change.

2. The level of LDL-C should be reduced according to the risk profile:

$>50\%$ , and  $<70$  mg/dl (1.8 mmol/l) in AH and CVD, CKD, diabetes mellitus or without CVD and high risk;

$>50\%$ , and  $<100$  mg/dl (2.6 mmol/l) in high-risk patients;

$<115$  mg/dL (3 mmol/L) in moderate-risk patients.

3. Fasting serum glucose concentration should be reduced to  $<126$  mg/dL (7 mmol/L) or glycated hemoglobin  $<7\%$  (53 mmol/mol).

4. The level of uric acid should be maintained  $<6.5$  mg/dL (0.387 mmol/L), in patients with gout – lower than 6 mg/dL (0.357 mmol/L).

5. In patients with CVD, it is advisable to consider antiplatelet therapy (only as a secondary prevention).

*Physical rehabilitation* for arterial hypertension includes numerous means of active influence on the functional systems of a patient's body: therapeutic exercise, occupational therapy, therapeutic massage, physiotherapy.

Epidemiological studies show that regular cardio training may be beneficial for the prevention and treatment of arterial hypertension and reduction of cardiovascular risk and mortality. The meta-analysis of randomized controlled trials demonstrated that cardio endurance training reduces resting systolic and diastolic BP by 3.0/2.4 mmHg in general and even by 6.9/4.9 mm Hg in patients with arterial hypertension [9, 19].

Currently, numerous scientific evidences of the positive effect of physical activity on the indicators of the cardiovascular system (CVS), in particular, blood pressure, in patients with AH. Studies devoted to the analysis of the effect of the cardio training on hemodynamic and neurovegetative indicators are particularly widely elucidated in the scientific literature [20].

Many publications reported the positive effect of physical training on BP regulation mechanisms and modified risk factors. Regular dosed cardio moderate-intensity physical activity contributes to increased tolerance to physical activity and is accompanied by improvement in the elasticity of blood vessels [21, 22], enhancement of the functional state of the cardiovascular system and the quality of life [23]. The cohort studies have shown that even regular physical activity of lower intensity and duration is associated with an approximately 20% reduction in mortality [24, 25], and this also applies to moderate-intensity physical training. Regular physical exercises in patients with hypertension promote body weight loss and blood pressure lowering. The findings of the scientific study have proven the effectiveness of the use of physical exercises in rehabilitation of patients with AH, and the most pronounced positive dynamics were observed during cardio training with the use of cyclic training equipment [4, 14].

Drug therapy in combination with therapeutic exercise led to the normalization of blood pressure, reduction of the stiffness of the vascular wall and violation of the mineral density of bone tissue, functional capabilities and body composition in postmenopausal women with hypertension.

The best result was observed in AH of I and II degrees with no morphological changes in the target organs. A significant effect of regular physical activity is observed in patients with AH of the I degree [21]. The findings of the of multiple meta-analyses show that the degree of BP lowering after a course of cardio exercises varies. Halbert J.A. et al. (1997) highlighted decrease in SBP by an average of 4.7 mm Hg, and DBP by 3.1 mm Hg after a course of cardio training [26].

A large meta-analytic study, which analyzed the findings of 54 scientific papers, found an average lowering of SBP by 3.7 mm Hg and DBP by 2.6 mm Hg after physical activity for more than one month in patients with AH. The positive hemodynamic effects of physical activity promote the reduce in the dosage of drug therapy in 55.9% of patients, namely diuretics in 80.8%, beta-blockers in 45.0%, calcium antagonists in 54.3%, ACE inhibitors in 37.6%. The use of physical training with the use of cyclic and strength training devices in people with AH has a positive effect.

Regarding strength training, the authors report that the positive effects of strength training consist in an effect on body weight, the functional state of the cardiovascular system, but should be used only as a supplement to the cardiac training, since cardio training is more effective in reducing the BP level [14, 27].

Therapeutic exercise is provided at all stages of hypertension, but most often at the first and second stages. In the first two stages, fewer contraindications are identified and it is more reasonable.

There are several forms of physical exercises: morning exercises, therapeutic gymnastics (TG), independent physical exercises, therapeutic dosed walking, group recreational physical training, dosed swimming, rowing, running, etc. [2, 28].

The outpatient stage of physical rehabilitation of hypertensive patients includes three modes of motor activity: partial load motor, partial load training, training motor. Numerous means of active influence on the functional systems of the patients' body are

used: therapeutic exercise, therapeutic massage, physiotherapy [2, 28].

Means of physical rehabilitation are therapeutic gymnastics, exercises with training devices, dosed walking, massage, physiotherapeutic treatment. If training equipment is available, exercises on a stationary bicycle, treadmill at a slow pace can be recommend.

Dosed walking is widely used, starting from the 2-3 day with a distance of 1-2 km at a pace of 80-90 steps/min. Morning exercises are an important stage during the course of therapeutic exercise. Physiotherapeutic treatment includes electrosleep, hydrogen sulfide, iodine-bromine and radon baths, ultraviolet irradiation.

Exercises on the training equipment and massage sessions are also performed.

Regular medical supervision (outpatient supervision) of patients with AH is important in medical rehabilitation. Outpatient supervision of patients with AH provides with monitoring of blood pressure level and risk factors, control of implementation of recommendations [28, 29].

Thus, reducing cardiovascular risk is the main goal of medical rehabilitation of patients with arterial hypertension. Medical rehabilitation requires a comprehensive approach and should include lifestyle changes and drug therapy.

#### Prospects for further research.

Improvement of medical rehabilitation methods, in particular physical rehabilitation, requires further study and improvement of physical rehabilitation methods.

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### МЕДИЧНА РЕАБІЛІТАЦІЯ ПАЦІЄНТІВ НА АРТЕРІАЛЬНУ ГІПЕРТЕНЗІЮ В ЗАГАЛЬНОЛІКАРСЬКІЙ ПРАКТИЦІ

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**Резюме.** Нині артеріальна гіпертензія (АГ) залишається найпоширенішим неінфекційним захворюванням у світі, незалежно від статусу країни чи рівня доходів її громадян. Як і у всьому світі, кардіоваскулярна захворюваність та смертність пов'язана саме з цією патологією, чому сприяють висока поширеність АГ та відсутність адекватного контролю артеріального тиску у значної частини популяції. Виникнення і перебіг АГ тісно пов'язані з наявністю факторів ризику.

Медична реабілітація включає в себе комплекс заходів, що сприяють переходу хвороби в стадію компенсації або її повного зникнення. Даний вид реабілітації включає: медикаментозну терапію, фізіотерапію, лікувальну фізкультуру, санаторно-курортне лікування. Рекомендовані зміни способу життя, які продемонстрували здатність знижувати АТ: обмеження споживання солі, поміркованість у споживанні алкоголю, регулярне виконання фізичних вправ, відмова від куріння.

Базисна антигіпертензивна терапія включає основні класи лікарських засобів: блокатори ренін-ангіотензинової системи (інгібітори ангіотензинперетворювального ферменту – ІАПФ і блокатори рецепторів ангіотензину II – БРА), блокатори кальцієвих каналів (БКК), тіазидні/тіазидоподібні діуретики (в тому числі хлорталідон та індапамід), В-адреноблокатори (В-АВ). Алгоритм медикаментозного антигіпертензивного лікування згідно сучасних останніх рекомендацій.

Фізична реабілітація пацієнтів на артеріальну гіпертензію включає великий арсенал засобів активного впливу на функціональні системи організму хворих: лікувальну фізичну культуру (ЛФК), працетерапію, лікувальний масаж, фізіотерапію. Поліклінічний етап фізичної реабілітації хворих на гіпертонічну хвороби включає три режими рухової активності: щадний руховий режим, щадно-тренуючий режим, тренуючий руховий режим з використанням великого арсеналу засобів активного впливу на функціональні системи організму хворих: лікувальну фізичну культуру, працетерапію, лікувальний масаж, фізіотерапію. Таким чином, медична реабілітація пацієнтів на артеріальну гіпертензію вимагає комплексного підходу і повинна включати модифікацію стилю життя, медикаментозну терапію, методи фізичної реабілітації.

**Ключові слова:** артеріальна гіпертензія, реабілітація, фактори ризику, антигіпертензивні препарати, лікувальна фізкультура.

### MEDICAL REHABILITATION OF PATIENTS WITH ARTERIAL HYPERTENSION IN GENERAL MEDICAL PRACTICE

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**Abstract.** Currently, arterial hypertension (AH) remains the most common non-communicable disease worldwide, regardless of the status of the country or the income level of its citizens. Globally, cardiovascular morbidity and mortality are associated with the above pathology, which is facilitated by the high prevalence of hypertension and the lack of adequate control in a large part of the population. The onset and clinical course of arterial hypertension are closely related to the presence of risk factors.

Medical rehabilitation includes a set of measures that contribute to the transition of the disease to the stage of compensation or its complete elimination. This type of rehabilitation includes drug therapy, physiotherapy, therapeutic exercise, sanatorium-resort treatment. Recommended lifestyle changes that have demonstrated the ability to lower blood pressure are reduced salt intake, moderate alcohol consumption, regular physical exercise, and quitting smoking.

The basic antihypertensive therapy includes the main classes of the medications: blockers of the renin-angiotensin system (RAS) (angiotensin-converting enzyme (ACE) inhibitors and angiotensin II receptor blockers (ARBs)), calcium channel blockers (CCB), thiazide/thiazide-like diuretics (including chlorthalidone and indapamide),



B-adrenoblockers (B-AB). The algorithm of medicinal antihypertensive treatment is made according to the latest up-to-date recommendations.

Physical rehabilitation of patients with arterial hypertension includes numerous means of active influence on the functional systems of the patient body: therapeutic exercise (TE), occupational therapy, therapeutic massage, physiotherapy. The outpatient stage of physical rehabilitation of hypertensive patients includes three modes of motor activity: partial load motor, partial load training, training motor with the use of a large arsenal of means of active influence on the functional systems of the patient body, namely, therapeutic exercise, occupational therapy, therapeutic massage, physiotherapy. Thus, medical rehabilitation of patients with arterial hypertension requires a comprehensive approach and should include lifestyle changes, drug therapy, and physical rehabilitation methods.

**Key words:** arterial hypertension, rehabilitation, risk factors, antihypertensive drugs, therapeutic exercise.

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### Conflict of interest:

The authors of the paper confirm the absence of a conflict of interest.

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