



Aging - Determinants that Determine Active Longevity

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Abstract

In recent years, the medicine of industrialized countries has faced both an increase in life expectancy and a progressive increase in diseases of middle and old age: atherosclerosis and its complications, cancer, obesity, diabetes mellitus of the second type, hypertension, age-related immunodeficiency, mental depression of the elderly, osteoporosis, etc., non-infectious having a single endocrine-metabolic pathogenesis. Now we need a modern therapeutic and prophylactic ideology and, possibly, a drug base, on the basis of which it is possible to create methods of anti-aging and restorative geriatrics. In the body of higher mammals and humans, there is a neuro-endocrine-metabolic mechanism of general regeneration with cascading amplification and negative feedback. This is the essence of the processes of anti-aging. We have found that the most important thing is good proper sleep, proper nutrition and optimal stress effects: optimal physical activity, cold exposure - breathing and dousing, periodic fasting. Analysis of primary and repeated medical examinations revealed that it is of great importance to prevent premature aging to maintain a stable habit of systematic physical activity and a culture of proper nutrition, which reduces the deficiency of vitamins, minerals through the preventive intake of biologically active foods. In the process of training, motivation for health activities increases with the transformation of the goal of strengthening one's health into a comprehensive the motive is to promote health.

Keywords: Hypertension; Longevity; Cancer

Introduction

Longevity without diseases has become an urgent task, and the main problem lies not only in the quality of this longevity, but also in a significant increase in the individual life expectancy of each person.

In recent years, medicine in industrialized countries has faced both an increase in life expectancy and a progressive increase in diseases of middle and old age: atherosclerosis and its complications, cancer, obesity, type 2 diabetes, hypertension, age-related immunodeficiency, mental depression of the elderly, osteoporosis etc., non-infectious having a single endocrine-metabolic pathogenesis. Although these diseases have been

known for a long time, their share in the structure of all causes of death has gradually changed. Now about 10 diseases determine the fatal outcome for every 80-85 people out of 100 who have reached middle and old age [9].

Along with a noticeable rejuvenation of aging diseases, the incidence rate of the elderly as a whole is twice, and in senile people 6 times higher than in people of working age. Almost every person over the age of 60 is diagnosed with several of the listed non-communicable diseases. The dominant pathologies are: diseases of the cardiovascular system, cerebrovascular disorders and, above all, acute disorders of cerebral circulation, diseases of the musculoskeletal system, malignant neoplasms.

Now we need a modern therapeutic and prophylactic ideology and, possibly, a drug base, on the basis of which it is possible to create methods for antiaging and restorative geriatrics. Of course, disease prevention is basically a set of correct recommendations: eat and drink properly, periodically fast, mandatory physical activity, do not smoke, do not drink alcohol, monitor blood pressure, weight, etc. Reading scientific publications concerning the regulation of mitochondrial metabolism and geriatric aspects of the endocrine regulation of physiological regeneration, you come to the conclusion that it is impossible to achieve significant success in the fight against the main non-communicable human diseases if you only affect the clinical manifestations of each separately, no matter how great the successes in modern treatment for each. Therefore, it is necessary to find a way to influence these diseases pathogenetically, as on the whole group as a whole [6,7].

Prevention of the main non-communicable diseases generally solves the problem of increasing the resistance of the human body to the action of numerous risk factors that cause aging diseases, and in recent years there have been works proving that the basis for the occurrence of aging diseases is a progressive decrease in regenerative processes in various cellular structures of the body. That is why numerous anti-aging techniques have been created, including the complex use of optimizers/accelerators/of respiratory metabolism in combination with melatonin, human growth hormone or its amino acid and pharmacological liberators-releasers in combination with releasers of one's own stem cells. It is believed that the results of the use of such methods are the slowing down of the aging process and the regression of diseases associated with it [8].

Certain scientific works say that in the organism of higher mammals and humans there is a neuro-endocrine-metabolic mechanism of general regeneration with cascade amplification and negative feedback. This mechanism works in a circadian mode mainly during night sleep, because regeneration is an energy-intensive process and requires turning off the central nervous system and muscle work. The ultimate metabolic task of the mechanism is to enable the synthesis of enzymes for anabolic and energy purposes in order to ensure the regularity of the general regenerative process (ORP). The ultimate physiological task is the daily restoration of cellular, tissue and organ structures damaged during the day and the previous time. This is the essence of anti-

aging processes. Those. the most important is a good proper sleep, and in the daytime the optimal stress effects are physical activity-cold-starvation.

The decline in a person's power capabilities begins at the age of about 60 years and the degree of decline is individual. This indicates that the mechanisms regulating the decline in strength in different people are activated to varying degrees and, probably, can be suspended through appropriate training sessions [1,3].

Within the framework of the project on 436 participants to study the factors of reducing premature aging, it was carried out in the Centers for Active Aging of the city of Astana and research institutes preventive medicine NJSC "MUA".

All project participants were divided into three age groups:

- From 73 years to 85 years
- From 63 to 72 years
- From 55 to 62 years.

In each age category, the main groups were formed - without the presence of chronic diseases and complications, with cognitive processes within the normal range according to the results of the Montreal Cognitive Function Assessment Scale. The physical and emotional state of these participants corresponded to their chronological age [4,13].

The "risk groups" included :

- Persons according to anthropometric indicators (overweight, large body volumes, etc.);
- Persons whose profession was associated with heavy physical labor and outwardly looked older from their chronological age;
- Persons with chronic diseases of various etiologies.

The influence of regular physical activity, training of cognitive processes and prevention of senile asthenia on the degree of rehabilitation and support for the usefulness of vital motor qualities, skills and abilities in the upper limits of age norms, the state of cardiovascular, respiratory and nervous systems [2,5].

The degree of strengthening of the muscular system and the preservation of mobility in the joints, the normalization of

blood pressure, the functions of the endocrine system, as well as the indicators of emotional tone were compared in different age groups.

Gender differences in the speed and degree of recovery in groups with chronic diseases with the same etiology were studied [3,5].

In health -improving groups with elements of physical therapy, yoga, respiratory gymnastics - qigong, Nordic walking, occupational therapy, exercises aimed at strengthening the defenses of an aging organism were mastered [10,11].

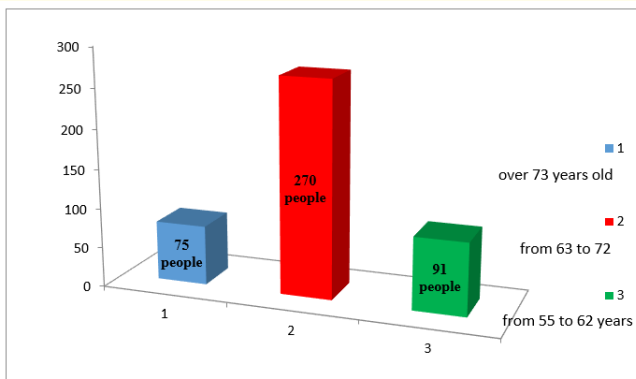


Figure 1: Age groups of health improvement participating in the project.

In groups of emotional and psychological unloading, individual psychological counseling and group sessions were conducted aimed at training and maintaining cognitive processes.

Systematic psychological unloading of older people allowed them to restore their positive emotional background and tune in to constructive communication with others.

Moral and organizational support for the elderly was provided not only by specialists, but also by the independent activities of pensioners, their mutually beneficial communication, exchange of experience, and initiatives.

In the process of classes, the conditions for the formation of an active attitude of older people to physical rehabilitation were revealed.

So, in groups older than 73 years, classes began with simple movements for the joints of the arms, legs and spine in a standing position. In the rehabilitation gymnastics section, exercises were selected using moderately swinging movements of the arms, legs, calf raises, tilts and turns of the torso, neck, light non -full amplitude squats, and then these exercises were performed while walking.

Simple movements without large amplitude and weights cause the release of synovial fluid into the joint cavity, which protects the articular cartilage from direct friction and thereby from damage. This is especially important when working with older women who, as a rule, are overweight and have weakened muscles. For women of the "risk group" - this is the most dangerous type of injury in everyday life and, in the classroom, with improper use of physical activity.

In the rehabilitation of persons with chronic diseases, great importance was attached to exercises that strengthen bone tissue (according to M. Nelson). Exercises were carried out in breathing exercises - qigong. Cognitive stimulation was carried out using the techniques of George W. Rebock, Chinese playing techniques with geometric figures - Tangram, Schulte tests, asymmetric exercises for hands, etc. [15].

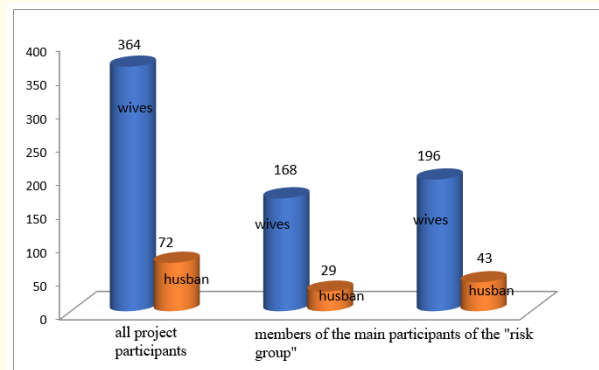


Figure 2: Rice. 2 Indicators of the gender composition of the project.

In each group, a developed program of rehabilitation gymnastics was used with the use of special exercises, which made it possible to accelerate the dynamics of restoring the function of the musculoskeletal system, respiratory volumes, and blood pressure [9].

In the 55 to 72 year old groups, classes were based on consecutive three-month workouts with a change of direction from fitness exercises, Nordic walking to rehabilitation gymnastics and yoga.

In all age groups, classes were held in breathing exercises - qigong, breathing according to the method of Strelnikova, Buteyko, (at the individual choice of the project participants themselves).

In general, performing simple low-amplitude exercises on the spot, then while walking and strictly individually dosed running load under the control of heart rate and respiratory volume, and in the final part of the exercises sitting, lying down with elements of flexibility development in the group of older women turned out to be effective.

During a three-month visit to the fitness room, older women significantly increased their motor pace on treadmills and became faster ($P < 0.001$) than in the first weeks of training (respectively, before - 3.43 ± 0.16 km/h and after - 9.37 ± 0.34 km/h).

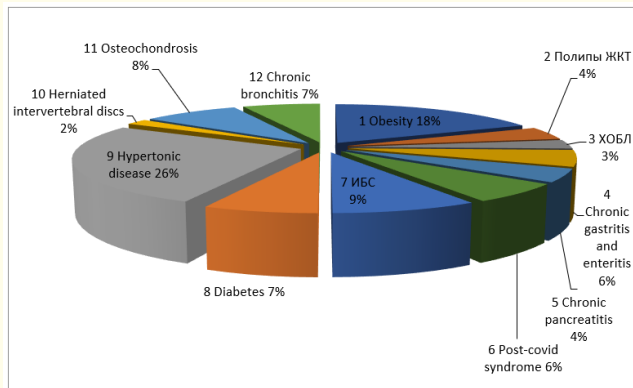


Figure 3: Groups with an individual training program.

All participants of the “risk group”, along with physical training, daily took the patented food product “Karkat”, containing pumpkin, melon, watermelon seeds, as well as the following components: horseradish, omnik, red root, golden root and harmala. In addition to the food product, pumpkin juice was taken in a volume of 50 ml.

During the study, 18% of individuals in all age and gender groups showed an improvement in their general condition.

In persons with diabetes mellitus, obesity, there was a partial decrease in sugar levels, on average from 15 to $9.8 \mu\text{mol/l}$, a decrease in blood pressure to 135/85 mm Hg, and an oxyhemoglobin level (SpO_2 - 97-98%). The average level of changes was 12% of the total number of those who go in for physical exercises in combination with the intake of the food product “Karkat”.

In 6% of persons with chronic diseases, no significant changes were observed.

48% of persons in the age groups from 55 to 62 years and from 63 to 72 years had significantly significant results, especially an improvement in motor activity, an increase in muscle strength.

The uniform distribution of multidirectional physical activity contributed to the elimination of significant fluctuations in individual functional indicators of the level of health.

The best conditions for the correction of age-related physical activity were achieved with the following ratio of funds: for general endurance - 75-80%, for strength endurance and flexibility - 10% each. At the same time, the regimen of taking the food product “Karkat” in combination with pumpkin juice was observed - three times a day. With such an organization of health training, the improvement in general well-being occurred faster and better than with other ratios of funds.

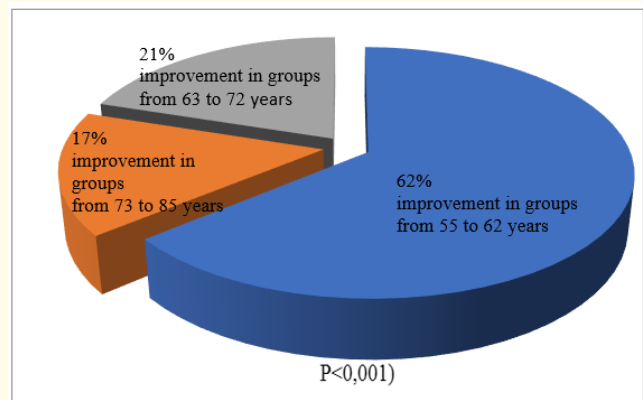


Figure 4: Positive dynamics in different age groups with the combined effect of physical activity and the intake of biological foods.

An analysis of primary and repeated medical examinations revealed that maintaining a stable habit of systematic physical activity and a culture of proper nutrition, which reduces the deficiency of vitamins and minerals through the preventive intake of biologically active foods, is of great importance for preventing premature aging. In the process of training, motivation for health-improving activities grows with the transformation of the goal of improving one's health into a complex motive - to improve health and communication.

Conclusion

Thus, studies have shown that the food product "Karkat" has a positive effect on metabolic processes and thereby increases the reactivity and adaptive capabilities of the body. In this regard, the use of the food product "Karkat" for the purpose of primary, secondary and tertiary prevention of diseases is expedient and promising.

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