

## Fitness correction of men using an “outdoor activity”

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### Abstract.

The work addresses the scientific substantiation and development of a program of health-enhancing fitness classes using the means of "outdoor activity." Common scientific methods of research are used: theoretical analysis and generalization library and Internet resources, documentary method, sociological methods, medical and biological methods, pedagogical observations, pedagogical testing, pedagogical experiment, methods of mathematical statistics.

The program of classes, aimed at improving the physical condition of men aged 40-50, includes several stages: diagnostic, preparatory, main, and effective. The organizational and methodological conditions necessary for the implementation of the developed program are determined. The effectiveness of the proposed program suggests improved physical fitness, increased motor activity, and reduced the risk of developing cardiovascular diseases. It was found that the main changes that led to the reduction of the risk of developing cardiovascular diseases were the reduction of blood pressure, body weight, abandonment of bad habits, increase of motor activity and increase of resistance to stress, while the number of men who had several risk factors for developing cardiovascular diseases, the combined effect of which greatly increased the risk. After the experiment the men in both groups showed no pronounced risk of developing cardiovascular disease. Some decrease in the risk of developing cardiovascular disease was observed in men of CG, mainly due to increased levels of motor activity and reduced excess body weight. Significant changes have also occurred in correction of the physical fitness level. There was a significant ( $p < 0.05$ ) improvement in physical fitness after the experiment in men of both groups. However, more pronounced changes have occurred among EG men - 20% have reached higher than average, 30% - average, 30% - below the average level of physical fitness.

**Keywords:** health-enhancing fitness, physical condition, men, second mature age, program.

### Introduction

Saving the life and health of people of mature age is of immense importance, since it is the very category of the population who has the greatest work and life experience that is of particular value to society as a whole (Golovanov, 2015; Futornij, 2015). Reduced motor activity, the appearance of excess body weight in combination with other adverse factors and harmful habits in mature males lead to a decrease in functional capacity, an increase in the risk of cardiovascular disease (Arefiev, Levinskaya, 2015).

Health-related fitness exercises have a positive effect on the physical condition and motor activity of men in modern society. Specialists in the field of fitness and recreation have established that regular exercise with adequate exercise loads expands the functional and adaptive reserves of the most important systems of the organism of mature age people (Ivashchenko, Blagiy, Usachev, 2008; Ripak, 2003). However, the analysis of scientific and methodological literature suggests that the method of using physical exercises for men aged 40-50 is not well-grounded. The study of this issue is of particular importance in organizing training in the health-related fitness for men, since, due to the historically and socially formed methodological approaches in the system of physical education in our country, fitness and health programs were used mainly in educational institutions. At present, the commercialization of the sphere of physical education and health services contributed to the emergence of a variety of author programs, which are often difficult to assess because of the lack of information on their scientific basis. Despite the large number of studies conducted in recent years by Ukrainian scientists (Andreeva, 2014; Blagiy, 2015; Ivashchenko, 2008) and some foreign ones (Krejci, 2007; C. Walter, 2009), regarding the use of various fitness and recreational facilities in the learning process engaging mature persons, in the special literature, there is still a lack of sufficient attention to the use and evaluation of the effectiveness of various forms and means of "Outdoor activity", which have become widespread in fitness clubs (Musnick, Pierce, 2004; Sullivan, Pomidor, 2015; Walter, 2009). Numerous publications on this issue are fragmented, controversial, or touch upon specific aspects. Thus, the issues of regulation of motor activity, definition of

normative parameters of physical education and recreational activities on the basis of attractive and accessible types of "Outdoor activity" are not sufficiently worked out. These include Nordic walking; CrossFit and others that are developing fast and spreading in Europe and throughout the world (Sadovnikova, 2015; Figard-Fabre, Fabre, Leonardi, Schena, 2011). All this determined the relevance of the research topic.

**Purpose of the research** is to develop and scientifically substantiate the program of health-related fitness exercises using "Outdoor activity" means aimed at fitness correction of 40-50 aged men.

### **Materials and Methods.**

In general, our study, at its various stages, involved 60 men of mature age (40-50 years). The research was conducted on the basis of the fitness club "Sheki" in Zaporizhzhya.

Common scientific methods of research were used: theoretical analysis and generalization of scientific and methodical literature data, documentary method, sociological methods, medical and biological methods, pedagogical observations, pedagogical testing, pedagogical experiment, methods of mathematical statistics.

### **Results.**

The motivational priorities for the types of motor activity of the second mature age men, morbidity structure, features of professional activity and motor activity, physical fitness indices: physical development, physical fitness, level of somatic health and functional state of the cardio respiratory system were studied.

The system analysis of the data presented in the special literature shows that taking into account the physical state indices, as well as knowledge of the motivation of those engaged in motor activity, will contribute to the solving of personal goals and tasks in the process of recreational activities, as well as significantly increase their effectiveness.

The results of the men's questionnaire survey revealed that the main contingent of those engaged in fitness clubs is the people with high education (75%), most of them are married (63.3%). The main contingent of respondents is those employed in the field of information technology, managers and clerks, and entrepreneurs. The professional activity of these individuals is characterized by high nervous and emotional stress, unregulated work schedule, irregular loading, and lack of motor activity.

It was ascertained that 41.6% of respondents in general adhere to a healthy lifestyle, 58.4% - most likely; 38.3% are engaged in regular motor activity, 38.3% are aware of the benefits of regular training, but are engaged irregularly, 15% are engaged from time to time and 8.4% are mostly not engaged.

The second mature age men choose mostly individual exercises (46.6%), 38.3% of respondents prefer the independent workouts, 15.1% of respondents prefer group activities. 48.4% of people attend fitness centers, and 51.6% prefer outdoor activities.

The study of the character of the fitness club members' motor activity has revealed their preferences. Thus, the priority types of motor activity for the men are resistance training (58.3%); sporting and recreational games such as football, volleyball, table tennis, billiards, bowling (41.6%); recreational swimming (38.3%); recreational jogging, walking (36.6%); cycling (25%).

The main purpose of the fitness classes for the men are: health improvement (70%), motor skills (51.6%), improvement of appearance (desire to optimize weight, figure) (48.3%), desire to increase physical fitness (46.6%), stress relief, fatigue, activation of mental activity (33.3%), change of everyday environment, communication with other participants of classes, desire to find new acquaintances, doctor's recommendation. With aging there is a tendency to increase health-improving, communicative, cognitive and professionally-oriented motives and to decrease motor and competitive motives.

It has also been found that 53.3% of men spend free time watching TV shows; 41.6% - working at a computer (games, communication, and other computer activities); 26.6% - other types of communication. At weekends, spending free time is more diverse. The inert rest is reduced to an average of 40%, and the time spent on visits, meetings, etc. is increased. Significant differences in most of the benefits in choosing the nature of classes in their free time were not observed. A quarter of respondents prefer physical exercises in their spare time.

An analysis of the incidence of men was carried out to determine the focus of health education. Thus, the structure of the general morbidity of the men is occupied by the following diseases: blood circulation (18.4%), respiratory organs (14%), digestive organs (9.3%), eyes (8.7%), genitourinary system 8.6%), bone and muscle system and connective tissue (7.3%), and others. In connection with the high incidence of cardiovascular diseases, an assessment of the risk of their development was made.

A general assessment of the risk of cardiovascular diseases suggests a lack of risk in 16.6% of the men, with 59.1% having a minimal risk. In most people in this group, the total score is at the level of the upper value (closer to 20 points), and even a slight increase in any of the indices can transfer them into a group with an obvious risk of developing cardiovascular diseases, which requires increased attention to this contingent. The apparent risk was found in 18.2% of the respondents and 6.1% of them expressed this risk.

It was found that the risk of developing cardiovascular diseases in the most men is due to factors such as neuro-emotional overload, bad habits (smoking and inappropriate nutrition), arterial hypertension, excess body weight and low motor activity. All of the above factors are controlled, lifestyle-related and can be eliminated.

With the help of pedometer, an estimation of motor activity of the men was performed (Apaychev, 2015). It was established that the level of motor activity of the investigated contingent is much lower than the normative one. On weekends there was a pronounced decrease in the number of locomotive activities. At the same time, the difference was about 600-1000 steps per day compared with workdays.

Among the main indices of physical condition, we determined the indices of physical development, functional state and physical health. The results of the evaluation of the physical development of the investigated contingent (except for the body weight) indicate that they correspond to their mean age values presented in the special literature.

The calculation of the physical health level showed that unfortunately, a significant number of men have low (61%) and below average (25%) level. Only 14% of the men surveyed have an average level of physical health. Assessment of the physical health of the investigated contingent indicates the practical absence of persons with a safe level of physical health. In age groups 40-45 and 46-50 years, there is a significant decrease ( $p < 0.05$ ) in the level of physical health, the deterioration of such components of physical health as vital and strength indices, Robinson's index (Zakharina, 2017).

The general assessment of the level of physical fitness (LPF - by prognostication) also indicates worse results in men of the age group of 46-50 years. It is noted that almost half (48.5%) of men 46-50 years old and one third (31%) of men 40-45 years old have low and below average physical condition. It has also been found that men with a high level of physical fitness have not been detected, indicating an urgent need for correction of the available initial level (Fig. 1).

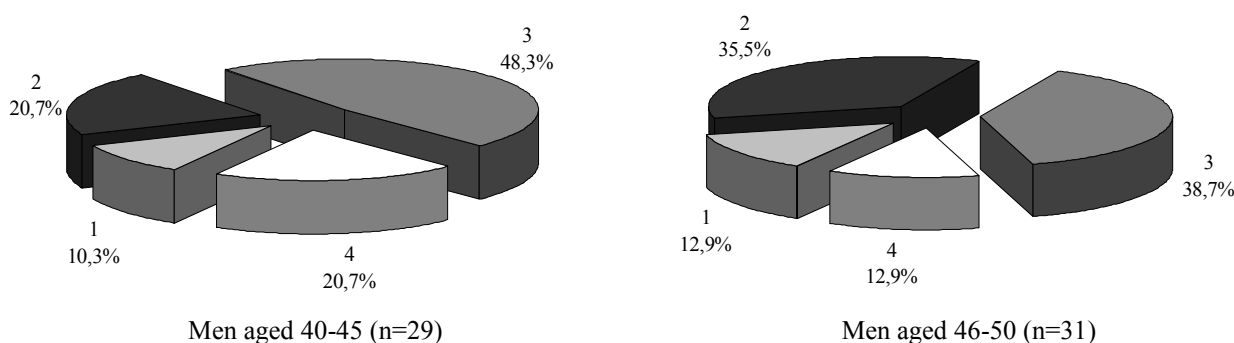


Fig. 1. The level of physical fitness of the men:  
1 - low, 2 - below average, 3 - average, 4 - above average

The revealed features and nature of professional activity, structure and volume of motor activity, as well as key indices of physical fitness, motivational benefits of the men are the basis for developing the content of the recreational activities program using the "Outdoor activity" means. The proposed program of fitness using "Outdoor activity" means can be implemented through organizational and methodological environment: adequacy of content to the requirements of professional activity of the men; accounting of the initial level of physical fitness, individualization of the program of classes taking into account the revealed features of physical fitness indices, the selection of adequate methods of medical and pedagogical control, continuity, increased activity and the desire to be systematically engaged in physical exercises (Figure 2).

While developing the program, we adhere to the basic principles of health training, under which we understand the most general theoretical positions, which objectively reflect the essence and fundamental laws of education and comprehensive development of personality. All exercises were selected taking into account the peculiarities of the physical fitness of men of the second mature age, as well as the associated risk factors for the development of cardiovascular diseases, taking into account the peculiarities of professional activity and previous motor experience.

The program included exercises aimed at correcting the dominant risk factors. Given the fact that the main contingent of the studied men was persons with low and below average level of physical fitness, the main purpose of the developed program was its correction. The program of exercises using the means of "Outdoor activity" included several stages: diagnostic, preparatory, basic, and effective.

The purpose of the diagnostic stage was to determine the state and level of health, physical fitness of the person; detection of the degree of deviation of a person's individual data from the norms; estimation of motor experience, selection of rational means of healing for correction of existing deviations; definition of rational motor regime. The preparatory stage was carried out with the aim of familiarizing with the basics of Nordic walking, the implementation of resistance training, and familiarization with the methods of self-control of the load intensity. The focus of the main stage was the implementation of the planned program of exercises, aimed at correcting the physical fitness and preventing the risk of developing cardiovascular diseases.

The structure of the fitness lesson consisted of three parts: warm-up, main and final parts (cool-down). In the warm-up period, which lasted 10-15 minutes, breathing exercises were included, general exercises with sticks (turns,

bending, twisting), pre-stretching (for muscles involved in the main part), slow walking. The main part (30-45 minutes) consisted mainly of Nordic walking (alternation of fast and slow walking), and muscle-strengthening exercises - exercises based on one's own weight (squatting on two legs, on one leg, etc., lunge); exercises on gymnastic apparatus (on bars or uneven bars); exercises with weights. The final part (cool-down) (5-10 minutes) included exercises for restoration of breathing, stretching, relaxation exercises. Differentiation of loads during the training involves taking into account the level of physical fitness, previous motor experience and preparedness.

For people with a low and lower than average level of physical fitness, and a minimum or initial motor experience at the preparatory stage, the intensity of the classes was 115-125 beats•min<sup>-1</sup>, for men with an average level of physical fitness and motor experience there was between 125-135 beats•min<sup>-1</sup>. For people with a higher than average level of physical fitness and average or high motor activity - 135-145 beats•min<sup>-1</sup>. At the main stage of the study, the duration of the lesson (up to 90 minutes) and the length of the distance (from 2.5 km at the preparatory stage to 6 km at the end of the main stage) increased. The purpose of the effective stage of the proposed program of classes was to assess the current level of physical fitness, making adjustments to the training program if needed. At each stage of the program adequate means of medical and pedagogical control were applied.

The evaluation of the effectiveness of the proposed program was carried out during a pedagogical experiment, the duration of which was 6 months, by comparing the physical fitness of the men in the control group (CG) - 20 people who were engaged in the program of the fitness center, and the experimental group (EG) - 20 people who were engaged in the program we proposed.

The program for CG included exercises on bicycle ergometer, treadmill, step-simulator, which were carried out at an even pace and occupied 60% of the training time for persons with low and below than average LPF and 40% of the time for persons with average LPF, and exercises with weights. At the beginning and at the end of the CG training, stretching and breathing exercises were performed. The main components of both programs were the same and had the same time intervals. The frequency of trainings in both groups was 3 times a week. The main differences between programs for the control and experimental groups with the same number and duration of classes are their content.

The effectiveness of the proposed training program with the use of "Outdoor activity" indicates a significant change in the physical state, reducing the risk of developing cardiovascular diseases, increasing motor activity, improving the psycho-emotional state, and efficiency.

The reliable differences of the physical state indices are noted: in the experimental group in six indices (HR, BP systolic, BP diastolic, body weight, dynamometry of the hand, restoration of heart rate); in the control group - only in four indices (HR, BP systolic, BP diastolic, restoration of heart rate).

There is an improvement in the health of the investigated contingent. Thus, according to the results of the physical health level assessment, it was found that a significant number of men in the experimental group improved their health. In particular, among the participants in the experimental group, it is noted that 20% of respondents reached their safe health level (above average). According to the results of the experiment, there was a decrease in the risk of developing cardiovascular diseases.

In the studied EG men, the main changes that led to a reduction in the risk of developing cardiovascular diseases, manifested themselves in the reduction of blood pressure, weight loss, abandonment of bad habits, increased motor activity and increased stress resistance, as well as decreased the number of men who had several risk factors for the development of cardiovascular diseases, the combined effect of which greatly increased the risk. The men of CG showed a tendency to reduce the risk of developing cardiovascular diseases, mainly due to an increase in motor activity and a decrease in excess body weight.

There was a significant ( $p < 0.05$ ) improvement in motor activity (both in CG and EG). The total amount of motor activity (according to the results of the pedometer) increased significantly during the week, both in the representatives of the EG ( $x; S$ ) (from 58030; 982 to 69060; 893) and KG (from 59008; 1340 to 65146; 1049). Significant changes ( $p < 0.05$ ) occurred in the indices of health state, activity and mood of EG men. Favorable emotional background has allowed significant increase of the motivation to outdoors exercises. Significant changes have also occurred in correction of the physical fitness level. There was a significant ( $p < 0.05$ ) improvement in the physical fitness after the experiment in men of both groups (Fig. 3).

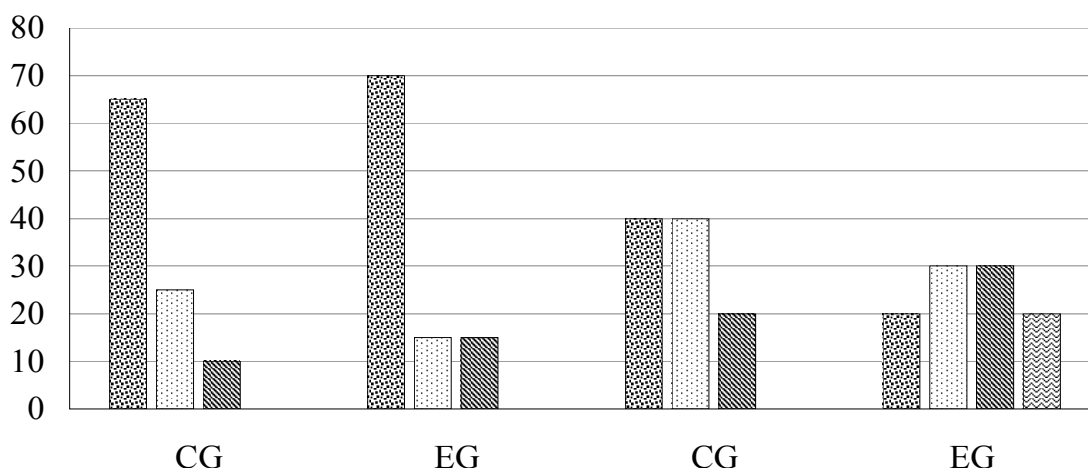


Fig. 3. Distribution of the men in CG and EG according to their level of physical fitness before and after the experiment. Level of physical fitness:

■- low, ■- below average, ■- average, ■- above average

Thus, we can conclude that health-related fitness classes using “Outdoor activity” means, based on the level of physical fitness and motor experience, are better for improving the indices of physical and psycho-emotional state, increasing the level of health and motor activity, reducing the risk of development of cardiovascular diseases for the men aged 40-50.

#### Discussion.

We confirmed the low level of involvement of the population in motor activity (Dutchak, Bazhenkov, 2015); some factors influencing participation in recreation and recreational motor activity (Patsalyuk, 2010); the urgency of using outdoor exercises to meet emotional, psychological, and cognitive needs, correction of the physical fitness of mature age people (Andreeva, 2014); high popularity of “Outdoor activity” (Amman, 2008; Walter, 2009; Golovanov, 2015); as well as the existing developments on the feasibility of using in fitness programs various means of aerobic-anaerobic motor activity.

The theoretical information about the possibilities of using "Outdoor activity" means in fitness programs for the mature age people is supplemented; expanded data on the content and forms of fitness training in the conditions of physical education and health clubs and beyond (Patsalyuk, 2012); on the risk factors for the development of cardiovascular diseases of the investigated contingent (Arefiev, Levinska, 2015). The concept of the factors influencing the choice of the fitness training of the men and on their effectiveness is expanded; on the positive effect of physical activity using the means of "Outdoor activity" on the psychological and emotional state of the individual.

A completely new theoretical substantiation of the structure and content of the Nordic walking program in conjunction with muscle strengthening exercises for the men, aimed at correcting the indices of their physical fitness; definition of organizational and methodological conditions for the implementation of the developed program using the "Outdoor activity" means for the men, which contribute to the correction of physical fitness, increased motor activity, working capacity.

#### Conclusions.

1. System analysis of data presented in the special scientific-methodical literature and the world's best practice experience testifies to the considerable interest of researchers in the problem of elaboration of fitness programs for the mature age people. At the same time, the aspects of regulation of motor activity and the determination of the parameters of physical education for the men on the basis of attractive and accessible types of "Outdoor activity", which to date have become widespread both abroad and in Ukraine, are not sufficiently studied.

2. In the structure of the general morbidity of the men, diseases of the circulatory system (18.4%) and diseases of the respiratory organs (14%) are dominated by diseases of the system of blood circulation, followed by diseases of the digestive system (9.3%); diseases of the eye and its adnexa (8.7%), diseases of the genitourinary system (8.6%), diseases of the musculoskeletal system (7.3%), trauma and poisoning (6.5%). The assessment of the risk of developing cardiovascular diseases has revealed the most significant risk factors, which include neuro-emotional overload, bad habits (smoking and inappropriate nutrition), hypertension, excess body weight and low motor activity. The general

assessment of the risk of cardiovascular disease shows that there is no risk in 16.6% of the men; in 59.1% of them there is a minimal risk; obviously - in 18.2% of the respondents and 6.1% - it is expressed. It is determined that the main risk factors for the development of cardiovascular diseases belong to the group of controlled and can be adjusted during the health-related activities.

3. Most men have low (65%) and below average (25%) health levels. Only 14% of the men surveyed have an average level of physical health. The assessment of the health level of the investigated contingent shows the absence of persons with a safe level of health. The overall assessment of the physical fitness indicates a worse outcome in men of the age group of 46-50 years. It is noted that almost half (48.5%) of men 46-50 years old and one third (31%) of men 40-45 years of age have low and below average physical fitness. It was established that men with a high level of physical fitness were not found at all in any age group, which indicates the urgent need for correction.

4. The effectiveness of the proposed program of training using the means of "Outdoor activity" is evidenced by significant changes in the physical state, reducing the risk of developing cardiovascular diseases, increasing motor activity, improving the psycho-emotional state, working capacity. The following intragroup reliable differences in the physical status indices before and after the experiment were established: in EG - six parameters (heart rate, systolic blood pressure, diastolic blood pressure, body weight, hand dynamometry, heart rate restoration); in CG - only four indices (heart rate, systolic blood pressure, diastolic blood pressure, heart rate restoration).

Significant changes were observed ( $p < 0.05$ ) in the indices of well-being ( $x; S$ ) (from 3.79; 0.33 to 5.01; 0.74 points); activity (from 4.11; 0.02 to 5.40; 0.84 points) and mood (from 4.46; 0.47 to 5.53; 0.33 points) of EG men, which was shown in an increase in the average level of evaluation of these indicators. Men of both groups have significantly ( $p < 0.05$ ) improved motor activity. The total amount of motor activity (according to the results of the pedometer) for the week increased significantly as representatives of the EG ( $x; S$ ) (from 58030; 982 to 69060; 893) and CG (from 59008; 1340 to 65146; 1049).

5. It was found that the main changes that led to the reduction of the risk of developing cardiovascular diseases were the reduction of blood pressure, body weight, abandonment of bad habits, increase of motor activity and increase of resistance to stress, while the number of men who had several risk factors for developing cardiovascular diseases, the combined effect of which greatly increased the risk. After the experiment the men in both groups showed no pronounced risk of developing cardiovascular disease. Some decrease in the risk of developing cardiovascular disease was observed in men of CG, mainly due to increased levels of motor activity and reduced excess body weight. Significant changes have also occurred in correction of the physical fitness level. There was a significant ( $p < 0.05$ ) improvement in physical fitness after the experiment in men of both groups. However, more pronounced changes have occurred among EG men - 20% have reached higher than average, 30% - average, 30% - below the average level of physical fitness.

Thus, we can conclude that training with "Outdoor activity" means contributes to improvement of the psycho-emotional state, increases the level of health and reduce the risk of developing cardiovascular diseases in men aged 40-50 and corrects the indices of their physical fitness.

#### Competing interests

The authors declare that they have no competing interests.

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## Appendix

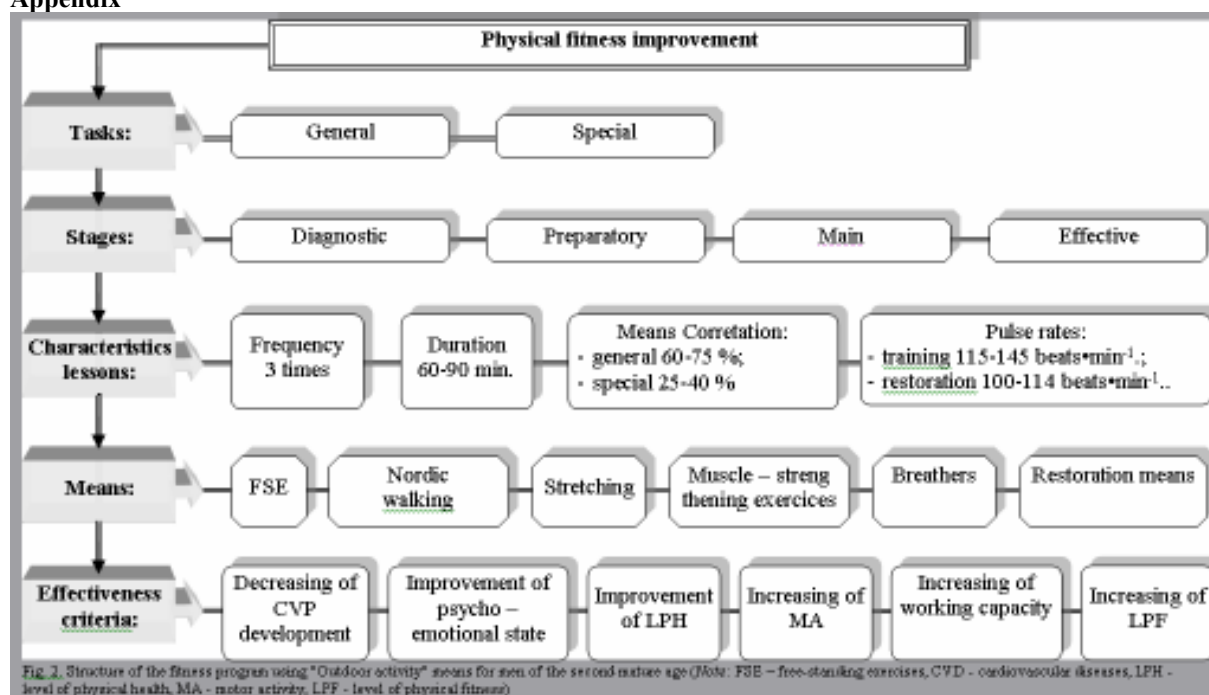


Fig. 2. Structure of the fitness program using "Outdoor activity" means for men of the second mature age (Note: FSE – free-standing exercises, CVD - cardiovascular diseases, LPH - level of physical health, MA - motor activity, LPF - level of physical fitness)