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HEPA (Health Enhancing Physical Activity) - Health and Fitness Assessment for Seniors

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Recommendations for implementing HEPA for seniors in project countries (IO3)

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1. INTRODUCTION – PROJECT ACTIVITIES

The overall objective of this project is to encourage participation in recreational physical activity for seniors (persons age 65+) in project partner countries by developing new recreational sport programmes suited for 3 types of most common health conditions (back pain, cardiovascular disease and osteoporosis) thereby supporting the implementation of the EU Physical Activity Guidelines.

The health benefits of physical activity (PA) for older adults have been well established in the scientific literature. Numerous outcomes have been studied to document associations with PA, including reduced prevalence of common chronic conditions (e.g., cardiovascular disease, diabetes, hypertension), improved mental health (e.g., depression, stress), quality of life, increased physical function, decreased cognitive decline (e.g., dementia, Alzheimer's disease) and reduced mortality rates

Physical activity is at the core of health and well-being. The benefits of physical activity – including reduced risk of no communicable diseases and lower levels of stress, anxiety, and depression – are well known. The social benefits of physical activity participation are often particularly important to older people.

However, health promotion messages often target children and young people, with less focus on the importance of physical activity for people aged 60 years and over.

The World Health Organization (WHO) recommends that adults (including elderly) engage in at least 150 min of moderate-intensity aerobic physical activity each week. On EU level, the report, unveiled by Commissioner Navracsics in Sofia during the annual EU Sport Forum shows that levels of participation have not changed substantially since the previous Eurobarometer survey in 2014. In fact, the proportion of those who say they never exercise or play sport has slightly increased from 42% to 46% Europe-wide, and this is a continuation of a gradual trend since 2009. 15% of Europeans do not walk for 10 minutes at a time at all in a weekly period, and 12% sit for more than 8.5 hours per day.

In addition, another study confirms this trend pointing out that one third of adults in Europe are insufficiently active indicating that

more than 50% of adults are overweight in the majority of European countries, thus further contributing to the proliferation of no communicable diseases.

To address the problem of physical inactivity, many governments of the 27 EU countries have started to act in the last few years, by adopting policies that promote health-enhancing physical activity (HEPA). However, less than 50% of the countries developed policies on the “Senior Citizens” sector. In 2015, International Sport and Culture Association (ISCA) commissioned a study called the “Economic Costs of Physical Inactivity in Europe”, showing that half a million Europeans die every year as a result of being physically inactive (…”Across Europe, inactivity's contribution to all-cause mortality amounts to over 500,000 deaths per year - deaths which be averted through enabling and encouraging all Europeans to achieve lifestyles which involve the recommended levels of physical activity..”).

With this project we want to stimulate the physical activity of elderly to remain vital and healthy in mature years. Special attention will be aimed to older people in retirement homes, retired (pensioners') associations, and elderly people who are at home. One in four adults across Europe is currently physically inactive.

Training for seniors proposes new dimension in context of innovative exercises for seniors respecting their physical condition, limitations per age and physical ability (illness, health problems, disability etc.).

The specific objectives of this proposal are:

1. Raising awareness regarding benefits of participation in recreational PA for seniors (persons age 65+) in terms of social inclusion and health enhancing;

2. Analysing current HEPA guidelines in project countries and developing new Recommendations for implementing HEPA for seniors with emphasis on new developed exercises aimed at resolving back pain and on exercises adapted to persons with cardiovascular disease and osteoporosis using multi-sectoral approach;

3. Strengthening the capacity of kinesiologists and trainers through non-formal education on new methodology for conducting recreational sport activities for seniors in project countries;

4. Strengthening the capacity of general practitioners on benefits of participation of seniors in recreational sport activities

5. Creating a network of main stakeholders (project partner organizations, kinesiologists and general practitioners), national and local sports committees, units of local (self) government and health institutions to exchange examples of good practice regarding the inclusion of seniors in recreational sport activities. The **project consortium** and the extent to which the objectives address issues relevant to the participating organisations is described below:

Applicant:

Zagrebački savez sportske rekreacije "Sport za sve" (Association for Sport Recreation City of Zagreb, Sport for All) – abbreviated “Sport for All - Zagreb” is a non-profit, voluntary and non-partisan association of Zagreb local recreational associations. Sport for All - Zagreb is a member of the Sports Association of the City of Zagreb as well as the Croatian Recreational Sports Association "Sport for All”.

The Association was established in 1951 in Yugoslavia and was re-established in 1991 after Croatia had declared its independence. Today it has 18 member associations.

The main objectives of the Sport for All - Zagreb are the promotion, development and popularisation of recreational sports activities (grassroots sports) for citizens of all ages in order to protect and enhance their health and to make their free time well-arranged; collaboration with various national, regional and international recreational sports associations; strengthening of role of recreational sports associations in the sport policy making in the City of Zagreb.

Therefore, for the Sport for All - Zagreb, as an organizer of sport activities for elderly, it is important to have great number of well-educated trainers, to develop a specific set of

recreational activities for the elderly and to create a network with general practitioners and participating organizations for best practice exchange.

Partners:

Fitnes učilište (Fitness academy) is a registered adult education institution which tends to contribute to raising the quality and standards of services in the fitness industry through education of top experts and creation of motivation for their continuous professional development. The specific aim is to offer a balanced curriculum with vocational knowledge and skills as well as a development of competencies in a fitness sector and by doing so to enhance participants' opportunities for employment and/or further studies.

Not accepting the level of practice they came across, the founders agreed to form an institution that wil understand the trends and gaps in current vocational practices in fitness sector and, on the other, give the best knowledge along with the practice. It is the first institution in the region to harmonize their program with the European standard, which means that, when graduated from the Academy, students will be recognized as professionals with an international certificate. The Academy is a member of Europe Active organisation. The Academy also cooperates with Croatian institutions such as Croatian Institute for Public Health, Teaching Institute of Public Health „Dr. Andrija Štampar", Croatian federation for sports recreation "Sport for all". The goal is to create professionals who will understand the importance of continuous education and to promote health-enhancing physical activity. Academy was also the host of the 4th European Exercise is Medicine Congress and the staff has participated in WHO-HEPA Congress in Istanbul and has finished Curriculum glob ALE (CG) programme, a cross-cultural core curriculum for the training of adult educators worldwide.

For the Academy, as a registered adult education institution which tends to contribute to raising the quality and standards of services in the fitness industry through education of top experts and creation of motivation for their continuous professional development, it is

important to educated trainers for working with elderly and to create a network with general practitioners and participating organizations for best practice exchange.

Zavod za šport Ajdovščina (Institute of sport Ajdovščina) takes care that the sports-related services. „A healthy mind in a healthy body“ is the motto of the Institute. The mission of the Ajdovščina Sports Institute is to ensure sports facilities and sports recreation and leisure time programmes for all generations and all kind of users. Institute of Sport is implementing programmes and raising awareness on the need to implement programs for the older persons over 65 years of age. Such programs are also part of the National Sports Program plan of Republic of Slovenia and also a part of annually sports programs of the community**.** In order to do so, it is important for them to have great number of well educated trainers, to develop a specific set of recreational activities for the elderly and to create a network with general practitioners and participating organizations for best practice exchange.

Асоциация за развитие на българския спорт (Bulgarian Sports Development Association - hereafter referred to as BSDA) was founded in 2010 and is a non profit public benefit organization devoted to the development of Bulgarian sport and improving sporting culture in Bulgaria!

Their main goal is sustainable development of physical education and sport in Bulgaria and improvement of health, physical condition and sports culture of the nation. Therefore, for the BSDA, as an organizer of sport activities for elderly, it is important to have great number of well-educated trainers, to develop a specific set of recreational activities for the elderly and to create a network with general practitioners and participating organizations for best practice exchange.

Asocijacija „Sport za sve“ is existing for 28 years and is aimed to promote healthy styles of life and well-being through recreation of all age groups, massive sport events, ecology topics and international camps and festivals. Association is organizing massive recreation and sport events, with all age groups, for 28 years. For many years, Association Sport for all is organizing throughout the year Activities for third age, intended for senior citizens 65+. Their experts are

professors of physical education, with over 30 years of experience and expertise in different areas of sport and recreation with all age groups.

It is important for Asocijacija „Sport za sve“, as an organizer of sport activities for elderly, to have great number of well-educated trainers, to develop a specific set of recreational activities for the elderly and to create a network with general practitioners and participating organizations for best practice exchange.

Associação Desportiva Cultural e Social de Carvalhais (ADCS Carvalhais) works very closely with the local community in the organization of sport activities for all related with rural area where the organization is established. They are an umbrella organization in partnership with 22 different local sport clubs from their region. For ADCS Carvalhais, as an organizer of recreational sport activities, it is important to have great number of well-educated trainers, to develop a specific set of recreational activities for the elderly and to create a network with general practitioners and participating organizations for best practice exchange.

Coordinator and all partners in their daily activities are working with target groups (elderly, fitness professionals (kinesiologists, trainers) and general practitioners) on various jobs and tasks. By developing Educational modules for fitness professionals (kinesiologists, trainers) and general practitioners, as well as Recommendations for future activities to promote recreational sport activities for seniors they will enhance the recreational sport in their countries with emphasis on HEPA implementation for seniors (65+).

The project aims and objectives will be achieved through the implementation of six work packages (WP). The WP is, including aims and tasks, described below:

- WP 1 Project management
- WP 2 Assuring preconditions for new Educational Modules and Recommendations Development
- WP 3 Educational Modules Manual for sport for all coaches, fitness professionals (kinesiologists, trainers) and general practitioners Development

- WP 4 Capacity building and Sport pilot program for seniors
- WP 5 Evaluation
- WP 6 Dissemination and Communication

In the scope of **WP2 (Assuring preconditions for new Educational Modules and Recommendations development)** the main task is the development of the Research on current HEPA for seniors implementation in project countries (IO1).

Analysis of current HEPA for seniors guidelines in project countries will be done, best practices on existing recreational sport activities for seniors will be collected.

Besides, the analysis of the needs and conditions of sport for all coaches, fitness professionals (kinesiologists, trainers), elderly people and general practitioners will be also done.

An online questionnaire will be prepared and disseminated to total 50 sport for all coaches, fitness professionals (kinesiologists, trainers), 50 general practitioners and 100 elderly persons who would take part in educational events.

The present document **Research on current HEPA for Seniors implementation in project countries (IO1)** presents the analysis of current HEPA for seniors guidelines in project countries, best practices on existing recreational sport activities for seniors and the analysis of the needs and conditions of sport for all coaches, fitness professionals (kinesiologists, trainers), elderly people and general practitioners.

It will be a baseline for development of Recommendations for implementing HEPA for seniors in project countries (IO3).

2. ANALYSIS OF CURRENT HEPA FOR SENIORS GUIDELINES

In today's society, the image of the older person is often depicted as an inevitable onset of deficiencies: we associate loss and renunciation, dependence, physical frailty and care, altogether turning life into a burden. Based on this negative image, demands consequently arise there to search out ways to impede or at least postpone the deficits and losses. And in this context, sport is regarded as being one of the most adequate measures. Correspondingly, sport programmes for the elderly are offered according to the principle "to escape ageing".

This deficit perspective is changing more and more. Today, ageing is understood as a dynamic process, respectively, a certain span in the continuum of birth, life and death. This interpretation is because every stage of life allows individual development and that later life represents a period with its own specific orientations and values.

Consequently, we should not deal with the state of later life from the aspect of its potential deficits, but we should focus on the opportunities and activity options we encounter in later life which are the basis for a life-long learning development. In gerontology and geriatrics this process is also called the concept of "successful ageing" and involves the same: it means to achieve a certain state of balance between needs of an individual and the demands represented by the objectively and subjectively experienced living conditions (Schmitz-Scherzer & Tokarski, 1988), that is, to adapt to the given facts and to exploit one's potentials for active living and personal development.

In the years to come, the number of elderly persons in the European population will significantly increase (Tokarski, 1993). In 2030 more than 20% of the European population will be older than 60 and 5% will be older than 80 years of age.

As a consequence, it is estimated that compared with today, a considerably higher percentage of elderly persons will participate in physical activities and sport as the future generation of the elderly is more strongly characterized by the dynamic development of leisure, physical

fitness and health sports. Due to better physical fitness, improved medical care and higher incomes, a considerable part of the elderly population will pursue an independent life.

Furthermore, a structural and social change has led to the fact, that many of the elderly of today have completely different expectations and demands regarding their future life in society than former generations had. New life and ageing styles have developed and continue to develop and are closely connected with a plurality and variability of ageing concepts, a fact, that has to be considered when offering programmes and services for older adults.

BULGARIA

Bulgaria currently follows WHO's Global recommendations on physical activity for health. Physical inactivity has been identified as the fourth leading risk factor for global mortality (6% of deaths globally). This follows high blood pressure (13%), tobacco use (9%) and high blood glucose (6%). Overweight and obesity are responsible for 5% of global mortality (Global health risks: mortality and burden of disease attributable to selected major risks, Geneva, World Organization, 2009.). Levels of physical inactivity are rising in many countries with major implications for the general health of people worldwide and for the prevalence of NCDs such as cardiovascular disease, diabetes and cancer and their risk factors such as raised blood pressure, raised blood sugar and overweight.

Physical inactivity is estimated as being the principal cause for approximately 21–25% of breast and colon cancer burden, 27% of diabetes and approximately 30% of ischemic heart disease burden (1). In addition, NCDs now account for nearly half of the overall global burden of disease. It is estimated currently that of every 10 deaths, 6 are attributable to no communicable conditions (The global burden of disease: 2004 update. World Health Organization, Geneva, 2008).

Recommended levels of physical activity for health 65 years old and above:

For adults of this age group, physical activity includes recreational or leisure-time physical activity, transportation (e.g. walking or cycling), occupational (if the person is still engaged in work), household chores, play, games, sports or planned exercise, in the context of daily, family, and community activities. In order to improve cardiorespiratory and muscular fitness,

bone and functional health, and reduce the risk of NCDs, depression and cognitive decline, the following are recommended:

- Adults aged 65 years and above should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week, or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week, or an equivalent combination of moderate and vigorous-intensity activity;
- Aerobic activity should be performed in bouts of at least 10 minutes duration;
- For additional health benefits, adults aged 65 years and above should increase their moderate intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous intensity aerobic physical activity per week, or an equivalent combination of moderate- and vigorous intensity activity;
- Adults of this age group with poor mobility should perform physical activity to enhance balance and prevent falls on 3 or more days per week;
- Muscle-strengthening activities should be done involving major muscle groups, on 2 or more days a week;
- When adults of this age group cannot do the recommended amounts of physical activity due to health conditions, they should be as physically active as their abilities and conditions allow.

CROATIA

Comparing the last two population censuses in the Republic od Croatia, we can see that in a period of 10 years the number of young people (0-14 years old) decreased by 102.206 people (-13,84%) as well as the number of middle-aged people (15-64 years old) which decreased by 96.153 people (-3,24%). At the same time, number of elderly people (65+ years) increased by 65.093 people (+8,58%) in the ten-year period (Central Bureau of statistics of the Republic of Croatia, 2013).
From the above mentioned, it is evident that the population in the Republic of Croatia is getting old which directs the interests of scientists and the public in improving the quality of life of the elderly population. One of the best ways to improve the quality of

life and independence of the elderly is through adapted recreational physical activity tailored to their health needs.

Because of that, there is more and more talk about Health Kinesiology today, which connects health, medicine and kinesiology (Heimer, 2018). In old age there is almost no person who does not have at least one health problem.

Given that physical activity at that age should be approached with some caution, Health Kinesiology and the interdisciplinary approach are the most important thing when we are talking about the quality and safety of recreational programs conducted with this age group.

Kasović et al. (2004) recommended rules for safe physical exercise with this population:

- If the person has not been physically active before or has not exercised for a long time, they should start exercising with less intensity and load;
- It is necessary to drink enough fluids during exercise;
- They need to think about what they are doing while exercising;
- Exercise should be a pleasure for them, and any onset of pain can be an alarming sign;
- In case of feeling short of breath, nausea and weakness, rapid heartbeat accompained by tremors and skipping, or tingling sensation in the limbs, it is necessary to stop physical activity and seek medical advice.

The Living Healthy project, co-financed by European Union from the European Social Fund, has been implemented in the Republic of Croatia for 5 years. Its goal is to improve the health of the population by reducing the negative effects of behavioral, biomedical and sociomedical risk factors and creating environments which all people in Croatia lead to the highest level of health and quality of life (Croatian Institute of Public Health, 2016). The Living Healthy project team (Croatian Institute of Public Health, 2020) has adopted the following guidelines for the recommended level of physical activity for people over 65 years of age:

- Older adults who are involved in physical activities, regardless of the duration of the activity, enjoy certain health benefits, including maintaining good physical and cognitive function. Any amount of physical activity is better than none, and more physical activity provides greater health benefits.
- Older adults should be physically active on a daily basis. During the week, they should be involved in moderate-intensity physical activity for at least 150 minutes (2.5 hours), over periods of 10 minutes or more. One way to reach the recommended level of physical activity is for a person to be active for 30 minutes for at least 5 days a week (e.g. yoga, dancing, housework, etc.).
- For those who are already regularly involved in moderate-intensity physical activity, similar benefits can be achieved by engaging in high-intensity physical activity for 75 minutes collected during the week or a combination of moderate-intensity activity.
- Adults should engage in physical activities aimed at strengthening muscles at least two days a week (e.g. exercises with elastic rubber, with their own weight, with weights, with a gymnastic pilates ball, etc.).
- Older adults should engage in physical activities aimed at improving balance and coordination at least two days a week to reduce the risk of falls (e.g. corrective gymnastics, dancing, static strength exercises, etc.).
- All older adults should minimize the amount of time spent sitting for extended periods of time (e.g. doing stretching exercises, walking around the apartment / house, etc.).

PORTUGAL

For Portugal, the numbers of the Special Eurobarometer 472 from March 2018 about Sport and Physical Activity [1] are very clear and show us that we are in trouble, because 68% of the respondents never make any kind of exercise or play sports and the tendency it's that this number could increase in the future. This tend it's not only for Portugal because other studies confirm this trend pointing out that one third of adults in Europe are insufficiently active, in particular those from low socioeconomic backgrounds, minority ethnic groups, and people with disabilities.

Portugal will have in the future a demographic problem, statistical projections show us that by 2060 the country will have around 3 million people with more than 65 years old, for each 100 youngsters we will have 307 seniors [2].

Portugal it's working in the implementation of HEPA policies in line with the 23 indicators defined in 2013 by the EU Council related with the recommendations on promoting Health-Enhancing Physical Activity across sectors. According with a scientific article published in May 2018 in the Health Policy Journal, volume 122 – Issue 5 with the title: "Promoting health-enhancing physical activity in Europe: Current state of surveillance, policy development and implementation" [3], we can check that in the 23 indicators of the HEPA monitoring framework, Portugal only implemented a total 8 indicators related with HEPA policies (34.7%). The indicator 21, related with the thematic area senior citizens and the schemes for community interventions to promote physical activity in older adults it's referred in the study as a non-implemented indicator.

This is a true interesting situation, because we know that a huge part of the 308 municipalities in Portugal have different kinds of programs of physical activity for seniors. The reason for this local program's development and implementation it's simple, we have aging populations in all country and municipalities are just giving answer to the wellbeing needs of these citizens in their communities.

In 2017 it was created in Portugal a inter-sectorial commission for the promotion of Physical Activity, this commission created the National Action Plan for the Promotion of Physical Activity that has national actions (politics, programs projects and events) for the promotion of physical activity and reduction of sedentary behaviour in nine key-areas: Sport, Health, Education among all life cycle, Monitoring and Surveillance, Communication and Information, Work and Companies, Community and Civil Society, Environment/Active Mobility and Special Groups.

National recommendations on Physical Activity have been developed in the framework of the Government coordination and leadership of promoting Health-Enhancing Physical Activity, with several academic and scientific bodies. They provide guidelines for all age groups and for specific populations and developed a national strategy for the promotion of physical activity that should be implemented between 2016 - 2025. The national strategy for the promotion of Physical Activity in the Health Sector, focus on the reduction of sedentary behaviour and the

promotion of a healthy lifestyle within its importance in the prevention of Noncommunicable Chronic Diseases and the beneficial effects on multiple diseases, foreseeing “exercise as a medicine”. A combined approach had to be adopted in which dimensions, core policies (top-down) and players in the field (bottom-up) are important for the national strategy for the promotion of physical activity successful implementation.

According with the Portuguese National Strategy for the Promotion of Physical Activity, Health and Well-being [4] its essential to develop a broad range of activities to decrease sedentary behaviour and boost the practice of physical activity. In this sense the objectives are established and priorities relating to the scope of interventions of health services and their partners and institutions that can influence the populations’ health and wellbeing.

SERBIA

According to the Statistical Office of the Republic of Serbia (2019), estimated population of the Republic of Serbia in 2019 is 6,945,235 – 3,383,732 males and 3,561,503 females, which is a decline of 552,756 – 7.4% compared to the population in the census year 2002 (7,498,001), ie a decline of 241,627 – 3.4% compared to the population in the census year 2011 (7,186,862).

Amongst them, there are 1.250.316 over 65 years of age (527.067 men and 723.249 women). Out of that number , 271762 citizens 65+ lives in Belgrade. Average age of the population is 41.6. According to the middle projection variant, the number of people aged 80 or over will triple in half a century and will represent a quarter of the total number of elderlies, i.e. the share of the oldest in the total population will increase from 1.9 to 6.2% (Rašević).

According to data from 2006., most important and wide spread risk factors for health are physical inactivity (67,7%), high blood pressure (40,3%), smoking (33,6%) and obesity (18,3%). (Institute for Public health). According to Institute for public health of Republic of Serbia, the most common causes of death in 2019 were diseases of the circulatory system with 51.6% (men 47.0%, women 56.3%), most common non chronical diseases are high blood pressure (63,8%), back pain (32,2%), coronary diseases (24,7%).

According to the data “Studies of disease burden and injuries in Serbia”, physical inactivity contributes a significant percentage to total DALYs and most for stroke (27.91%) and then for colon and rectal cancer (25.96%), ischemic heart disease (24.19%), breast cancer (15.13%) and type 2 diabetes (8.3334%). Physical inactivity is responsible for 8.2% of life years lost due to premature death (YLL) in men and 11.8% YLL in women (1).

Increasing number of older population is one of the biggest challenges in terms of public health as well as in terms of the implementation of sports and recreational activities. It is necessary to continuously work on educating and promoting physical activity, in order to encourage elderly population to include physical exercise in their daily routine for metabolic, morphological and physiological benefits. (Đukanović, Parčina, Mašić, Kostovski).

When it comes to the HEPA programs on the national level, there is still significant gap in the systematic approach.

- Programs of physical activities for elderly to be planned and conducted under expert supervision
- Intensity of exercises is to be adjusted to the age, health condition, gender, preferences etc.
- Before joining the physical activity program, doctor needs to be consulted and necessary examinations are to be done. It is obligatory to warm up before physical activity and calm the organism after activity.
- Recommended daily activities are walking, Nordic walking, swimming, exercises in water, cycling, dance, yoga, etc.
- Results of moderate aerobic training intensity level clearly suggest benefits of aerobic training on cardio-respiratory fitness of elderly population
- People over 65 with limited mobility should do exercises which improve body balance 3 or more times weekly. Strength exercises should include large muscles groups and

should be done 2 or more times a week - physical activity in accordance with the possibilities

- In the prevention and reduction of cardiovascular risk of aerobic exercise (such as running, swimming, cycling), with the intensity of training of medium load (65% of the average respiratory volume) load have a positive effect. The best form of physical activity is one that increases endurance and strength.

In 2018," Guide for healthy life habits: Dietary and physical activities" has been issued, with authors from Faculty of sport, Faculty of medicine and Institute of sport and medicine of sport, which also contains specific instructions for physical activity for 65+, which recommends 150 minutes of moderate to intense activity per week OR 75 minutes of intense activity per week OR an equivalent combination of moderate and intense activities, with exercise episodes lasting at least 10 minutes. (or as much as one can).

There are certain contraindications for engaging in physical activity for the elderly, depending on their age, health condition and current fitness status, in the case such as severe coronary insufficiency or heart failure, endocarditis, large cardiac aneurysm etc. Usual medical screening prior to engaging into activities involves an examination by a cardiologist and sports medicine specialist.

SLOVENIA

Slovenia has a quite few recommendations and guidelines for the exercise of the elderly people over 65 years old. The material covers the implementation of various forms of exercise. The emphasis is on performing aerobic activity with less intensity. The guidelines also include stretching exercises, strength exercises and balance exercises.

Slovenia has many professional articles and recommendations by sports and medical institution for the implementation of exercises for the elderly who suffer from various diseases. Systematic implementation of the method of exercise for this type of population began with the adoption of a new national sports program 2014-2023 and the law of Sports in 2017.

Since, Slovenia has an official training program for coaches, which is implemented by the Olympic Committee of Slovenia.

In the Republic of Slovenia, the field of sports is regulated by a document of the national sports program and the law of sport. The mentioned documents define the contents of the organization and the way of financing of sports programs at national and the community level. The field of sports for all in Slovenia is defined and regulated by national sports federation at the national level and sports clubs in the community level.

In the Republic of Slovenia, the Olympic Committee is the holder for education process for coaches which implement a program for elderly people over 65 years old. Now, they have two valid different education training programs for trainers-coaches who implement programs for elderly people. Currently, in the county only thirteen individuals have officially valid professional qualifications.

Otherwise, the current educational program, which is expected to end at the end in the year 2022, includes 26 individuals. Thus, we anticipate that at the end of the year 2022, 42 trainers will be appropriately educated to work in sport with the elderly population.

According to the data Institute of Sports of the Republic of Slovenia for the year 2020 and 2021 the sports program for the elderly is implemented in 30 local communities out of 220. Thus, 700 individuals are included in sports programs for the elderly who practice alone or under the guidance of various professionals from various fields of sports and also medical programs.

In Slovenia, the cooperation with the medical and sports profession is implemented in some comunities and institutions. It is carried out with the cooparation with doctors, physiotherapists and kinesiologists. At the moment, health imporoving centers have been established in Slovenia which operate inside 28 medical centers. They run prevention and rehabilitation programs for people over 19 of age.

In Slovenia, the Law of Sports defines the graduated staff for work in sports which includes also kinesiologist. They perform various tasks, which include also implementation programs

with elderly population. The co-financing of kinesiologists is specifically defined in the rules-law of the annual sports program at the national level.

The rules provide for a co-financing of salaries of kinesiologists in the share of 50% of the local community and 50% of the state budget. Regarding the initiatives to place the co-financing of programs in the annual sports program, there are no signs from both the Olympic Committee of Slovenia and the municipal sports federations which operate at the local level. During the HEPA-S project preparation, the research on Great differences in sport system models and physical level between EU countries make general recommendations inadequate. In all EU strategies and HEPA recommendations, these differences are not sufficiently

highlighted and sport is described as simple and obvious tool to implement. The main challenge is to convince professional sport bodies (e.g. local and national associations, federations) to express more solidarity with sport-for-all domain. It is easier to observe HEPA domain directed to younger age group but difficult when older people PA are a policy goal. Their physical activity brings no sport benefits.

Experts admit that existing professional sport expertise is not sufficient to develop HEPA and especially Health Promotion for Elderly People (HP4OP) solutions in sport sector. Further investment in innovative HEPA and HP4OP experts in wide sport domain should be international goal in EU. What is necessary are very precise and well described training models for different types of health issues using different types of sports.

Educational system in HP4OP from physical activity perspective should be now a task for proper schools and universities. Within this project we are creating sport offer and recommendations for public policy for older citizens using unique, holistic approach which so often could not be implemented by sport organizations only. Within this project and it's cross-sector cooperation we have a clear aim: not only to prove significant meaning of physical activity impact on health, but based on checked and evaluated best practices, to create social innovation in PA usage for older people life quality In order to do so, we have collected five best practices on recreational physical activities for preschool children from each project country as a basis for the development of Educational modules.

2.1 BEST PRACTICES FOR RECREATIONAL PHYSICAL ACTIVITIES FOR SENIORS IN PROJECT COUNTRIES

BULGARIA

1. Kula – Sport for All

Sports Club "Kula – sport for all" was established by the elderly with the idea to support sports and physical activity of the elderly in the municipality of Kula, Vidin.

Target People from retirement clubs/clubs for people with disabilities

Needs addressed: health and longevity among the elderly people by the development of mass sports, strong physical and mental health of the elderly through sports and cultural activities.

2. Title Olympic Games for All

The initiative "Olympic Games for All" was launched within the "Common Sports – the competition between generations as motivation for sports and healthy lifestyles for senior citizens" project, co-funded by the Erasmus+ Sport programme of the European Union, in which the Municipality of Aksakovo is in partnership with the Portuguese municipality Vila Nova de Cerveira. The project aims to promote an active lifestyle among people over the age of 60, motivating them to practice sports activities.

Target People: People over the age of 60

Needs addressed: Maintaining the physical activity of the people over the age of 60, Prevention of social isolation after retiring.

3. Sports Festival for clubs for of retirement people

The initiative is the first sports contest of clubs for of retirement people and is implemented under a project of the Municipality of Tundzha.

Target people: Retired people

Needs addressed: Maintaining the physical activity of the people over the age of 60, Prevention of social isolation after retiring.

4. Yoga and sports activities for elderly people

With age, daily sports become an important part of maintaining a healthy lifestyle. With regular exercise, older people feel more energetic, and the pain that comes as a result of aging decreases or may even disappear.

Target People: Residents of “Nadezhda“ Retirement home

Needs addressed: healthy lifestyle for the elderly people, Reducing the pain as a result of aging, through regular exercise.

5. Dancing With Health

On 13 July 2016, the Committee on Environment, Public Health and Food Safety (ENVI) of the European Parliament held a workshop, “The fight against cancer is a team sport: the role of education and sport”. The workshop examined the scientific evidence for the link between physical (in) activity and cancer, different kind of experiences at EU level and the policies in action in this field.

Target People: Breast cancer survivors and women who are still in treatment aged 30-65.

Needs addressed: To develop and promote an innovative dance protocol for breast cancer survivors and women who are still in treatment aged 30-65 to involve them in a moderate/vigorous physical activity and as a consequence, to better their quality of life.

CROATIA

1. Healthy living

The project was implemented at the national level in the Republic of Croatia. The project holder is the Croatian Institute of Public Health.The project was implemented from 2014 and 2020.

Target: To improve the health of the population by reducing the negative effects of behavioral, biomedical and sociomedical risk factors and creating environments which all people in Croatia lead to the highest level of health and quality of life.

Needs addressed: The implementation of this project aims to educate citizens about the need to maintain health and adopt healthy living habits, which can contribute to reducing the incidence of chronic non-communicable diseases that cause more than three quarters of deaths in Croatia.

2. Health Enhancing Physical Activity for people 50+ years of age

Zagreb Association of Sports Recreation "Sport for All" and the Teaching Institute for Public Health "Dr. Andrija Štampar". The project was implemented in 2016 and 2017.

Target: The aim of the project was to establish cooperation between doctors and kinesiologists and to improve the physical activity program for the people 50+ years of age.

Needs addressed: In the work of a kinesiologist, there is a need to cooperate with doctors due to the health conditions of the trainees.

3. GetFit4Free

Free Nordic walking and fitness were provided for citizens of Zagreb aged 35 to 65. The project holder was Faculty of Kinesiology, University of Zagreb in cooperation with the City of Zagreb and the City Health Office. The project was implemented in 2020 and 2021.

Target: the aim of the project is to effectively eliminate the negative consequences of physical inactivity and sedentary lifestyle of the working population through health-oriented physical

activity within the Nordic walking program and fitness exercise program (circular and cardio programs).

Needs addressed: To raise awareness of the importance of physical activity and healthy living habits in maintaining health and prolonging quality of life among the citizens of the city of Zagreb.

4. Active Croatia

The professional partners of the project are the Faculty of Kinesiology, University of Zagreb, the Croatian Medical Chamber and the Definition of Food. The project is implemented at the national level in the Republic of Croatia since 2013 until today.

Target: The aim of the project is to promote a culture of healthy and active living.

Needs addressed: Active Croatia, together with its partners, pays special attention to education. The 2021 season brought much more educational content. The project is moving more in the direction of health education of citizens.

5. Recreation for the elderly

The project is implemented in Zagreb in 2016. The project holder was FloorFitness.

Target: The aim of the project is to improve the quality of life and social inclusion of the elderly in the City of Zagreb by developing and implementing recreational programs and activities and by providing support to the elderly in the implementation of recreational programs.

Needs addressed: Motivating users for continuous, proper and independent exercise.

PORTUGAL

1. More Age, More Health (Mais idade, Mais Saúde)

This is physical activity program for seniors developed since 2006 in the Bragança Polytechnic Institute and that has the support of the Bragança Municipality. The initial idea was to be a research project for a Phd but because of the growing of the number of participants this program continued to be developed in the last 15 years.

Target: Seniors

Needs addressed: Promote and encourage physical activity, encourage socialisation between senior people and evaluate the impact of the program on the participants.

2. More and Better Years (Mais e Melhores Anos)

It's multi-physical activity program managed by the Municipality of Famalicão that target citizens with more than 65 years old.

Target: 65+ year old citizens

Needs addressed: Physical Activity and Active Ageing

3. Diabetes in Movement (Diabetes em Movimento)

The program started as a research project for a Phd in the University of Trás-os-Montes and Alto Douro in Vila Real. Firstly, was implemented in the municipality of Covilhã in 2011 and in Vila Real in 2014. Now the program is developed in 32 municipalities and since 2018 is under the management of the National Health Directorate and the National Program for Physical Activity. “Diabetes em Movimento” it’s now a trademark.

Target: Citizens with type 2 diabetes

Needs addressed: Physical Exercise

4. Bila Senior >55

It's a municipal program that take physical activity to the villages and areas of the municipality of Vila Real. Currently targets 20 villages and municipality areas and has 530 participants.

Target: 55+ Citizens

Needs addressed: Physical activity and socialization

5. National Program for Walking and Running (Programa Nacional de Marcha e Corrida)

It's a national program that encourage citizens to walk or run, it has now centres all across the country and it's normally operationalised by a group of sport professionals from the municipalities or sport organisations that help and give guidance to the participants the areas of walking, running, health and fitness.

This program is managed at national level by the Portuguese Institute of Sport and Youth and the Portuguese Athletics Federation.

Target: Adults over 15 years old.

Needs addressed: Physical Activity, Health and Fitness.

SERBIA

1. Active, Healthy and Productive Aging

Developed individually by Institute of Public Health of Vojvodina, Institute for Public Health of Republic of Serbia „Dr Milan Jovanovic Batut“ and Belgrade City Institute for public health.

Target: This project aims to inform and increase the knowledge of the elderly population about the factors of active and healthy aging. The target groups are people older than 60, users of gerontological institutions, users of pensioners' clubs, professional associates who work with the elderly and the general public.

Needs addressed: In the work of a kinesiologist, there is a need to cooperate with doctors due to the health conditions of the trainees.

2. Sport 4 health project EU

European countries, among which is Serbia, coordinator is University of Novi Sad - Faculty of sport and physical education, Serbia. The overall idea to be evaluated in this project is that advanced practices and knowledge on alternative physical activities in/around the workplace

represents a quantifiable health benefit, contributing to increasing healthy lifestyle behaviour in working population, resulting in mood improvement, higher productivity, decrease in absenteeism and lifestyle diseases.

Target: Working population, to be more active and improve the enjoyment of life.

Needs addressed: To encourage participation in sport and physical activity amongst working population in order to lower health risk factors for lifestyle diseases.

3. Health fitness for elderly

Implemented by City Center for physical culture

Target People: Seniors

Needs addressed: Specific needs for elderly who need to exercise under supervision

4. Olympics of sport, health and culture Third Age

Organizer is Third Age Association, supported by Ministry of Sport of Republic of Serbia

Target: To encourage, organize and empower people, so that they can realize their potential for the physical, mental and social well-being throughout the life cycle, engage in all spheres of society in accordance with their needs and opportunities.

Target: The aim of the project is to promote a culture of healthy and active living.

Needs addressed: Wellbeing

5. More Active Serbia

The project is implemented with a task to raise awareness of the importance of physical activities and create healthy life habits

Target: To move and inspire all the citizens to engage in some of the activities and get advises regarding their specific needs.

Needs addressed: Increased number of participants of all ages

SLOVENIA

1. Exercise in water for seniors

Swimming association of Slovenia organizes Exercise in water for seniors. The aim of this activity in the first place is to protect and enhance health of the elderly. Activity is well prepared for the needs of this age group which consists of exercises in upright position, adapted to the specifics of the aquatic environment, and swimming.

Target: Elderly who are relatively healthy, as well as those with health problems and limitations caused by illness or injury.

Needs addressed: reduces the risk of developing and developing cardiovascular disease

2. Exercise for seniors

Association for sport Slovenske Konjice believes that physical activity is crucial for maintaining a quality and independent life. It is especially important for the elderly, who use physical activity to maintain physical mobility and thus reduce the risk of disease. The purpose of the program is to increase physical activity among senior citizens and thus contribute to better aging.

Target: Seniors in municipality of Slovenske Konjice.

Needs addressed: They presuppose that regular exercise can positively contribute to elderly people

3. Caring for life energy and a healthy body in mature years

Association of Pensioners' Associations of the Municipality of Koper - Center for Daily Activities for the Elderly Koper (CDA Koper) applied for the project together with partners QI LAB Institute, Faculty of Health Sciences, University of Primorska and EM-SOFT SISTEMI, d.o.o. The aim was to offer quality and new activities that contribute to better health or help individuals maintain and integrate physical activity by enabling quality of life, longer

independent and active life, greater social integration (prevention of social exclusion) and intergenerational cooperation.

Target People: over the age of 60 in municipality of Koper

Needs addressed: to prevent extremely rapid aging of society, care for health and thus the longest possible independent, healthy life of the individual.

4. Free exercise for seniors in the sports hall

Municipality of Slovenske Konjice was collaborating with Association for sport Slovenske Konjice with which they offered free exercise for seniors in the sports hall as a part of a project Healthy ageing movement 2015/2016.

They believe that physical activity is crucial for maintaining a quality and independent life. It is especially important for the elderly, who use physical activity to maintain physical mobility and thus reduce the risk of disease.

Target: Seniors of Municipality of Slovenske Konjice

Needs addressed: To slow down the aging process, to increase cognitive abilities, endurance and mobility,to lower bad cholesterol level, to strengthen bones and reduce the risk of osteoporosis.

5. Exercise for elderly

Aruduc Medici is an organization of three doctors, two heal workers and two kinesiologists. They have made a program Žirfir that was developed on the design of the sports education card, but is adapted to the adult population. With daily activity we can prevent development of a disease or deterioration of the health of an individual.

Target: People older than 65

Needs addressed: to perform daily activities efficiently and more harmoniously, which puts less strain on the joints and thus reduces the risk of chronic wear and tear, healthier lifestyle.

2.2. CONCLUSION

Bulgaria follows WHO's Global recommendations on physical activity for health.

They have a National Strategy for Physical Education and Sports Development 2012–2022 that was adopted by the National Assembly of the Republic of Bulgaria in 2011. The Strategy aims to highlight the social function of physical education (PE) and sports in Bulgaria, and the need for political, economic and social changes to improve the uptake of physical activity. It addresses the principal stakeholders, including public authorities, local government and public sports organisations.

The National Programme for the Development of Physical Education and Sports 2013–2016, was passed by the Council of Ministers in 2013, includes further considerations, such as sports infrastructure and the role of various bodies in the national sports system. The vision of the programme is to build a functioning system for the promotion of PE and sports in the Republic of Bulgaria, to encourage physical activity and participation in sports and social tourism. The government programme for the sustainable development of the Republic of Bulgaria also includes provision for physical activity and a national strategy for active life of the elderly people in Bulgaria (2019 – 2030).

Bulgaria has presented good examples of good practices in field of HEPA for Seniors and data for a 2017 study shows that Bulgaria also had implemented a total of 11 of the 23 indicators related with HEPA Policies in the 27 EU member states till that year.

The problem in Bulgaria seems to be "the gap" between the national policies, the allocated funds and the implementation of the policies at local level were many times the "sport for all" and the programs for elderly people are not financial supported with the "same enthusiasm" as the professional sport teams.

Croatia it's following the tendency of the rest of the Europe in terms of the aging of the population. Manny great national scholars identify physical activity as a way of improving the quality of life of the elderly people and they have very good recommendations related with exercises for people with cardiovascular disease, osteoporosis, and back pain. The best practices presented are very good examples of the good work that the country is doing on this field. The country follows the WHO recommendations, but till 2017 and according with published information they have only implemented 9 of the 23 indicators related with HEPA

policies in the 27 EU member states. The indicator 21 related with physical activity for seniors it was a non-implemented indicator at that time.

The Special Eurobarometer 472 from March 2018 about Sport and Physical Activity is very clear and show that Portugal it's in trouble, because 68% of the respondents never make any kind of exercise or play sports and the tendency it's that this number could increase in the future. Projections of the National Institute of Statistics show that the number of elderly people it's growing very fast each year and by 2060 the country will have around 3 million people with more than 65 years old, for each 100 youngsters we will have 307 seniors. In the country the age group between 65 and 74 years old, 80,7% of the men and 87,7% of the women are currently below the WHO recommendation levels of physical activity per week.

Portugal it's trying to implement the 2013 EU Council recommendations on promoting Health-Enhancing Physical Activity across sectors, but till 2017 they had only implemented 8 of 23 indicators for HEPA policies in the 27 EU member states. They have a National Program for the promotion of physical activity, and they also have a national strategy that should be implemented till 2025. The problem is that making working groups and lots of documents that did not have a true practical implementation does not help to solve any problem. The ones who are trying to solve the problem, by themselves, on the field are the

are the municipalities, these public organisations are giving answer to the needs and wellbeing of the elderly citizens in their communities. We think, based on our personal experience, that Portugal could have a "gap" between the national program, the national strategy for physical activity and the real driving force on the field of Sport in Portugal that are the municipalities.

The best practices presented are very good examples of the good work that is made in Portugal in this area. The country has some good initiatives at national level but most of the successful programs in the country are local programs manage by the municipalities.

We think that the only way to engage more seniors in regular physical activity and reach the levels of recommended physical activity in this age group it's by working with local public and private organisations and local physical activity services providers.

Serbia it's a Non-European Union country, the population in the country it's in decline, they follow the tendency of the rest of the European countries in terms of the aging of the population.

Of all health disorders, the population of Serbia is the most burdened by chronic one's non-communicable diseases. The leading causes of death in our country are almost identical to the leading causes deaths in the world. Serbia has a national program of prevention, treatment and control of cardiovascular diseases, in which physical activity is included as a part of prevention. According with research in Serbia while 56% of the population has never been engaged in physical exercise and only 10% participate in sport activities in a way that is in line with the recommendations of the World Health Organization (WHO).

The increasing number of older populations is one of the biggest future challenges in terms of public health as well as in terms of the implementation of sports and recreational activities in Serbia. When it comes to the HEPA programs on the national level, there is still significant gap in the systematic approach. Things are slowly moving up, especially with research, conferences and seminars on this topic, universities and academic scholars in Serbia are doing a great job in this field.

According with a study from 2018 publish on the Health Policy Journal volume 122 related with the implementation of HEPA policies in the 27 EU Member States, till 2017 Slovenia had implemented 20 of the 23 indicators. The indicator 21, related with the thematic area

senior citizens and the schemes for community interventions to promote physical activity in older adults it's referred in this study as an implemented indicator. Slovenia has a long tradition and culture in sports, physical activity and exercise and has a quite few recommendations and guidelines for the exercise of the elderly people over 65 years old. The material covers the implementation of various forms of exercise.

Slovenia has many professional articles and recommendations by sports and medical institution for the implementation of exercises for the elderly who suffer from various diseases. Systematic implementation of the method of exercise for this type of population began with the adoption of a new national sports program 2014-2023 and the law of Sports in 2017.

We conclude that we have different contexts in each one of the partners countries of this project and the implementation of HEPA policies in the EU Member States are in different stages in each one of the countries, with some "gaps" between national policies and the implementation at local level. Serbia it's a non-European Union country this fact could have some impact in the implementation of policies at national level because they do not have the "pears pressure" that the European Union countries have.

Apparently, the country that is making a better job in the field of Sport and Physical Activity promotion and HEPA policies implementation for all age groups it's Slovenia, maybe because not only of the good tradition on sports, physical activity, and exercise on the country, but also because of the internal organisation, efficiency in law implementation and small size.

3. EDUCATIONAL MODULES MANUALS (IO2)

As a vital part for non-formal educations, high quality educational materials for sport for all coaches, fitness professionals (kinesiologists, trainers) and general practitioners were presented which will be of high use for all organizations working with seniors.

The purpose of Manual for health professionals is to improve health and quality of life of adults and to reduce the risks and consequences of NCD by providing Safety Screening & Considerations prior exercise, Referring Patients and prescribing exercise. In addition, the health professionals will be expected to regularly analyze participant's progress and be able

to report on adherence and outcomes to relevant stakeholders. This module cover non- formal education of sport for all coaches and fitness professionals (kinesiologists, trainers) on conducting recreational sport and PA for older people (65

On the other hand, manual for fitness professionals cover non- formal education of sport for all coaches and fitness professionals (kinesiologists, trainers) on conducting recreational sport and PA for older people (65+). Within this specific module, we develop general PA programme for older people (65+) suited for 3 types of most common health conditions (back pain, cardiovascular disease, and osteoporosis). Modules manuals helps educate sport for all coaches and fitness professionals (kinesiologists, trainers) for conducting this programme and its specifics.

3.1. FITNESS PROFESSIONAL'S OCCUPATIONAL ROLES

Building on the foundation of the role of a fitness professional, the Exercise for Health Specialist should additionally be able to:

1. Understand basic needs in exercise and health for seniors
2. Understand background and impact of back pain, cardiovascular diseases and osteoporosis on seniors' fitness and quality of life
3. Conduct screening and risk stratification of seniors.
4. Conduct appropriate testing, functional and physical fitness assessments with exercisers and present results and its related exercise guidelines;
5. Create evidence-based exercise for seniors at risk or with back pain, cardiovascular diseases, and osteoporosis.
6. Motivate exercisers with controlled health conditions to adopt and maintain healthy lifestyle behaviors
7. Manage communication with exercisers, medical and health care professionals and maintain professional administrative records for seniors.

Cardiopulmonary System and Changes Over Time

The reduced function of the cardiopulmonary system commonly observed in older people has been associated with a number of important factors. One factor is the diminished level of oxygen transfer. This is related to changes in respiratory function associated with a loss of elasticity of the lung tissue, rigidity of the chest wall, and decreased strength in the respiratory muscles. This combination of conditions contributes significantly to a decrease in cardiopulmonary endurance (Spirduso et al., 2005). Other factors are a decrease in both stroke volume (the volume of blood pumped from the heart during one heartbeat) and maximum heart rate (the highest heart rate a person can attain). The decline in maximum heart rate is estimated to be approximately 5 to 10 beats per decade of age from its peak around age 20. However, maximum heart rate is not predicted well by age alone, and habitual aerobic exercise has a significant impact on maintaining cardiopulmonary endurance (Morgenthal and Shephard, 2005). Decreases in stroke volume and maximum heart rate contribute to diminished cardiac output (the amount of blood pumped by the heart per minute). Finally, there are increases in blood pressure (the pressure exerted by the blood on the walls of the arteries) and other vessel-related difficulties (Spirduso et al., 2005). All of these factors contribute significantly to the decline of performance in cardiopulmonary endurance activities.

Again, although age is a factor in some changes in cardiorespiratory function, lifestyle factors contribute most dramatically to the outcome. Regular aerobic exercise has been documented to have a significant positive effect on the cardiopulmonary system, slowing and even reversing declines in efficiency that historically were associated with the aging of this system (Boileau et al., 1999; Spirduso et al., 2005). Aerobic exercise is credited with increasing respiratory function, maintaining stroke volume, and reducing resting blood pressure in both young and old participants. Exercise reduces the level of blood lipids and increases glucose tolerance and insulin sensitivity, thus reducing the risk of atherosclerosis and adult-onset diabetes (Hornsby and Albright, 2003). Studies indicate that there is a greater decline with age

in the efficiency of oxygen transfer in sedentary people than in those who are physically active. It is clearly documented that exercise has a significant impact on maintenance of aerobic power and endurance. It is encouraging to note that the cardiopulmonary system responds to training regardless of previous physical activity patterns (Spirduso et al., 2005).

Benefits of Exercise for Osteoporosis

Studies have shown that lack of physical activity promotes bone loss. Smith and Gilligan (1989b) reported that the removal or decrease of muscular or gravitational forces on bone segments causes bone atrophy. The degree of atrophy is influenced by the bone's normal role in weight bearing; those bones responsible for greater loads show more rapid atrophy when the load is removed. Increases in bone mineral density are greater in the bones where the force is applied; for example, tennis players often experience significant bone hypertrophy (enlargement) in the dominant arm (Smith and Gilligan, 1989b). Postmenopausal women are susceptible to osteoporosis because of the increased bone loss associated with the loss of estrogen. Therefore, they are the most common study group for determining the effect of physical activity on bone loss. Studies show that women who exercise regularly will slow bone loss and even gain bone mineral density (Goldberg and Hagberg, 1990; Spirduso et al., 2005). Other studies show that when formerly sedentary subjects participate in a regular physical activity program, bone loss is decreased or bone mineral density is even increased (Smith and Gilligan, 1989b). It is also clear that when exercise is reduced, the loss of bone mineral density resumes. Exercise increases strength, posture, and balance, which can increase functional status and decrease falls and their resultant fractures (Bloomfield and Smith, 2003).

Exercise Modifications

Research clearly shows that to affect the loss of bone mineral density, exercise must be weight bearing (Rimmer, 2005b). Resistance training has been shown to be especially beneficial to help improve bone mineral density, muscle mass, strength, and balance in postmenopausal women. (Nelson et al., 1994). Exercise for prevention of osteoporosis can also include

moderate-intensity weight-bearing activities, such as low-impact aerobics and vigorous walking. Avoid ballistic or jarring movements. Also, some positions such as standing for extended times on one leg may place a vulnerable bone at risk. Such exercises should be limited to a maximum of 8 repetitions at a time. For those people who are in the later stages of osteoporosis, exercising while standing on one leg should be avoided completely. Consider carefully the benefits versus the risks of any vigorous movements. For someone with osteoporosis who is at a high risk of falling, chair exercise and chair-assisted exercise is more appropriate than free-standing exercise. Also, when programming exercise for osteoporotic people, avoid excessive flexion of the spine (i.e., bending forward at the waist), which can contribute to spinal fractures and will place internal organs (already crowded because of osteoporotic-induced spinal changes) in a position vulnerable to injury. Know the visible signs of osteoporosis, such as spinal kyphosis (hunched spine) and pain in common problem zones such as hips, back, and wrists (Rimmer, 2005b). Plan classes that will be safe for people with beginning stages of osteoporosis (often undiagnosed), and seek physician input when creating programs for people with diagnosed osteoporosis.

Lower back pain (LBP)

Lower back pain (LBP) is one of the most common medical complaints in the world. It is the second most common complaint in doctors' offices.More than 80 percent of Europeans have had LBP at least once. Though there are many causes of LBP, most are mechanical. That is, they result from overloading or injuring the back. LBP can be acute (less than three months) and chronic (more than three months). For both, exercise is a key part of the treatment.

Basically, for both types you should avoid any movement or activity that causes symptoms or pain. Try to return to normal levels of activity as soon as feasible. Avoid bed rest except during times of severe pain. For severe acute LBP, treat with pain relief medicines and ice packs. Modify activities to reduce stress to the lower back, especially at first. Also, emphasize low-intensity activities. Over time, increase the intensity and duration of activity until you return to normal. For chronic and recurring LBP, exercise and normal activities are strongly recommended. Many people with LBP have depression, anxiety, and insomnia. They also have low levels of fitness. Some see pain as a sign of injury. As a result, they stop being active. They avoid any kind of exertion. They don't realize it is safe to remain active. In fact,

being active improves LBP over the long-term. The key is to make small changes in how they do things.

Senior assessment competence for fitness professionals

Senior assessment is a battery of test items that measure the physical capacity of older adults to perform normal everyday activities. The test is considered a functional fitness test because of its purpose in assessing the physical characteristics needed for functional mobility in later years. Specifically, functional fitness is defined as having the physical capacity to perform normal everyday activities safely and independently without undue fatigue. As we age, we want to have the strength, endurance, flexibility, and mobility to remain active and independent so we can take care of our own personal and household needs; do our own shopping; and participate in active social, recreational, and sport activities, if that's our choice. The SFT is for professionals in the fields of health, fitness, and aging who need an economical, easy-to-use assessment tool for measuring the fitness of older adults in the clinical or community setting. The test assesses independently living older adults, aged 60 to 90-plus, across a wide range of ability levels, from the borderline frail to the highly fit.

In assessment, subjective methods and objective measures are combined. Subjective measures include questionnaires and objective measures include devices and other equipment. To evaluate one must know which test to use. Often, at this point, question marks are flying over our head: Which test to use? Do I have the knowledge, money or resources for this?

First thing first, we will start with basics. There are 2 types of tests – *laboratory* and *field test*.

Both have pros and cons. Laboratory tests are performed in stable conditions, are more reliable, precise, and sensitive. Why would one then use field test? Because they but are cost-effective, practical, specific, and easy to do.

Our goal is to use tests that are practical, easy to use and as close as possible to the gold standard. We want a fast and accurate information!

This, together with normative values of a test, will give us a practical and useful way to help our client.

Often a client comes to expensive testing and never do a re-test of it! This is a huge problem with expensive laboratory testing. We want to avoid this and make testing cost-effective and reliable.

Characteristics of a good test are:

- Sensitivity
- Reliability
- Objectivity
- Validity

Sensitivity is the ability to detect a true difference.

What if it's too High? It detects everything so it is unable to discriminate between what you're searching for and everything else you find.

What if it's to Low? It can't detect enough so it is unable to discriminate between what you're looking for and nothing. Either case, the result is an incorrect result.

Reliability refers to the consistency of a test.

A test given on one day should yield the same results on the next day.

Objectivity is the close agreement between scores assigned by two or more judges. Objectivity is also referred to as rater reliability.

Validity indicates that a measurement instrument (test) measures the capacities about which conclusions are drawn.

Here are some more useful information's about a test:

- *Method of scoring* – objective format is more reliable than subjective format.
- *Homogeneity of the group tested* – if it is more alike it is more reliable;
- *Length of test* – longer tests are more reliable than shorter tests (for example: number of questions or elements);

• *Administrative procedures* – it is important to give clear directions, explain the technique, motivate subjects and ensure good environment.

So, once we decided which test to use – we must know how to prepare for the test and which instructions to give to a client.

Before the procedure, an instructor has to:

- check the space and make sure equipment is ready to use,
- prepare worksheets and devices,
- identify the major risk factors
- explain the procedure to a client day before.

The client has to:

- get a good night sleep,
- take care diet and fluid intake
- prepare comfortable clothes (now it is not time to try out your fancy new trainers' model),
- spare himself of high-intensity activity 48 hours before, etc.

On the testing day

The client has to:

- follow the instructions from instructor day before,
- do proper warm-up

The instructor has to:

- pay attention to details,
- pay attention to potential risk factors,

- show technique to a client.

After testing

The client has to:

- do cool down and relax.

The instructor has to:

- make sure client if safe.
- do practical and easily understood result presentation.

Scope of practice

Before involving the client in the training process, one should have a formal education in fitness or kinesiology. For instance, getting the education necessary to become a fitness instructor, personal trainer, fitness trainer, master in kinesiology, and so on. We will talk about why this is so important a bit later.

So let's say you have taken your exam and you are now certified trainer. A FT should never provide services outside their defined scope of practice.

For example: Trainers should never diagnose, but rather refer clients to an appropriate allied health professional. Trainers do not prescribe diets or supplements, he or she refers clients to a dietitian or nutritionist. And trainers do not rehabilitate but design a training program once a client has been released from rehabilitation.

FT know that training other people, clients, is a service focused on helping to enhance their fitness and modify risk factors for disease to improve health. So what will the scope of practice for fitness trainers include?

• Creating exercise programs that are safe, effective and appropriate for an apparently healthy, or with medical clearance to exercise, individual

• Conducting interviews with clients about their health history in order to determine if a person should first talk to a doctor

- Conducting a fitness assessment (Fitness Index)
- Assisting clients in setting and achieving realistic fitness goals
- Teaching correct exercise methods and progressions through demonstration, explanation, and proper cueing and spotting techniques
- Motivating individuals to begin with exercise programs and to stay on track
- Educating clients about fitness and health related topics
- Protecting clients confidentiality (GDPR, HIPPA, and related national laws)
- Acting professionally, respectfully and with integrity
- Knowing what is within the scope of practice and always referring clients to other healthcare specialists if needed
- Being ready to respond if some emergency situation occurs during training

Bearing this in mind, here is one more example. Clients often ask questions about nutrition because they want to reduce body fat. Trainers can help with designing an effective exercise program that will affect body composition and recommend web pages or books with guidelines about nutrition. Those clients who want a more detailed nutrition plan will need to be recommended to a nutritionist.

On the other hand, a trainer should never contradict the client's physician even though the physician does not have knowledge about exercising, but his guidelines will be based on the client's health, medications, injuries, diseases, and must be followed for the health and safety of the client.

There are many ways of how to reach the goal of becoming an instructor or trainer. It depends on a person's time, finances, and level of competences a person wants to reach.

Education for fitness instructors (Level 3, EQF) lasts for about 3 months and it's financially least demanding. The scope of practice for the instructors is the same as for trainers but are not educated to design structured exercise programs on their own.

Fitness (personal) trainers have a higher level (Level 4, EQF) of education compared to an instructor.

A trainer's role includes designing, implementing and evaluating exercise/physical activity programs for a range of individual clients.

If a trainer earns a specialist title (Level 5 EQF) for exercise or health, or some other, that means they have the ability to work with a wide range of individuals that have existing chronic health conditions or are at high risk of developing them due to their lifestyle. They can program and supervise exercises for individuals (and groups if they hold this prior competency). A Specialist is able to communicate effectively with medical and healthcare professionals about participants. A Specialist will take a holistic approach to the wellness of their clients that includes advising on lifestyle, healthy eating and stress management in addition to exercise relevant to the condition, medication and with respect to professional boundaries.

Next level is trainer - bachelor (Level 6 EQL). This trainer with full scope of practice has advanced knowledge of a field of work or study, involving a critical understanding of theories and principles, advanced skills, taking responsibility for decision-making.

A person with a master degree in kinesiology (Level 7 EQL) with the scope of practice for fitness trainers, has also a highly specialized knowledge of exercise and fitness, critical awareness of knowledge issues in a field. This person will be able to communicate with the health specialists on a higher level and talk about collaborating.

The purpose of obligatory formal education in fitness is to protect the client from harm. Professionals who earn their certificate validate their knowledge and competences to employers, clients and other healthcare providers.

3.2. HEALTH PROFESSIONAL'S OCCUPATIONAL ROLES

Building on the foundation of the role of a leader in health prevention, Health professional should additionally be able to:

1. Conduct screening and risk stratification of individuals at risk or with a health condition;
2. Conduct appropriate testing, functional and physical fitness assessments with exercisers and present results;
3. Provide recommendations for physical activity and developing & utilizing physical activity referral networks
4. Create evidence-based physical activity behavior change;
5. Motivate exercisers with controlled health conditions to adopt and maintain healthy lifestyle behaviors;
6. Manage communication with exercisers, fitness professionals and maintain professional administrative records.

Referring Patients

Exercise Referral Scheme

Healthcare professionals have a crucial role to play in promoting physical activity with patients and ensuring that patients are offered the safest and most appropriate physical activity pathway to meet their healthcare needs and personal preferences.

The role of primary care

Primary care has been recognized as an important setting for the promotion of physical activity. Primary care professionals come into frequent contact with the general

public, indeed it is estimated that 85% of the population visit their GP surgery on an annual basis. Every consultation provides an opportunity to promote behavior change or to refer to relevant support services. Furthermore, there is strong clinical and cost- effectiveness evidence to demonstrate the importance and the potential of using health professionals to promote physical activity.

Prescribing Physical Activity

Prescribing physical activity Counselling and prescribing physical activity is carried out according to the established current level of physical activity of the patient, in accordance with the recommended guidelines. As instructed by Blair et ir. one of the easiest ways to prescribe physical activity in primary care is to follow the so-called FITT principle. FITT is an acronym composed according to the initial letters of the English words Frequency (frequency), Intensity (intensity), Type (type or type) and Time (time). All four words, of course, describe the characteristics of the activity.

It is thus recommended: that activities be carried out 5 days or more per week (F), that the intensity be at least moderate (50 % to 70 % of the maximum projected heart rate, calculated

according to formula 220 – the age of the person) (I), that activities that activate large muscle groups be selected, increase the frequency of the heart and cause light sweating (T), that the activity be carried out for at least 30 minutes, positive effects are also achieved cumulatively with three 10-minute episodes of exercise (T).

Provide Patients with a Physical Activity Referral

Several studies have suggested that efforts made by health care systems to increase patient physical activity are best accomplished by transforming “patients” into “participants.”

Identify Community Programs

Task someone in your practice with building out your customized Community Physical Activity Resource Guide. This may include university or medical fitness facilities, health clubs and local community centers. Include facilities that offer specialty programs for older individuals who may not typically feel comfortable at a gym such as evidence-based programming for older patients or those with medical conditions (i.e. cancer, arthritis, pre-diabetes). If your health system or medical practice develops a partnership with a community-based fitness entity, the EHR can be programmed for easy referral. Patient navigators, health coaches or fitness facility coordinators can reach out to patients and assist with the process.

Find Qualified Exercise Professionals

Given the time limits of your busy practice, a qualified exercise professional (exercise physiologist, personal trainer or group exercise instructor) can extend the reach of your care by providing the expertise, supervision and motivation that will help patients adopt and maintain a habit of regular physical activity.

Unfortunately, the landscape of personal trainers and fitness instructors is confusing and often frustrating to sort through. The most well-respected national certifications are accredited by the National Agencies and in line with Europe Qualification framework. In addition, accredits certifications for professional health care roles such as respiratory therapist, family nurse practitioner, emergency medical technician (EMT), registered dietitian (RD), and many others.

Determine Your Patient’s Readiness to Change

Prior to prescribing physical activity to your patients, it’s important to determine their “Exercise Stage of Change.” Some patients may only be ready for encouragement; some will be prepared to take steps toward reducing sedentary

behavior and/or becoming more active; and others will be ready to receive a physical activity prescription and referral to certified exercise professionals

4. ANALYSIS OF PILOT PROGRAM IMPLEMENTATION

After finalized non-formal educations, for general practitioners and (kinesiologists, trainers) each partner organization started to promote the project for implementation of the pilot

program for seniors. It was implemented for 4 months in all project countries. As part of the pilot project, 30 participants of each country were involved in the exercise process.

In addition to designing and refining a general programme for older people (65+) to be implemented as part of the pilot project, a senior fitness test was conducted with all project participants to determine the level of motor and functional status of participants on initial and final measurement.

Tests for measuring motor skills were determined by formed expert group on Hepa S project. Each organization carried out the tests on it's own way, which was adapted to the implementation of the programs. Test results are numerical, which were defined by the time component of the duration of the preliminary exercise. The tests were performed by both kinesiologists and physiotherapists before and after the implementation of the entire exercise program.

The battery of tests were performed by two anthropometry tests (body height and body weight), four motor tests (sit raise, biceps curl, chair sit ups and number of steps-cardio) and oswestry disability index questionaries.

The unit for measuring anthropometry was kg and cm. For motor skills (biceps curl, chair sit ups and number of steps-cardio) the time component was used, i.e. the number of repetitions.

Regarding the sit-raise test the number of hand touches was taken into account. A fewer touches meant better physical condition.

For the low back pain injuries the oswestry disability index questionaries were used. From it, we can see how and in what way the back pain affects the life of an individual. The comparison of the initial and final state showed excellent results which are shown in the paragraph below.

4.1. RESULTS

In all five partner organizations, terms of trainee participation the female gender were in mayority. There could be several reasons for this, we supose that one of the main is a prevailing mentality in male gender that physical work in the outdoor environment is also a

suitable form of activity that could replace a sports recreation. The implementation of the project included several steps which were conducted by a leading project partner. In order to carry out the steps, it was of course necessary to do certain analyses before starting with the exercise program, which included the prevention and treatment of low back pain injuries, osteoporosis and cardiovascular diseases.

- **Body mass index (BMI)**

BMI is a measurement of a person's leanness or corpulence based on their height and weight, and is intended to quantify tissue mass. It is widely used as a general indicator of whether a person has a healthy body weight for their height. Specifically, the value obtained from the calculation of BMI is used to categorize whether a person is underweight, normal weight, overweight, or obese depending on what range the value falls between. These ranges of BMI vary based on factors such as region and age, and are sometimes further divided into subcategories such as severely underweight or very severely obese. Being overweight or underweight can have significant health effects, so while BMI is an imperfect measure of healthy body weight, it is a useful indicator of whether any additional testing or action is required.

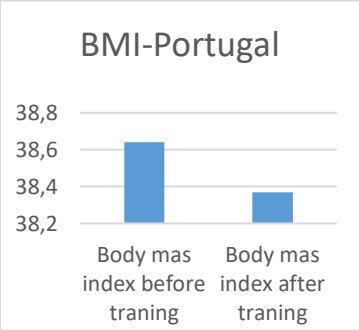
Refer to the table below adapted from World Health Organization's WHO (2010) we can see the different categories based on BMI.

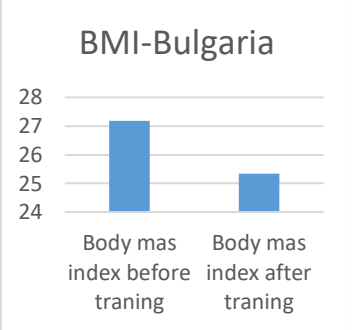
Category	**BMI range - kg/m^2**
Severe Thinness	< 16
Moderate Thinness	16 – 17
Mild Thinness	17 - 18.5
Normal	18,5 - 24,5
Overweight	25 – 30
Obese Class I	30 – 35
Obese Class II	35 – 40
Obese Class III	> 40

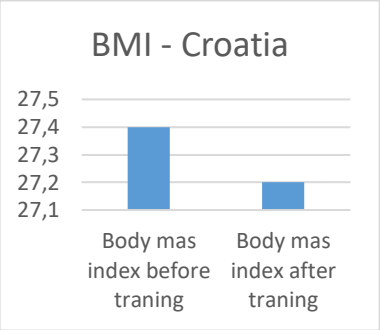
According to the results of the exercise of each partner obtain the progress in weight loss especially with participants of whose body wait was too high.

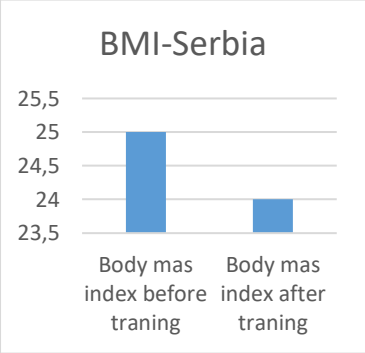
From the results we can see that the drop of BMI considering the average value. All partners had a decrease in BMI, but there was no change in structure. We attribute such a result to the

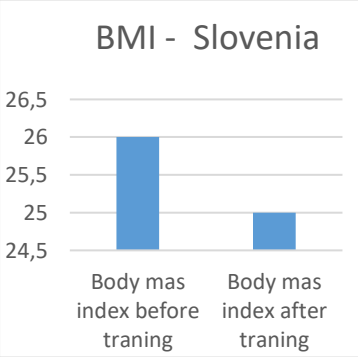
duration of the program and and level of its complexity. In the program we did not take in consideration a food segment which could be related on the body structure of the individuals.











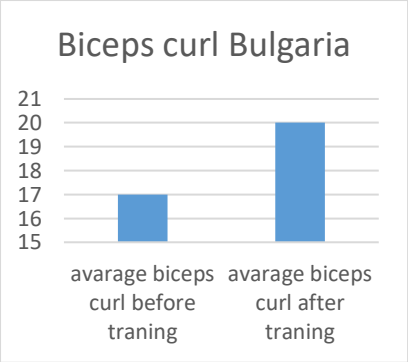
- **Biceps curl test**

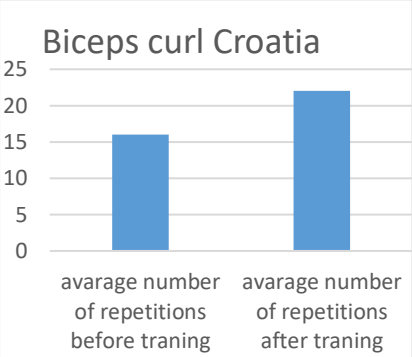
The client/patient is seated in a chair holding a weight with the palm facing the body. The arm should be against the trunk to avoid using other muscle groups. As the arm is brought through the range of motion, the wrist should rotate ending up facing the participant.

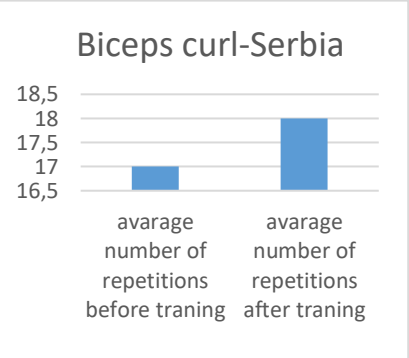
The goal is to complete as many curls through the entire available range of motion in 30 seconds. Several professional literatures provide information regarding the optimal functioning

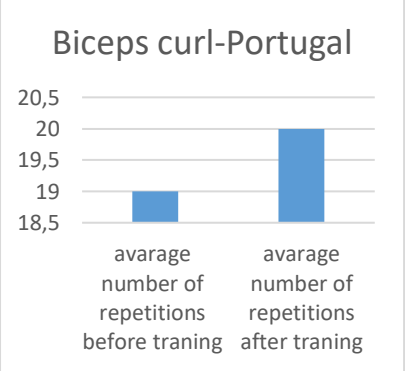
of the body according to the number of repetitions. In the table below, adapted from web site https://www.topendsports.com/testing/tests/arm-curl.htm (2022) we can see the state of physical capacity according to gender and age 65, which shows the average values and deviations.

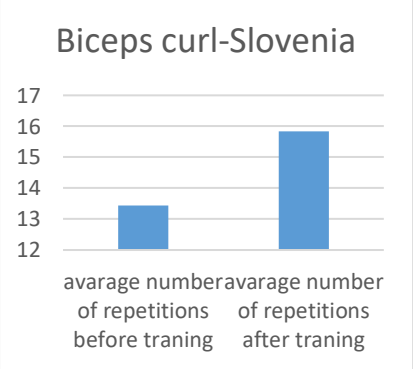
gender	age	below avarage	avarage	above avarage
M	65+	< 15	15-21	> 21
W	65+	< 12	12-18	> 18









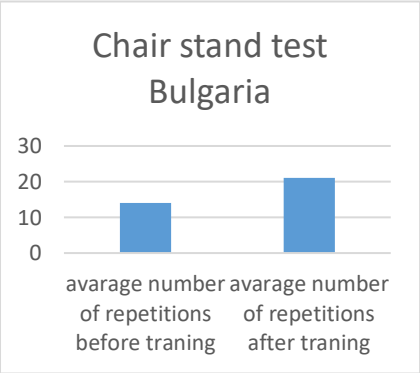


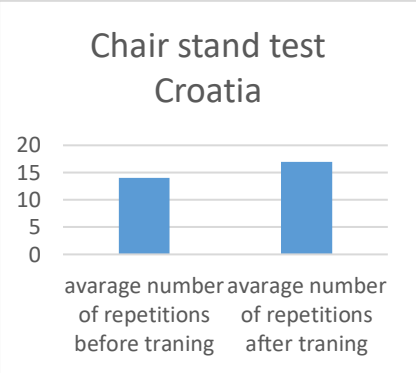
- **30-Second Chair Stand Test**

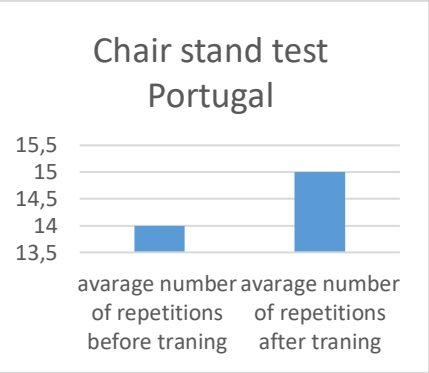
Place the chair against a wall, or otherwise stabilize it for safety. The subject sits in the middle of the seat, with their feet shoulder width apart, flat on the floor. The arms are to be crossed at the wrists and held close to the chest. From the sitting position, the subject stands

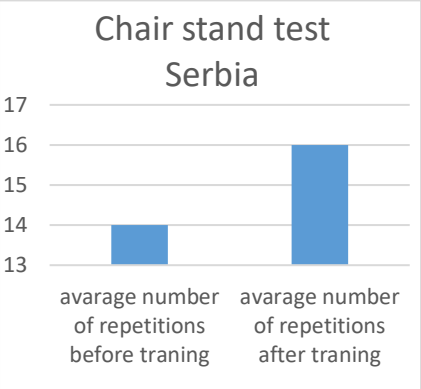
completely up, then completely back down, and this is repeated for 30 seconds. Count the total number of complete chair stands (up and down equals one stand). If the subject has completed a full stand from the sitting position when the time is elapsed, the final stand is counted in the total. The score is the number of completed chair stands in 30 seconds. In the table below adopted from the website https://www.topendsports.com/testing/tests/chair-stand.htm (2022) we can see the recommended ranges of test based for age group over 65 years old.

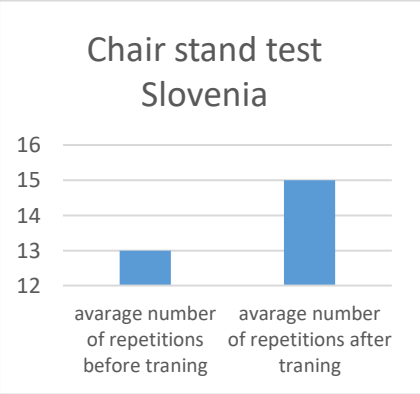
Gender	age	below avarage	avarage	above avarage
M	65+	< 12	12-18	> 18
W	65+	< 11	11-16	> 16











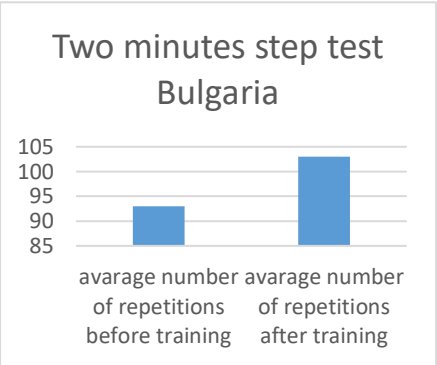
- **2 minutes step test**

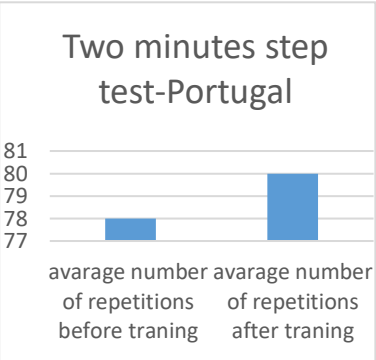
The subject stands up straight next to the wall while a mark is placed on the wall at the level corresponding to midway between the patella (knee cap) and illiac crest (top of the hip bone). The subject then marches in place for two minutes, lifting the knees to the height of the mark

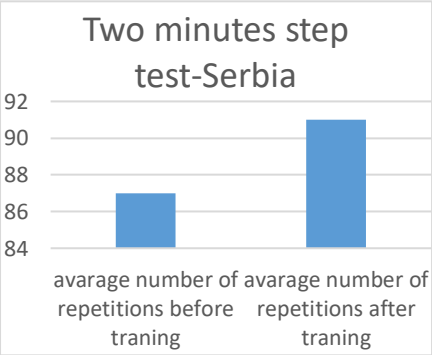
on the wall. Resting is allowed, and holding onto the wall or a stable chair is allowed. Scoring: Record the total number of times the right knee reaches the tape level in two minutes.

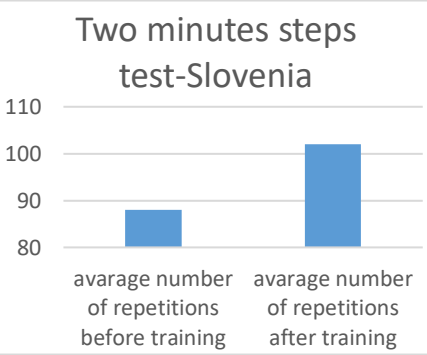
A table adopted from the website https://www.topendsports.com/testing/tests/step-in-place-2min.htm (2022) showing the recommended ranges based on age group 65+.

gender	age	below avarage	avarage	above avarage
M	65+	< 87	86-116	> 116





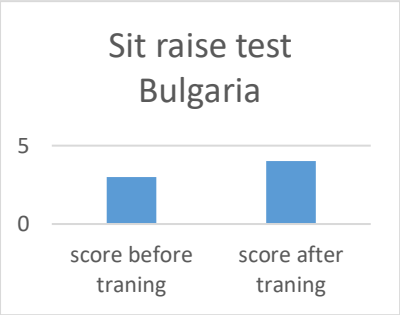


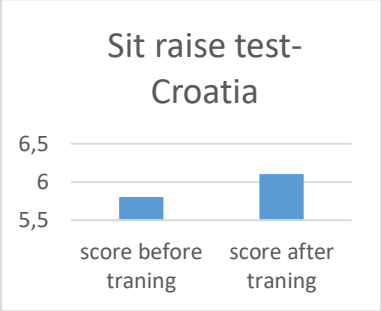


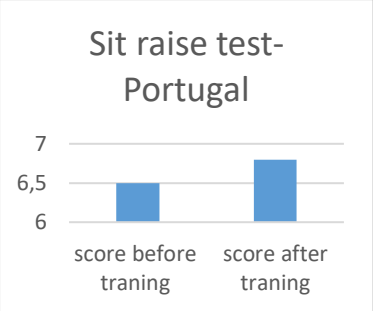
- **Sit and raise test**

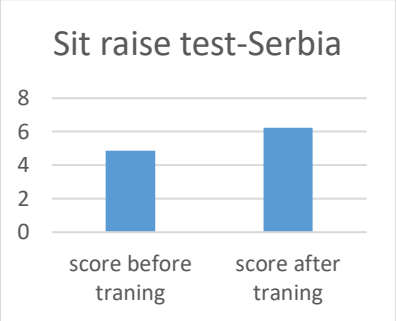
The test is administered on a nonslip surface, with individuals given the following instructions: "Without worrying about the speed of movement, try to sit and then to rise from the floor, using the minimum support that you believe is needed.

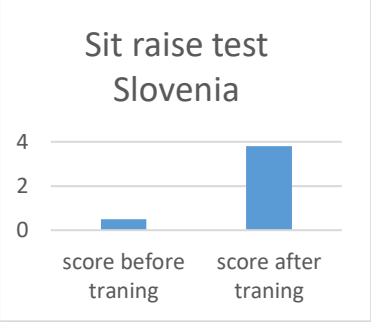
Scoring: a maximum of 10 points is possible, 5 for sitting and 5 for rising without any supports. Each support used (hand, forearm, knee, side of leg, or hand on the knee) removes 1 point. Participants may also lose an additional 0.5 points for an unsteady performance. Regarding this test, it was slightly different from the others. Most of the potential trainees in the start were not able to do this test. After the pilot program, everyone could complete the task with different motor skill scores.











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- **Oswestry low back disability questionnaire**

The Oswestry Disability Index (Oswestry Low Back Pain Disability Questionnaire) is an important tool that researchers and disability evaluators use to measure a patient's permanent functional disability.

The questionnaire summarized by the website https://evidenceinmotion.com/ (2022) is set numerically, whereby the individual is classified according to the intensity of the pain in the table below.

SCORE	DISABILITY LEVEL
0-4	No disability
5-14	Mild disability
15-24	Moderate disability
25-34	Severe disability
35-50	Compleetly disabled

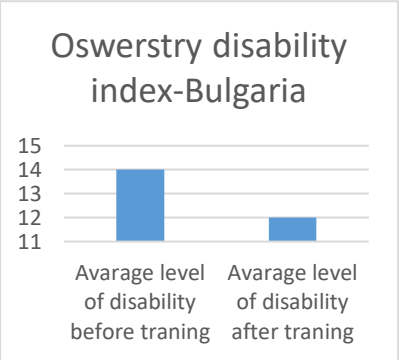
No disability - the patient can cope with most living activities. Usually no treatment is indicated apart from advice on lifting, sitting and exercise.

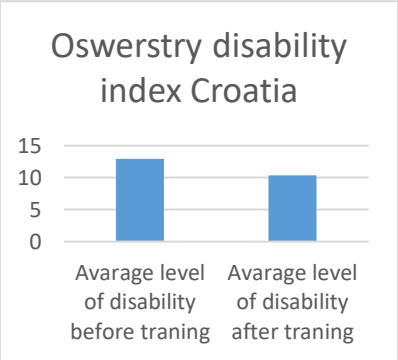
Mild disability - the patient experiences more pain and difficulty with sitting, lifting and standing. Travel and social life are more difficult and they may be disabled from work. Personal care, sexual activity and sleeping are not grossly affected and the patient can usually be managed by conservative means.

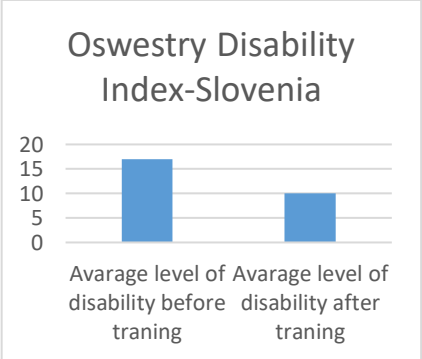
Moderate disability - pain remains the main problem in this group but activities of daily living are affected. These patients require a detailed investigation.

Severe disability - back pain impinges on all aspects of the patient's life. Positive intervention is required.

Completely disabled - these patients are either bed-bound or are exaggerating their symptoms







4.2. ANALYSIS OF EVALUATION QUESTIONNAIRES

The pilot project, which was implemented in five countries, included two stakeholder groups of professional staff and the target population over 65 years of age. The implementation phase of the project included two important steps. The first phase of the project was the implementation of the nonformal training of professional staff who was in charge for various tasks.

It was thus necessary to include 10 doctors, 10 kinesiologists and physiotherapists and at least 30 participants over the age of 65 in the pilot program whose aim was to connect the medical and sports professions.

Informal trainings took place in all five partner countries based on the content provided by the aplicant. Regarding the course of the training, the partners in their districts agreed with individual institutions and profesional staff. The non formal education took place in the form of discussions with the content that is important for connecting the medical and sports

professions. Regarding the non formal training of doctors, kinesiologists, physiotherapists, and eldery people we conducted a survey. In the text below we presented the interpretation of the project groups of the entire consortium (average answers).

ELDERLY PEOPLE 65+

- Rating the event: good, very good, excellent
- Rating the program for improving the health problems: it helped me, it helped me a satisfactly, it helped me a lot
- Influention for participating regarding the program was free of charge: bearly, influenced, moderatly, highly
- Transfer to healthy lifestyle: medium, moderatly,very intense
- Recommendation to others: moderatly recommended, highly recommended
- Reparticipating the program in the future: yes
- Information regarding the program: TV, radio, social media, words of mouth

KINESIOLOGISTS AND COACHES

- Rating of the event: excellent
- Rating the knowledge improvment after the course: high
- Recommendations to the others: always
- Intention for a
- Attending the event in the future: maybe, sometimes, very offten
- What they like: The connection between health and sport, Great initiative,Extremely useful event, Expertise and useful information, Relevance and importance of the topic, The education systematically covered all aspects of the necessary approach to promoting the necessity of targeted physical activity for the elderly,
- What they dislike: no aswers were put in the schedule, Too much theory, too extensive, too overwhelming

GENERAL PRACTITIONERS

- Rating of the event: excellent
- Intention for prescribing exercise rather then madications: always
- Recommendation to others: always
- Intention for attending the event in the future: always
- What they like: professional presentations of all participants Useful information, Professional trainers, An important topic and useful training, The importance of topic and all the most important parts of it were greatly presented, great oportunity to give our patients aditionals exercise programs,
- What they dislike: There should be such events more often, Wish large number of colleagues to find this topic extremely important,

4.3 FINDINGS AND CONCLUSION

In all five partner organizations, terms of trainee participation the female gender were in majority. There could be several reasons for this, we suppose that one of the main is a prevailing mentality in male gender that physical work in the outdoor environment is also a suitable form of activity that could replace a sports recreation.

In other motor tests, the average progress of the participants was around 20%. Regarding the BMI all partners had a decrease in weight loss but there was no change in structure. We attribute such a result to the duration of the program and the level of its complexity. In the program we did not take in consideration a food segment which could be related to the body structure of the individuals.

In the questionnaire regarding the oswestry disability index all segments which related to pain that conduct a lifestyle were improved. Here we also got informal data from the participants, as they reported in all partner organizations that their pain decreased and general state of health had improved.

Reflecting upon the differences in organizations systems in sport in each country we found that all local environments have their own specifics, which had to be taken into account. We also found that the sports funding systems in all countries allocate a small amount of co

financing for sports programs for the elderly 65+. There are several reasons in all systems like; lack of adequate sports infrastructure and lack of adequate staff who could develop some proposals regarding the implementation of such innovative programs.

Of course, at the end of the project, the question regarding cooperation between medical and sport profesion remains open and undefined. During the implementation of the pilot program the benefits of the cooperation of the medical and sports professions had many impacts on local environments which were noticed in promotion and popularization of exercise for elderly and improving the physical and health condition of the trainees.

Currently, the development of this type of program depends on self-initiative and initiatives of non-governmental organizations. If there is a need in local environments for the development of such programs, proposals for the development and implementation of these could be prepared and sent to decision-making bodies for consideration. The more proposals and starting points are prepared the greater is the possibility that stakeholders from the other profession will join in upgrading this type of program.

5. RECOMMENDATIONS FOR IMPLEMENTING HEPA FOR SENIORS IN PROJECT COUNTRIES

5.1. CONCLUSIONS FROM HEPA S FINAL CONFERENCE IN ZAGREB

At the final conference held in Zagreb on October 15, the recommendations and results of the HEPA-S project were presented. The conference was attended by 75 people including influential people from Croatia and Serbia. Most of them also held an invited lecture on topics closely related to the issues of the HEPA-S project:

- Tanja Ćorić, dr. med. and prof. dr. sc. Branko Kolarić, dr. med. both from the Department of Public Health Gerontology and the Faculty of Medicine, University of Rijeka;
- Zvjezdana Bogdanović, Advisor to the Minister, Ministry of Labour, Pension System, Family and Social Policy;
- Assoc. prof. dr. sc. Krunoslav Capak, MD, Director of Croatian Institute of Public Health;
- Dr. sc. Romana Galić from City Office for Social Protection, health, veterans and persons with disabilities of the City of Zagreb;
- Prof. dr. sc. Stjepan Heimer, dr. med. from ZSSR „Sport za sve“;
- Dr. sc. Dubravka Kalinić, MD, psychiatrist from Psychiatric Clinic Vrapče and School of Medicine, University of Zagreb;
- Dr. sc. Marija Bubaš, State Secretary at the Ministry of Health
- Prof. dr.sc. Vladimir Jorga, MD, Dean of ECPD International Faculty of Sport, Beograd;
- Kutnjak Kiš Renata, MD, epidemiologist, Head of Public Health and Health Promotion Activities from Public Health Institute of Međimurje County;

- Prime. Mr. Sc. Branislava Resanović, MD, specialist in social medicine and health ecology, Head of the Center for Preventive Medicine from the Teaching Institute of Public Health "Andrija Štampar";
- Mr. sc. Hrvoje Radašević, professor of kinesiology, Center for Preventive Medicine from the Teaching Institute of Public Health "Andrija Štampar";
- Dr.sc. Maja Vukelja, mag.cin. from Society for Sports Recreation "Trnje", Zagreb;
- Dr. sc. Ivana Aras, MD, ENT specialist, Polyclinic SUVAG, Zagreb.

As part of the conference, a publication, entitled “Physical activity, health and quality of life of the elderly” was published.

In the first lecture, Mrs. Tanja Ćorić referred to the Public health aspect of demographic transition. Here is a summary of his lecture:

“Demographic transition and population aging is taking place in most developed countries, especially in Europe, whose population has the largest share of people over 65 (19%).

According to the published first results of the 2021 Census of the State Statistical Office (DZS), the share of the population over 65 in the Republic of Croatia in 2021 is 22.3% (868,638), while in 2011 it was 17.7% (758,633). Health statistics data on the number of hospitalizations and days spent in hospital in the last five-year period show an increasing trend in the share of hospitalized geriatric patients, regardless of the decrease in the total number of hospitalizations.

Quality health care for the elderly must also include the necessary social care in accordance with their functional capacity, which is assessed on the basis of their physical (mobility) and psychological status (independence). For the comprehensive care of an elderly person, it is necessary to ensure the synergy of health and social protection.

The referral center of the Ministry of Health for the health protection of the elderly at the Service for Public Health Gerontology of the NZJZ "Dr. Andrija Štampar" in cooperation with all state and city bodies during the Decade of Healthy Aging (2020-2030) will continue to be the initiator and implementer of the activities necessary to preserve the health of the elderly and healthy and active aging."

Mrs. Zvjezdana Bogdanović in her lecture reflected on the role of social policy in the care of the elderly. Here is a summary of his lecture:

"The Ministry of Labour, Pension System, Family and Social Policy recognizes the vulnerability of the elderly and their needs for various types of social support and services, and encourages the improvement of existing and the development of innovative forms of care for elderly people who are encouraged to stay in their own homes.

Continuously increasing benefits and ensuring and improving the quality of services for the elderly the Ministry contributes to a greater degree of social inclusion, and thus to a greater degree of physical activity of the elderly in the Republic of Croatia. Social inclusion activities, which include various types of physical activity, will continue to be encouraged by providing funds from various sources that are available not only to accommodation service providers but also to civil society organizations that provide support to older people with the aim of their greater mobility and inclusion in life community."

Mr. Krunoslav Capak in his lecture spoke about the role of the Institute of Public Health in promoting cooperation between health and kinesiology:

"Despite numerous current evidences on the health benefits of physical activity, it seems that the relevant policies in many countries ignore the knowledge and experience gained in societies oriented to the health of the population or very slowly implements this issue into a political strategy, and this is accompanied by weak application in practice. It is a well-known fact that it takes even more time to implement evidence-based medicine into public health policy and practice. Nevertheless, in recent years we have witnessed an increasing recognition of the need for a stronger focus on physical activity as an irreplaceable factor in

health and recovery. This is the basis of the initiative for the formation and development of the HEPA Europe network (HEPA - Health-Enhancing Physical Activity), an open system that promotes evidence-based health physical activity, exercise and sport intended for the general population.

In the end, we come to the conclusion that neither doctors nor kinesiologists have the necessary knowledge and experience to meet the requirements for a modern approach to health protection and prevention of chronic non-communicable diseases through appropriate physical activity. Since health is the domain of medicine and health professionals, and physical activity is the domain of kinesiology and kinesiologists, it is necessary to enable them to obtain information, knowledge and experience for cooperation in a common field. Therefore, public health strongly recommends joint cooperation first in the education of experts of various profiles, which would improve joint efforts and create a broad base of promoters of physical activity in order to further raise the level of health literacy of the population, at least in the part related to preserving health through physical activity at every age."

In the next lecture, Ms. Romana Galić commented on the role of local authorities in ensuring physical activity programs for the elderly. Here is a summary:

"Active and healthy aging and comprehensive care for the elderly has been one of the most important public health priorities of the City of Zagreb since 1987, when the City of Zagreb became part of the World Health Organization's large European network "Healthy Cities". Until today, with an active policy aimed at the elderly, we strive to respond to their specific needs, and therefore the care of elderly citizens is recognized as one of the priorities of social policy. Zagreb's recognizable model of active and healthy aging is the local community support program "City of Zagreb Gerontology Centres", which is completely free for users and is implemented in all 17 city districts. The program annually includes around 7,000 users, of which almost 2,000 use recreational programs. The evaluation of the program carried out in 2019 showed that the largest number of users of the Gerontology Centres, 69% of them, use sports and recreational activities. With the aim of presenting the programs and activities that exist in the area of the city, the City of Zagreb has been organizing a recognizable event called the Gerontological Party for 19 years. Also, it is important to highlight the cooperation with civil society organizations whose programs are financed in the field of social and humanitarian

meaning and health promotion. In the past two years of the COVID-19 pandemic, exactly such programs/projects have helped our elderly citizens to stay active and preserve their mental health."

Mr. Stjepan Heimer spoke about the physiological changes during aging and the role of physical activity:

"Numerous physiological functions decline with aging; however, the contemporary view of the aging process distinguishes between the decline in function and resilience attributable to biological aging from that attributable to disuse. Low levels of physical activity and fitness are primary determinants of the decline in metabolic and functional reserve observed in old age, and therefore accumulated sedentary behavior among older adults is a significant risk to personal and public health."

Ms. Dubravka Kalinić in her lecture spoke about the psychosocial characteristics of elderly people. Here is her summary:

"The third age is a period of decline in psychophysical abilities. Old age is not only marked by physical and organic changes, but also by specific psychosocial characteristics. Important psycho-social problems that accompany old age are retirement, death of a spouse, chronic diseases, financial difficulties, social isolation and diseases that lead to social and physical inactivity.

Maintaining social relationships is key to promoting psychological and physical well-being in old age. Involvement in satisfying social relationships is associated with less functional decline, reduced risk of cardiovascular disease, and reduced mortality. Social interactions contribute to emotional well-being and quality of life."

In the next lecture, Mr. Vladimir Jorga reflected on the new understanding of aging. Here is a summary of his lecture:

"The past twenty years the scientific understanding and view of aging has changed drastically. This was made possible by the advancements in biomedical and sport sciences and with the mapping of human genome. Today we have access to enormous amounts of data that allows us to better understand aging processes at the cellular level, and use this knowledge to improve the quality of life for aging world population. The primary goal is no longer to achieve longer lifespan but rather to accomplish longer „health span". The pillars of this new health paradigm are DNA and its repair mechanism, immune system, microbiome, angiogenesis and regeneration. All of these pillars rest on key environmental epigenetic factors – diet and physical activity. We now know the extent of effect of physical exercise on cellular process in human body and more specifically on aging. An entire emerging field of „muscle-centric" aging, encompassing physical activity and health sciences (health kinesiology), is dedicated to the role of muscle exercise in maintaining mental and physical health vitality.

At present we know that muscle system is not only a locomotor organ but is also crucial for its endocrinological role. Dependening on the type of muscle tissue and type of physical activity (aerobic, anaerobic, resistant training, high intensity interval training) the muscle cells secret various different signaling biomolecules for receptors found in brain, liver, pancreas, gastrointestinal tract, heart and immune cells. Having the knowledge of the specificity of the signaling molecules and their effects (autocrine, paracrine, endocrine) we can customize different types of exercises for different age groups to accomplish optimal health. Most importantly strenght (resistance) training is now recommended for people of all ages and genders as it is key to prevention of muscle atrophy (sarcopenia), strength atrophy (dynapenia) and muscle contraction speed atrophy (kratopenia). To protect older people from injuries during heavy weight training there is a new method developed that uses blood flow restriction to maximise muscle gain with minimal weights. This method has made possible for people of all age groups to build and maintain their muscle strength and in doing achieve health and vitality at any age."

Mrs. Renata Kutnjak Kiš spoke about the "vital sign" and exercise prescription for the elderly. Here is her summary:

"The positive effects of physical activity and exercise on people's health have been irrefutably confirmed. People who lead an active life and meet the recommendations for physical activity and exercise live longer, are healthier and have a better quality of life. Therefore, the promotion of health-oriented physical activity should be one of the priority public health tasks, with the aim of reducing the global burden of chronic non-communicable diseases. Physical activity and exercise should be treated as medicine, and health professionals should advise every patient, especially the elderly, about the benefits of physical activity and, if necessary, give them a prescription for exercise. For the successful implementation of physical activity in the standard of health care services, it is necessary to include the verification of the level of physical activity in the electronic medical record, i.e. e-carton, and to ensure the availability of certified physical exercise programs in general and for certain diseases and conditions, with a strong connection between the health sector and of kinesiology and continuing education and up to the education of experts from both sectors. In Croatia, systematic work has been done on this for many years, and there are several examples of good practice."

Ms. Branislava Resanović in her lecture talked about the health examination before starting exercise:

"Determining health risk and recommending a health screening before engaging in physical activity is a procedure performed according to the American College of Sports Medicine (ACSM) guidelines and whose primary goal is to identify individuals who may be at risk for a primarily adverse exercise-related cardiovascular event.

In the Center for Preventive Medicine, as part of prescribing the "Green Prescription", preventive medical examinations are performed for recreational athletes. The task of the examination is to determine the current health status and reveal possible health risks associated with physical activity. The examination is aimed at determining those health and functional characteristics, which will enable the user and activity manager to choose the most appropriate health-oriented physical activities with the maximum reduction of unwanted events."

In her lecture, Ms. Maja Vukelja spoke about general and specific physical exercise programs for the elderly. Here is a summary of her lecture:

"Physical exercise has a positive effect on the quality of life of every individual, especially the elderly. Elderly people who exercise regularly will be independent of the help of others for longer periods of time. Through physical exercise, they will improve their strength, mobility and agility, which will reduce the risk of falls and fractures and will make them feel more confident and safer. Regular physical exercise throughout life will prevent or slow down the development of health problems that may occur due to age. Kinesiologists who perform physical exercise for the elderly have a serious and responsible job that aims at health-oriented physical exercise. This means that the physical exercise carried out by the trainer/kinesiologist must have a positive effect on the health of the person and must not endanger her in any way. In order for a physical exercise program to meet this criterion, it must be adapted to the people for whom it is intended as well as their health problems. It makes this program specific compared to all other regular physical exercise programs implemented in practice."

Mr. Hrvoje Radašević presented an example of cooperation between health system and PA centers for the elderly. Here is a summary of his lecture:

"The modern approach to the promotion of physical activity confirms the importance of the connection and cooperation between health sector and kinesiology sector in the comprehensive process of determining risks, prescribing and conducting physical activity in order to minimize the possible health risk of physical activity. Therefore, physical activity should be recognized and treated as a "vital sign" by the medical community, which should ask the question about the state of physical activity during each visit to the physician.

Cooperation between health system and kinesiology is most often called health kinesiology. Health kinesiology refers to a scientific, professional and organizational field that primarily refers to the application of physical activity for preventive, therapeutic and rehabilitation purposes, and connects public health, medicine and kinesiology.

In the last 10 years, the Teaching Institute for Public Health has made a step towards cooperation with the kinesiology sector, and since 2015, it has cooperated with centers that carry out physical activity for the elderly. Such cooperation proves to be mutually beneficial because if the components of exercise are adapted to the health and functional status of the elderly, physical activity and physical exercise will be safe for most people and will not pose a health risk. Therefore, it is necessary to further improve and encourage cooperation between physicians and kinesiologists in order to minimize the risk of physical exercise, especially in the elderly."

Ms. Ivana Aras presented a targeted kinesiology program to maintain balance in elderly people. Here is her summary:

"Physical activity and programmed exercising are an important factor in health prevention and wellbeing, especially in elderly. Maintaining balance is one of the basic physical functions necessary for a normal adult person's everyday life, working and self care. This function in general is expected to weaken in elderly, and the impairment can originate on different levels. The frequency of this pathology is such that it becomes a public health problem. Various types of exercising have been proven to be effective in preserving balance and reducing the risk of fall.

To investigate the connection between regular exercise and balance maintaining, the pilot project was conducted from june to october 2021, organized by Sport Union „Medveščak" and Polyclinic for rehabilitation of listening and speech SUVAG Zagreb. The study included 30 female members of Sport Union, who joined the 3 months programme of specific training designed for balance improvement. Stabilometry measurement was performed for all the participants before the beginning, as well as at the end of the programme. It was shown that results of the first measurement were already better than the population average. After 3 months of specific programmes, they were even better.

The study showed that regular recreational exercising preserves balance functioning in elderly, but specific, programmed training gives additional improvement."

At the very end of the conference, a pilot project, its results and recommendations for exercising the elderly suffering from osteoporosis, cardiovascular diseases or lower back pain were presented.

5.2. RECOMMENDATIONS FOR PHYSICAL EXERCISE FOR ELDERLY PEOPLE WITH OSTEOPOROSIS, CARDIOVASCULAR DISEASES AND LOWER BACK PAIN

OSTEOPOROSIS	
RECOMMENDATIONS FOR PHYSICAL EXERCISE	**WHAT TO AVOID**
• Exercise 3 times a week for 30 minutes with a tendency towards daily exercise; • Emphasis on coordination, balance and strengthening of the muscles of the whole body, especially the legs and back muscles; • Aerobic exercises with load (slightly faster walking, walking through water, light aerobics, dancing, Nordic walking...); • Stretching exercises and increasing the range of motion (emphasis on stretching the pectoralis and muscles of the back of the thigh); • Load exercises and isometric exercises (with manual resistance, with the help of weights). *(Gnjidić, 2010; Sunara, 2018; Škes, 2014; Hanih, 2015; Jinek, 2012; Dahm & Smith, 2010)*	• High-intensity exercises (jumping, running...) • Striking movements; • Bending backwards exercises; • Forward swings that involve touching the fingers; • Exercise on a rowing machine; • Rotations in the spine (golf, tennis...). • Swimming and cycling are good cardiovascular training, but they are not as useful for improving bone health. *(Škes, 2014; Gnjidić, 2010; Sunara, 2018; ACSM, 2017; Dahm & Smith, 2010)*

LOWER BACK PAIN	
RECOMMENDATIONS FOR PHYSICAL EXERCISE	**WHAT TO AVOID**
• Stabilization exercises proved superior to other intervention methods – they should be performed for 10-15 seconds 12-15 repetitions with a slight exhalation during contraction; • Emphasis on the musculature of the anterior abdominal wall, paravertebral musculature, gluteal muscles and musculature of the pelvic-thigh hoop; • educate clients about the correct posture; • Nordic walking = building stable back musculature, better spinal mobility and better posture. *(McGill, 2015; Brdar, 2017; Jajić, 1984; Kosinac, 2005; Laslo, 2016)*	• Be careful with excessive hyperflexion and rotation; • The use of dynamic exercises in the acute phase can lead to a worsening of symptoms due to an increase in intradisk pressure = dynamic exercises must be introduced gradually and periodically; • Avoid bending and buckling of the trunk; • Avoid carrying heavy loads. *(Bičanić, 2015; Janjić, 1984; Grazio i sur., 2012).*

CARDIOVASCULAR DISEASES	
RECOMMENDATIONS FOR PHYSICAL EXERCISE	**WHAT TO AVOID**
• 30-45 minutes of moderate-intensity physical activity (exertion level of 5 or 6 on a 10-point scale) at least 4 times a week with a tendency to exercise daily; • The most important aerobic exercise of low to moderate intensity (walking, cycling, hiking, swimming...); • Resistance exercises = moderate muscular endurance exercises . *(Maćešić & Špehar, 2014; Mijolović, 2014; Mišigoj-Duraković i sur., 2018; ACSM, 2017)*	• Isometric and static exercises; • In some researches anaerobic exercises showed no improvement in respiratory and circulatory system functions, while other researches suggests the best effect of a combination of aerobic and resistance exercises, but with a recommendation that resistance training should generaly be moderate. *(Kasović i sur, 2004; Mišigoj-Duraković i sur., 2018; Matković & Ružić, 2009; Mijolović, 2014; Pruthy, 2004; ACSM, 2017)*