

The Effect of Recreational Sports on Human Health

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Abstract: *The lifestyle of modern industrial societies dictates limited movement and increasingly reduced physical burden. As a result, people feel physical discomfort in many ways. In this situation, physical activity is very important for maintaining and creating functionality, well-being and quality of life. The ultimate goal of this research is the impact of sports / mass sports on human health. The method adopted for the study was a literature review. Based on the present study, it is found that sports / mass sports not only improve physical efficiency, but also increase mental and social well-being. The natural basis for a self-determined and autonomous life is achieved through sports, because it prepares the process of constant adaptation to changing life situations. Therefore, motor activity can become a life aid and mobility can be considered as a basis for better quality of life. Regular physical activity goes hand in hand with broad and varied adaptations of the human body. These include the cardiopulmonary system, the metabolism, the endocrine system, the immune system, the muscular system and the skeletal system, as well as the brain and mental function. Human physical and mental well-being are more affected by subjectively experienced well-being than by the actual state of health. The subjective state of health depends on the physical well-being on the one hand, and on the mental state of the individual on the other. Regular exercise, which sets normal and effective lures, and the manner and degree of physical effort that it requires remain among the necessary limits, contributes to the improvement and stabilization of the state of health. Early initiation of regular physical activity and its lifelong continuation is particularly effective and is therefore recommended in terms of health. In addition, sports / mass sports can become the sources for other experiences such as social, physical or associated with nature.*

Key words: health, sports, mass sports

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I. Introduction

If the attraction of athletic exertion, in the sense of a sport for maintaining health and a widespread sport in orientation and quantity, corresponds to the central factors of physical efficiency endurance, strength and mobility, the ability of physical function is maintained, improved or restored. This creates another essential basis for maintaining or restoring overall well-being and quality of life. Especially in old age, exercise offers the possibility of maintaining physical fitness and autonomy to a greater extent, which makes life easier for older people. With regular physical exertion in doses, a person's basic mood can be affected forever. In addition, sporting activities can be sources for other experiences such as social, physical or associated with nature. Sports not only improve physical efficiency, but also increase mental and social well-being (Brehm & Kurz, 1988). Digel (1990) states that the meaning of the concept of sports derives mainly from their use. Schlicht and Strauss (2003) summarize sports into 5 categories:

- The model of competitive sports, which is found in top and widespread sports and its 'base' is the sports club.
- The model of commercialized sports, which is customer-oriented and meets the needs for good physical condition, entertainment and well-being, and is provided by studios and tourism businesses.
- The model of healthcare sports, which is found and operated in many healthcare services that aim to increase, maintain or restore health.
- The model of alternative sports with the various movement scenes such as Inline-Skating, Streetball, Rafting, cycling or similar sports activities.
- The model of rejuvenating sports, such as Tai-Chi-Quan and similar forms of movement from the Far East.

The individual perception of sports changes with age, current state of health, social relationships, professional requirements, so it is subject to constant change and evolution that can range from high-performance sports and infant swimming to the point of pushing a wheelchair, according to the words of someone with little physical development. For a long time, the saying "exercise is health" was unquestionable, as the great actions of the

German Sports Federation have always emphasized to the public. Singer (2000, 327) summarizes various studies on the effect of athletic activity and points out that "athletic activity of any kind has a positive effect on the usual well-being of many groups of individuals." "Those that exercise sports are considered to be self-conscious, self-controlled, disciplined and hard-working" (Bette, 2001, 7). Piel (2001, 69) states the following about importance: "Health, fitness and integrity are the socially acceptable characteristics of a dynamic, young, successful person, a person who has remained young, a person who remains young». Abele, Brehm, and Gall (1991) refer to some possible framework conditions for athletic activities that could enhance well-being (hence health):

- Activities should, as far as possible, include multifaceted requirements for endurance, strength and mobility.
- The intensity of the physical load should be precautionary aimed at effective loads at a stress level that is subjectively experienced as moderate. But especially at the beginning of the program, for the normal adjustment process, significant marginal values must not be exceeded in favour of the desired psychological effects.
- Participants must consider that the sporting activity makes sense both in the short and in the long term.
- The programs should be designed in such a way that the physical exertion required is pleasant for the individual, and everyone who participates can be satisfied with their own effort.

The goal is a lasting "commitment to sports". Muecke (1986, 202) states: "Health motivation probably is a relatively effective motivator for (re-) starting athletic activity and participation in a club. However, it is not powerful enough to make sporting exercise habitual as a steady behaviour standard. "The natural basis for a self-determined and autonomous life is achieved through sports, because it prepares the process of constant adaptation to changing life situations. Therefore, motor activity can be a life aid and mobility can be considered as a basis for the quality of life. Mobility includes the ability to coordinate, relax muscles, adapt to growth, regulate body weight, and resist infections, and furthermore strength, flexibility and endurance skills. These skills fall under certain individual systems of our body. So e.g. endurance belongs to the cardio-circulatory system, coordination to the central nervous system. Even if only one system suffers damage, mobility can be severely reduced. This results in the demand for a sport for the elderly, which promotes and supports all individual parts equally and comprehensively shapes motor skills (Meusel, 1990). Gebhard and Hertle (1980) are of the same opinion that the subjective state of health can be improved by athletic activity and that for the active behaviour in leisure time it plays a greater role than the objective state of health. Physical and mental well-being is more affected by subjectively experienced well-being than by the actual state of health. According to the authors, the subjective state of health depends on the physical well-being on the one hand, and on the mental state of the individual on the other. Kapustin (1992), as well, is convinced that regular exercise, which sets normal and effective lures, and the manner and degree of physical effort that it requires remain among the necessary limits, contributes to the improvement and stabilization of the state of health.

General endurance training has multifaceted positive effects. On the one hand it is the basis for physical efficiency and on the other hand it guarantees an optimal protection from the numerous effects of diseases due to lack of movement. We can report the following positive results in detail:

- Optimization of heart functions
- Conservation of heart function
- Strengthening the immune system
- Optimization of metabolism
- Adaptations at the vegetative nervous level
- Increasing efficiency and well-being

In summary, we can argue, scientifically substantiated, that sport can improve and maintain the subjective and objective state of health, where the subjective well-being is more crucial to the condition of human life than the objectively established health. Improving or maintaining good health gives a person quality of life. Hofmann (1980) even claims that health is of paramount importance to humans and is the ultimate goal. Similarly, a disability results in a change of physical integrity and well-being, and therefore changes one's self-image. The emotional balance is then shaken. There is insecurity as regards the social role and the duties in society and in the social environment (Bach, Hiedl, & Strothmann, 1997). From the point of view of health promotion, it is certainly very pleasant when an initial health incentive is increasingly being replaced by the psychological-social motivation of mental balance, counterbalance and general well-being, without the acceptance of physiological damages.

II. Methodology

The present study is a bibliographical review that presents the critical points of the existing knowledge about the subject "the Effect of Recreational Sports on Human Health". There is no specialized and comprehensive research in this area. This study attempts to fill this gap and may be a useful aid for those who will make similar efforts in the future. The main objective of the bibliographical review is to integrate the study into the "body" of the relevant literature. The review of the current study refers to clearly formulated questions and uses systematic and explicit criteria for the critical analysis of a published paper by summarizing, sorting, grouping and comparing.

Bibliographic Review Study

The effect of physical activity on human health

The concept of health is subject to a dynamic change. For a long time, there was a minimalist definition, according to which health was identified with the lack of disease. The World Health Organization (WHO) today defines health as a state of extensive physical, mental and social well-being. Various health care offerings - at least in Western industrialized countries - need to be adapted to this broad definition of the concept of health. In recent decades, thanks to pioneering pharmaceutical and invasive treatment processes, there has been impressive progress in the diagnosis and treatment of various diseases. The consequence of this was a further increase in life expectancy. However, diseases still exist, and they not only reduce significantly the subjective quality of life, but also greatly burden the socio-economic system. These include a number of the so-called diseases of civilization, which are increasing massively and whose cause is also associated with lack of physical activity. In addition to cardio-circulatory diseases, diabetes in particular, carbohydrate and fat metabolism disorders, as well as diseases of the musculoskeletal system should be mentioned in this regard. Neurological and mental performance is also affected. Lack of movement accelerates the reduction of bodily functions, such as e.g. observation, attention, awakening. Lack of physical activity is now considered a definite risk factor. As regards the health system, according to estimations in the USA, most deaths are caused by smoking, while in the second place is the lack of movement. Similar numbers most probably apply also in Germany. Two-thirds of all Germans do not get enough physical activity. Therefore, it is more important to develop and implement effective preventive strategies based on movement, which today have acquired new importance in the sense of lifestyle management. So, sports and physical activity became very important. Regular physical activity achieves a tremendous potential for promoting health, which is currently not nearly exhausted. Public debates on these issues, however, often take place without the knowledge of scientific evidence, despite the demand for data-driven Medicine.

The aim of this research is to present the important physiological, healthy effects of regular physical / athletic activity. Essentially, in the sense of physical activity, one means any movement produced by skeletal muscle, which results in an increase in energy consumption. Physical activity is a workout that has a positive effect on health, only if it is planned, structured, purposeful and regular. A physical activity is considered regular, if it is performed at least three days a week. Methodically, a distinction is often made between light, moderate, and heavy physical activity (see Table 1). The effects of adequate regular physical activity on humans are widespread. The health benefit depends decisively on the form, duration and intensity of the physical activity. The regular exercise of the muscles and the activation of the offered energy during the physical load are decisive for the effect on health. Scientific research has better documented the positive effects of endurance forms of movement, such as e.g. walking, running, cycling, etc. in aerobic metabolism, therefore without "hyper-acidification" from lactic acid salt. As far as strength training is concerned, there is currently much less scientific research. From the aspect of health, methodically correct execution is crucial (Zarotis et al., 2011).

Table 1

Examples of light, moderate and heavy physical activity	
Intensity	Example
Light physical activity	Slow walking at a rate of <4 km / h
Moderate physical activity	Walking at a rate of 4-7 km / h
Heavy physical activity	Various sports and hard manual work

Physical activity affects health only if it is planned, structured, purposeful and regular.

As part of these studies in healthy children and adults of all ages, moderate-intensity aerobic exercise and the related improvement of the cardiorespiratory performance were associated with a significant reduction in the overall mortality risk with a dose-effect ratio. However, it was a prerequisite for physical or athletic activities to take place as regular and long-term training. Daily activities and short stages of physical burden in everyday life, which consume overall more energy, were found also to have a protective effect according to

various studies. However, they needed additional directed physical activity in the sense of the aforementioned training.

Normal effects of regular physical activity

Regular endurance physical activity has been an integral part of almost the entire evolutionary history of mankind. Therefore, it is understood that similar activities in the sense of a medical training go hand in hand with broad and differentiated adaptations of the human body. These include the cardiopulmonary system, the metabolism, the endocrine system, the immune system, the muscular system and the skeletal system, as well as the brain and mental function. These mechanisms of adaptation functionally lead to an increase of physical and cognitive efficiency (Zarotis et al., 2011).

Cardiopulmonary system

The effects on the cardiovascular system as well as the function of the lungs are amongst the predominant protective factors, provided by regular physical exercise. They are characterized by a decrease in heart rate both at rest and during physical exertion, improved myocardial perfusion, and increased myocardial oxygenation. Also, stroke volume and cardiac output are increased. Overall, this reduces the workload of the heart. Regarding the effects on the vascular system, the elasticity of arterial blood vessels improves, blood pressure drops and the perfusion of the flow path becomes better (Zarotis et al., 2011).

Metabolism

Physical exercise also affects fat and sugar metabolism in a similarly important way. Endurance training increases the enzymatic breakdown of neutral fats into glycerine and free fatty acids, a process called lipolysis, important for providing energy when the endurance load increases. Lipolysis, on the one hand, breaks down adipose tissue and on the other hand, affects favourably the levels of fat in the blood. Thus, among other things, the very dense lipoproteins increase, particularly the HDL subcategory, and there is a favourable change in LDL cholesterol atherogenic molecules. Also, insulin sensitivity increases and glucose transfer to skeletal muscle cells becomes more efficient. In this way, the abnormal cycle of metabolic syndrome can be effectively broken (Zarotis et al., 2011).

Endocrine system

The effects on the endocrine system are complex and have not been thoroughly investigated yet. Sports activity certainly affects the normal hormonal cycle in many ways. Thus, it has been proven that physical exercise, among other things, activates the pituitary-cortical axis of the adrenal glands as a result of increased cortisol release from the adrenal cortex. Also, regular exercise, accompanied by improved endurance training, reduces the increase of the stress hormones, norepinephrine and adrenaline, under conditions of physical fatigue. Various studies show that this is also associated with a reduced release of stress hormones in response to mentally stressful factors, in the sense of improved resistance to stress. In terms of health, endurance exercise has also an important effect on insulin secretion. Therefore, the working muscles use glucose more effectively and the pancreas has to produce less insulin. This can reduce the often-elevated insulin levels in the blood in the context of the metabolic syndrome. It is generally accepted that the above hormonal effects contribute significantly to the positive results of physical activity. Regular exercise increases resistance to stressful, psychosocial situations. Recent research suggests that a combination of moderate endurance and strength training increases the release of male sex hormones. On the contrary, excessive sports activity can significantly reduce the release of male as well as female sex hormones (Zarotis et al., 2011).

Immune system

There is no doubt that regular, moderate resistance training stimulates the immune system. It strengthens the body's whole defence system, consequently, the resistance to bacterial and viral infections increases. We assume that general immune activation - at least in part - is responsible for the anti-cancer effects of athletic activity. Besides, the phenomenon of the so-called open-window is important from a practical point of view. It is characterized by a significant decrease in immune capacity immediately after intensive athletic activity (Zarotis et al., 2011).

Cognition and psyche

Endurance training causes complex functional and structural changes in the central nervous system. Thus, even low-intensity movements help to increase the brain's perfusion in a selective manner. In particular, there is a positive effect on the areas of the brain near the forehead. Additionally, they benefit the connections and networking of central nervous structures. This is especially important during the development of a child's brain. The release of endorphins during muscle exercise combined with the regulation of intracerebral serotonin

release leads to permanent mood improvement and – together with repressing the levels of catecholamine – to increased resistance to psychosocial stress factors (Zarotis et al., 2011).

Musculoskeletal system

Regular training causes extensive functional and morphological changes in working muscles as well as the skeletal system, resulting in increased performance and health-protective adaptations. Thus, regular training prevents muscle mass from degrading and at the same time improves neuromuscular coordination. Without intervention, after the age of 30 years, muscle mass decreases by 0.5-1.00% annually. Also, the activity of enzymes which provide cells with energy as well as the volume of mitochondria increases. Furthermore, glucose and free fatty acid transport efficiency also increases. As a result, the endurance and strength of the working muscles and the metabolism of fat and sugar are favourably affected. Additional strength training also reinforces the bone structure and joint cartilage, thickens and fixes the tendon and ligament fibres. Given the increasing life expectancy of the general population, these effects are important for preventive medicine and should not be underestimated (Zarotis et al., 2011).

Physical exercise in primary prevention - scientific data

In recent years, a series of landmark studies have been conducted to scientifically assess the potential of regular physical exercise for health in the sense of medical training. Summarizing the various epidemiological studies proves both a reduction in overall mortality by about 35% and a reduction in various diseases. Particularly convincing and broad are the data on the reduction of cardio-circulatory diseases and the resulting deaths. Besides, there are particularly encouraging data regarding the prevention of other diseases. The following are some of the primary prevention studies performed in this context (Zarotis et al., 2011).

Cardiovascular diseases

Cardiovascular diseases are, as in the past, one of the leading causes of death and disease in Germany despite impressive therapeutic advances. Judging by demographic developments in western industrialized countries, we don't expect this situation to improve in the coming years. Therefore, it is extremely necessary to develop effective preventive strategies. A large number of epidemiological studies in the field of primary prevention have shown that athletic/physical activity reduces cardiovascular mortality and morbidity considerably, regardless of other risk factors. Thus, it has been proved that burning an additional 2,000-3,000 kcal per week on physical activity reduces the frequency of myocardial infarction significantly. It is worth noting that the form of caloric consumption played an inferior role. Therefore, this result could be achieved e.g. by climbing stairs or walking. A similar effect was found for women in the study of nurse's health (Manson JE, HU FB, Rich-Edwards JW et al. 1999). During the eight-year observation, the study confirmed that moderate walking or intense aerobic exercise reduced cardiovascular incidents by 35% or 37%, respectively. The risk of myocardial infarction and stroke declined. This can be significantly enhanced by nicotine withdrawal, dietary change and weight loss. Thus, Stampfer and his colleagues in the same research group showed that broad lifestyle changes reduced the risk of coronary heart disease by 83% (Stampfer MJ, Frank HB, Manson JE et al. 2000). Blair et al. investigated the correlations between physical efficacy and risk of morbidity or cardiovascular disease. For this purpose, the individuals without previous cardiovascular or malignant diseases, included in the study, were divided into 3 categories of performance. The authors showed that physical activity and improved performance not only significantly reduce overall mortality but also decrease the risk of cardiovascular disease, particularly myocardial infarction and stroke, as well as cancer in men and women (Blair SN, Kohl HW, Barlow CE et al. 1995). Within the observation period, the risk of morbidity increased by a factor of 3 (men) and 5 (women) in the group with the lowest efficiency. This was attributed partially to increased cardiovascular disease. Besides, cancer risk increased by a factor of 4 for men and 16 for women. For women, it was primarily breast cancer, while for men it was mainly prostate and colon cancer. It is not yet clear whether good physical efficiency, objectively judged for example with a fatigue test, is the determining factor or physical activity itself. It is certain, however, that endurance efficiency can be judged more objectively by the degree of physical activity. A Finnish study of twins examined to what extent physical efficiency is determined genetically (Kujala UM, Kaprio J, Sarna S et al. 1998). This aspiring study of about 8000 healthy twin pairs showed that cardiovascular disease risk was decreased for those who exercised regularly compared to those who didn't at all. Specifically, by 43% for those who trained more than 6 times per month and by 29% for those who trained less than that. This protective effect depended on frequency and intensity of training, but not on genetic status.

Metabolic syndrome

The metabolic syndrome is characterized by a condition in which there is excessive weight, fat and sugar metabolism disorders as well as hypertension. The individual characteristics are in themselves serious

risk factors for the occurrence of cardio-circulatory and other associated diseases, but cumulatively they are a dynamic of high risk (called risk package)

Lack of exercise and poor diet are the most important factors in the development of the metabolic syndrome.

Many studies have clearly shown that although genetic factors can have a beneficial effect on the presence of the metabolic syndrome, the determinants of lifestyle are crucial: lack of exercise and poor diet. In Germany the 15-20% of the adult population suffers from this syndrome. Physical activity for endurance, thanks to its physiological effects, can intervene causally in Circulus virtuosos produced by the metabolic syndrome. Due to the enormous importance of the individual factors, the preventive effects of physical activity are listed below separately.

Hypertension

Hypertension (arterial hypertension) plays a special role in the range of cardiovascular diseases. It is one of the most common chronic diseases in Germany and a major risk factor for several comorbidities, including myocardial infarction and stroke. Current research shows that hypertension, especially for predisposed, overweight people, can be significantly reduced with regular exercise. The analysis of the studies carried out to date confirms that physical/athletic endurance activity can reduce systolic pressure by 7-9 mmHg and diastolic by 5-7 mmHg. The training regimen consisted of walking, running and cycling for 2-3 hours per week. In most studies, the maximum effect was achieved after about 10 weeks. The higher the initial blood pressure, the greater it was reduced. Regarding the effectiveness of anti-hypertensive kinesiotherapy, there were no significant differences due to gender or age. However, it is pointed out that in general, because of the methodology, a group with inactive drugs (Placebo) was missing and mainly middle-aged men were examined (Zarotis et al., 2011).

Type 2 diabetes

Type 2 diabetes (DM) is a culture related disease, which is mainly attributed to genetic factors, especially in combination with obesity and lack of physical activity. Correspondingly, the incidence of type 2 diabetes is rapidly increasing. In Germany alone, there are currently at least 4 million patients. The condition is associated with many complications, primarily, damage to blood vessels and the autonomic nervous system. Increasing physical activity in the context of a broad lifestyle change is of particular importance for treatment. Thus, a health study performed on 84,941 nurses in the USA (Hu FB, Manson JE, Stampfer MJ et al. 2001), showed that with extensive lifestyle changes, such as achieving normal weight, adopting a healthy diet, with a high percentage of plant materials and polyunsaturated fatty acids, as well as exercising for at least 30 minutes daily, it was possible to reduce the presence of type 2 diabetes substantially. These findings are supported by another extensive study, which showed that regular exercise as well as providing nutritional advice to overweight people with pre-existing sugar utilization disorder (glucose tolerance) also reduced the recurrence of type 2 diabetes significantly. The Diabetes Prevention Program Research Group (2002) caused a further sensation. After a 2,8-year study, it showed that lifestyle changes based on movement could prevent the recurrence of type 2 diabetes more effectively than drug therapy with Metformin. Therefore, physical exercise is beneficial, even for the primary prevention of type 2 diabetes.

Fat metabolism disorders

Fat metabolism disorders as cardiovascular risk factors also play an important role and in particular, they are responsible for the development of atherogenic diseases such as myocardial infarction and stroke. In the population of Western industrialized countries, the so-called secondary fat metabolism disorders predominate in the context of the metabolic syndrome. These are mainly caused by the lifestyle, i.e. lack of movement and poor diet play equally a harmful role. The positive effect of physical activity on the prevention of metabolic disorders has been widely documented. In particular, various studies have shown protective effects from endurance sports activities, which require a weekly energy intake of 2000-3000 kcal from physical exercise depending on the cardiovascular protective effect. It should be noted that the best results are achieved by combining kinesiotherapy with dietary interventions (Zarotis et al., 2011).

Obesity

Regular endurance physical exercise has a very well-documented preventive effect on the presence of obesity. In particular, it reduces the risk of the so-called abdominal obesity, which is extremely harmful to health. Less certain are the results of exclusive physical exercise in weight loss. For this purpose, in most cases a combination of dietary measures is needed. Both strategies complement each other and work together (Zarotis et al., 2011).

Cognitive dysfunction

Maintaining cognitive efficiency as much as possible throughout life is very important for an independent and qualitative life. The reduction in cognitive efficiency is caused by structural and functional changes in the brain. Recent findings suggest that regular exercise significantly reduces the risk of developing cognitive impairment. Two new studies by the United Nations demonstrate empirically the direct correlation between physical exercise and cognitive ability - in this case in older women: for a period of 2 years, scientists followed the lives of more than 16,000 former nurses. At the beginning of the study, the women were between 70 and 81 years old and did not show signs of dementia. In the course of the research, it was proved that physically active women were cognitively more efficient than their inactive colleagues. Another study, in which participated about 2,300 healthy men between the ages of 71 and 93, came to a similar conclusion. In a period of 7 years, around 160 of those who participated in the study suffered from dementia, in most cases Alzheimer's. According to the researchers, physically inactive people were affected much more often than active people. Men, who walked less than 400 meters daily, were almost twice as likely to develop dementia in comparison to those that participated in the study and walked more than 3 kilometres daily (Zarotis et al., 2011).

Physical activity in childhood

Lifestyle diseases start in childhood and adolescence. In particular, the combination of lack of exercise and poor nutrition at this age leads to an increasing prevalence of obesity and metabolic syndrome, with all the consequences regarding health as well as psychosocial consequences such as insecurity and isolation. This makes it imperative to take timely precautionary measures. In addition to programs for overweight children, the curriculum at school oriented at healthcare should play an important role as well. In this regard, physical activity in all its variations plays a key role: it is necessary for the development of children and adolescents. Movement is essential for the development of healthy and productive children and young people. It is necessary not only for physical but also for cognitive development: it promotes learning ability, learning skills and psychosocial well-being. With movement, children perceive, conquer and expand their world, and furthermore they gain self-control and self-esteem. Motor ability is a prerequisite for being able to participate in most social areas. This does not concern only sports. The basis is set in childhood: children that have not learned at a young age to swim, ride a bike or catch a ball, later in life find it difficult to engage themselves in sports and have a physically active life. Thus, they lack an important condition for social integration and social participation (Zarotis et al., 2011).

Physical activity in old age

Thanks to hygiene, Medicine and prosperity, the life expectancy of Germans has increased by more than 30 years in the last hundred years. Today, a 70-year-old man is on average about 5 years younger as regards his physical and mental performance compared to a man of the same age in 1980. Statistically today a 60-year-old man still has 20 years of life ahead of him, while a 60-year-old woman has 24 more years. According to the German Parliament's Research Committee on demographic change, an "elderly" person often still has more than 25 years to live: The 60-79 age group is referred to by the committee as "older people", the 80-99 age group is classified as "elderly" and the persons over 100 years of age are classified as "centenarian". According to this definition, today a quarter of Germans belong to the "older people". In the year 2050 this percentage will exceed 40%. Physical activity is the key to good physical and mental well-being in old age (Zarotis et al., 2011).

Physical activity is the key to good physical and mental condition in old age.

However, almost half of the people over the age of 50 do not exercise at all, while 80% of the people over the age of 70 do not exercise at all. Therefore, only 10-15% of older people exercise regularly - as Sports Science requires. The positive effects of exercise on older people are undeniable. Those who exercise regularly have higher performance, are more flexible and more confident than people who do not exercise at all. Studies show that in a comparison between peers, physically active older people feel better about their health and respectively trust themselves more. For people over the age of 55, the desire for good physical and mental condition is the most important commodity in life, even more than wealth or independence. Nevertheless, in this period of life, it is crucial to complete the endurance training with coordination and muscle strengthening exercises. Only by expanding the range of motion can age-related functional impairments be effectively slowed down or avoided (Zarotis et al., 2011).

Practical guidelines for medical training

So which form of physical activity is best in terms of health? Most of the time, the predominance of dynamic (cycling, swimming, running, etc.) over static forms of training (strength sports) is accepted. Endurance training brings the above beneficial physiological results like no other major motor form of training.

At the same time, as a rule, these are sport types, the exercise of which can be easily adjusted. Nevertheless, a complementary strength training is increasingly considered to have positive results, that is in the right dose and industrially well-executed with an intensity of up to 40-50% of maximum strength in the sense of a multifaceted model. Basically, in each type of sport, there must be individual athletic-medical advice regarding the appropriate degree of physical burden as well as the individual optimal intensity and frequency of execution. According to modern recommendations, one should exercise for at least 30 minutes with moderate intensity as many days a week as possible, preferably daily. Respectively, the recommendations of the sports-medical companies formulate the basic principle "Better slower and longer". There the intensity is set at 3-6 metabolic units (METS) and corresponds to a consumption of about 4-7 kcal / minute. For example, this corresponds to a 2-3 km walk in 30 minutes. In addition, many newer studies have shown that even non-intensive workouts, especially endurance sports, are important for health. The increased consumption of calories due to muscle work obviously has a central place in the prevention of diseases due to lack of movement. That can be achieved, e.g. and in the form of regular increased daily activities. Such knowledge is particularly important for the kinesiotherapy of patients at risk, because this portion of patients, due to their limited fatigue capacity, are often unable to engage in athletic activity in the original sense. At this point, in addition to reducing the risk, improving the quality of life also plays an important role, which contributes significantly to the long-term continuation of all measures (Zarotis et al., 2011).

III. Conclusion

Health is perceived as an event of processes, which is formed in the current social and individual context. Mental, physical, and social aspects are important in describing health. Health and illness must be considered (physically, mentally, and socially) the opposites of a multidimensional continuum of health-illness, in which a person can be placed at a particular time. This 'momentary depiction' of health is the result of a dynamic balance (Balance) between the individual with his/her protective factors and the demands of his/her socio-ecological environment.

Researchers need to agree on processes that demonstrate mental well-being, fitness, social relationships and the ability to function in everyday life. This condition is not static, thus stable once and for all. It is being restored anew with the constant interaction of man and the environment. It is therefore the result of an ongoing process in which there is a constant interaction between people and their environment. On the one hand we have the adaptation of individuals to their environment and on the other hand the assimilation of the environment with the people it influences. If a state is achieved and maintained in which people can develop their life and experience physical, mental and social well-being, then they are considered "healthy". Where this condition is not achieved, the person is considered "sick." So, a great deal of scientific research shows that regular sports physical activity has tremendous potential in terms of maintaining a person's physical and mental health at all stages of that person's life. Biological mechanisms are complex and affect almost all organ systems. The health benefit depends significantly on the form, duration and intensity of the physical activity. Forms of endurance motion are recommended such as e.g. walking, running, cycling, etc. of moderate intensity for at least 2 times a week for 30-60 minutes each time. In addition, moderate strength training should be added that should include all major muscle groups. Early initiation of regular physical activity and its uninterrupted, lifelong continuation is particularly effective and is therefore recommended in terms of health (Zarotis et al., 2011).

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