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Motto:

“Exercise is a sequence of movements that converts fats, carbohydrates and proteins into health, independence and self-confidence” (from Prof. Rehor e-mail correspondence)

The new number of the scientific journal “ActaSalus Vitae” is oriented on problematic of physical activities in the stress and tension management. Stress is a natural part of life and occurs whenever there are significant changes in our live, whether positive or negative. Stress situations, which are “challenge” and “positive”, play very important role in personal and group development and present a high value for life in human society. But when stress occurs in amounts that individuals cannot cope, start complications in mental and physical health. Present manuscripts accent that stress factor may be also a lack of exercise, e.g. hypo-kinesis. In the research analyses oriented on school children were found out increasing of inability to concentrate, irritation, aggression, because resistance of children to stress (especially to stress from lack of movement) is lower, then in adults. Just here is the relation with the used motto of Prof. Rehor, which motivated me so much in this foreword. Any adequate regular physical activity strengthens the skeletal and muscular system, improves the function of the cardiovascular system and strengthens the lungs. Positively influences human feelings that causes increased production of endorphins. Physical fitness (which can only develop physical activity) supports the healthy development of the organism, develops positive personality, enhances the performance of physical and mental activities, facilitates the release of tension and helps to mental balance.

On the other hand, in the background of stress problematic in young people, after the hypo-kinesis are classified neurotic disorders of sleep (late sleep, restless sleep, nightmares). Modes of analysis in non-sportsmen participants identified in 72 % disorders of the circadian rhythms (late sleep, interrupted sleep, lack of sleep). The principal manifestations were depression, hatefulness and anger, apathy, weakness and long-lasting headache. Researches in the wellness area stress the positive orientation in the individual active life style, development in beliefs about the sense of human health promotion.

Let me wish to all participating in the new issue of “Acta Salus Vitae” either authors, readers, editors, reviewers: Happy New Year full of Happiness, Good Health, Prosperity and Wellness development!

Assoc. Prof. Milada Krejčí, Ph.D.
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STRATEGIES OF MENTAL HEALTH PROMOTION IN YOUNG ATHLETES – EDUCATION TO WELLNESS

Milada Krejčí

Abstract: Basic strategies to promote mental health in young athletes develop human responsibility for the state of mental health. Knowledge and skills leading to the reduction or elimination of excessive mental and physical stress in daily life (not only in sport life) bring to young man the knowledge of “Self”, and a development of the potentials in sense of appropriate and real-life perspectives implementation. Mental health includes art to be aware of “Self” and own feelings, to have empathy to other people and be able to use the information contained therein. Education to wellness stresses the positive orientation in the individual life, development in beliefs about the sense of human life. Wellness becomes a part of the protection and promotion of mental health in young athletes with a tendency to initiate self-education. It contributes to the cultivation of young sportsmen actions and behaviour.

Key words: Young sportsmen; Mental health; Wellness; Circadian rhythms; Auto regulation techniques; Relaxation and Meditation; Breath regulation; Personal and social development;

1 Theoretical background

1.1 Problem of mental health promotion

Mental health promotes learning, working and participation in society. The level of mental health and well-being in the population is a key resource for the success of knowledge-based society and economy. However mental disorders are on the rise in the EU and in the whole word globally. According statistic review from 2008 – 2012 almost 50 million citizens in EU (about 11% of the population) are estimated to experience mental disorders, with women and men developing and exhibiting different symptoms. Depression is already the most prevalent health problem in many EU-Member States. Suicide remains a major cause of death. In the EU, there are about 58,000 suicides per year of which 75% are committed by men. Eight Member States are amongst the fifteen countries with the highest male suicide rates in the world. The mental health and well-being of citizens and groups, including all age groups, different genders, ethnic origins and socio-economic groups, needs
to be promoted based on targeted educational interventions that are sensitive to the diversity of the European population.

Daily biorhythm is a natural cycle of the organism, includes power maxima and minima, periods for rest. Bad day regime has resulted in sportsman prone to depression, cardiac and vascular disease, gastric neurosis, in the best case, one has a bad mood, is inefficient and tired. The negative effects are more pronounced in female than in male sportsmen and more in younger sportsmen than in older persons.

The definition of wellness (according WHO) presents wellness as: “an optimal state of health of individuals and groups. There are two focal concerns: the realization of the fullest potential of an individual physically, psychologically, socially, spiritually and economically, and the fulfilment of one’s role in the family, community, place of worship, workplace and other settings” (WHO, 2000). Wellness is defined as the principle by which individuals and groups of people learn to behave in a manner conducive to promotion, maintenance, or restoration of health. Deductively we can found out that wellness begins with human motivation to improve living conditions. The educational aim of wellness is to develop in social life a sense of responsibility for health - as individuals, as members of families and as society members. Implementation of mental health promotion techniques in a person's sport life, whether coach, trainer or sportsman, is targeted to actively promote good mental health.

The base of mental training is an internal attention, which can start with an observation of breathing process and consistent of the breath and movement. It helps effectively in a positive mood changes, control of emotions, esp. of anxiety, stage of fright, fear. Basis of release, as any jerkiness is a manifestation of repression experience and no fading, conflict situations. In the control of negative thoughts and ideas can help technique of "Self-Inquiry Meditation (Maheshwarananda, 2001). This technique presents a combination of relaxation and concentration techniques, which reduce stress and mental tension, develop self-esteem and satisfaction and evoke happiness. Just as a physical exercise manifests in physical fitness and muscle strength, similarly concentration enhances mental health (memory, reaction time, etc.) and self-control. Self-examination ("Self-Inquiry Meditation") develops freedom and inner peace, promotes intuition and empathy. It is a key technique to develop self-control and self-esteem, which is a strategy for mental health in young sportsmen. It shows that it is possible to live in the present moment. In this state of inner concentration gradually decrease emotional blocks, fears, phobias and anxiety.

This technique should know and use mainly coaches, tutors and trainers in their daily work. Work with young people is very intrinsically rewarding, because we can see the
benefits in action-- “to manage the life”. It means to lead the way to be healthy and able to fulfil goals in the sport life. It links to the circadian regime regulation and is expressed in the daily care of the release, sleep, nutrition, training regime, etc. The cycle of day and night is reflected as a rhythmic alternation, and thus the man rhythmically alternate mode of action of work and rest.

Fatigue signals in young sportsmen need to be eliminated through a rest. Fatigue presents a protective mechanism against stress. Tired sportsman is irritated, causes conflict and can be aggressive. When in the addition he was forced upon a regime and rest is not of his free choice, irritability and restlessness grows.

Sleep during the day will not replace lack of sleep at night. Only in the dark of night can be created melatonin - the hormone of the pineal gland, which is a signal for the body to asleep. But the efficacy of melatonin caffeinated drinks (coffee, tea, Coca-cola) and spicy foods reduce. Tiredness (especially physical) can help to asleep, but the sport training should be implicated minimally three hours before bedtime. We should pay attention to young sportsmen daily regime and to try to eliminate sleep problems by following guidelines:

- To reduce or eliminate the time spent in front of the screen;
- Reading sms, chatting, playing on computer have a negative impact on sleep and quality of sleep (the negative impact of "blue lights" and scrolling time falling asleep after midnight);
- To keep a weekly to monthly overview of not following a television, not played on computers, etc. with subsequent analysis and evaluation for the personal level of sleep hygiene.

Recent research has shown that people which are sitting very long time in front of the television or in front of the monitor can be significantly reduced of the sleep quality. The problem is that emit flashing ("blue" light) stimulates the activity of the brain, and if it brings in "combat readiness" and vice versa suppresses melatonin production. It is necessary for promoting and keeping of young sportsmen health and power to plan sport training activities in the morningtime or in the afternoon time - in any case not to late evening, otherwise the effect will be the opposite.

Sleep and circadian modulation control have an effect on the secretion of most hormones. Sleep not only affects hormones hypothalamic-pituitary axis, but also hormones control carbohydrate metabolism, appetite and fluid and electrolyte management. After falling asleep (during non-REM sleep) hypothalamus plays an important role along with the pineal
gland. Hormone which is involved significantly in the management of sleep and wakefulness is melatonin. The production of melatonin is influenced by the presence of light, diet and the use of certain types of drugs.

Melatonin is a "hormone of darkness", which is controlled by a light stimulus whose work begins to rise sharply in the dark, with a maximum value around the so-called subjective midnight (from about 21.00 to 2.00 pm). Currently, melatonin begins to be considered almost miraculous anti-aging middle (Harada et al, 2010, 2012; Nevšímalová 2008). Current research shows that secreted by the pineal hormone melatonin has an effect on specific clusters of neurons in the brain that trigger and induce sleep. Reducing the level of light in the outside world is a stimulus that activates the pineal gland to increase the secretion of the melatonin. Strong light melatonin secretion prevents the contrary.

The discrepancy between the course of alternating light and darkness, day regimen may produce lighter or very serious disorder. It is well known that such failures and the need to compensate for disturbances of circadian rhythm induces sudden displacement person in another time zone, for example during traveling to other continents. Therefore, athletes who participate in the international competitions are traveling from distant countries either immediately before the race, or better in sufficient time to make their circadian rhythm could fully cope with local conditions. Very adversely on the person may exhibit differences in synchronization of biological rhythms, especially in cases where delays arise from the activities of circadian rhythm, as is the case with shift workers shifts at work at night (such as learning, studying), when there was no activity shift in the night time, but it is not yet possible to affect the production of hormones (such as melatonin and cortisol), body temperature, etc. For such people over time increases the incidence of heart disease, digestive tract problems, sleep disorders and other problems. Disruption of circadian rhythms occur naturally in a large extent in such cases where the level and duration of daylight is sufficient to synchronize them, especially in the winter with a short day and in countries with higher latitude (Wada, Krejčí, Harada, et al, 2011).

This can still contribute to local conditions, such as high and dense development restricting access of natural light, all-day stay in rooms with insufficient daylight or with only artificial lighting, etc. A significant part of the population in such a deficit of daylight produced characteristic symptoms and problems, such as fatigue, drowsiness, decreased activity and performance, lethargy, body weight gain, headaches, etc. (Harada et al., 2007). These symptoms are referred as the “syndrome SAD” (seasonal affective disorder), which can be described as seasonal detuning organism. For example, in the U.S. total affects the expert
basis this syndrome in the period from October to March, on average, approximately 5% of the population, but in New York due to adverse local conditions (very high buildings) and higher latitudes, this share is about 10%. Difficulties arising in this syndrome can be removed or at least substantially reduce the regular action of artificial light with a high level and for a reasonable period of time (for the luminance in lux thousands and necessary residence time in the light depends on its level).

Sleep is the most natural way unlocking all current, as in consciousness in the course of registration, the gradual processing of all daily sensory stimuli. Sleep is an important part of human life. It is defined as the functional state of the organism, which is characterized by specific neurophysiological properties. Sleep is defined as a state of rest with minimal physical activity, when there is a limited perception; mental activity of the brain is quite different from the waking state (Nevšímalová, 2008). Sleep has several stages that are repeated throughout the night. Sleep cycles are manifested in different biochemical processes and in different bioelectrical activity. According to contemporary theories of sleep leads to changing telencefalic and rhombencefalic stages of sleep.

Sleep has many important functions. During the eight-hour sleep the two phases will replace up to five times. Sleep renews mental and physical functions and their quality responds to physiological and pathological changes in the organism. It is an active process during which there are changes in brain activity, appears specific mental activity - dreams. In adolescents has further significance for the healthy growth of the organism in young athletes. Sufficient and quality sleep is important for their good health, emotional and mental balance and performance. On the basis of polysomnographic characteristics can distinguish two kinds of sleep - the stage known as NREM sleep, and called paradoxical phase - called by rapid eye movements (rapid eye movement) sleep, REM. Both phases have different neurophysiological significance and their management are applied and different anatomical structures. Non-REM sleep is divided by stages, which are repeated many times during the night. Stage 0 refers to the time before sleep, when consciousness becomes diffuse, as in the case of meditation. There is a gradual mental relaxation, muscle relaxation, slowing the heart rate, breathing and contact with the environment is gradually blurs to disappear. During the first stages may appear strange dreamlike impressions and ideas, which are apparently released from the unconscious levels of the psyche. Stage 2 is no longer true sleep. Stage 3 is quite deep sleep. To record EEG shows long slow waves running at about four cycles per second (delta waves). These regularly slow delta waves are high in 20-50% of sleep a person record. Stage 3 and 4, it is the deepest sleep, in which the muscles are completely relaxed, breathing is slowed.
heartbeat as well and also decreases blood pressure and body temperature. Sleeping is almost immobile, regular breathing and unresponsive to conventional external stimuli. The quality and number of stages 3 and 4 have a decisive effect on the feeling rested and refreshed upon awakening (Nevšímalová, 2008).

The quality and length of sleep are very important factors in the quality of life. Affect physical and mental performance, physical and mental health. Sleep is essential for the quality of mental health. It is advantageous in terms of mental health fall asleep earlier in the evening and in the morning wake up sooner. In healthy adolescents and adults is the optimal time to sleep around 22.00. People called “evening type” have their temperature and maximum power shifted to later hours than the so-called “morning-type” people. Compliance with the lifestyle rhythms, which is genetically determined, promotes proper functioning of physiological functions of the body. The fresh feeling after waking decides representation of deep sleep (stage 3 and 4) during the night, but a very important factor is the number of past) full sleep cycles. Most often a person wakes up in the morning after the REM phase, which each sleep cycle concludes. After the REM phase one feels brisk, does he challenge to find, is now able to "start". Young sportsmen in a chronic sleep deprivation suffering from fatigue and may be more susceptible to infections, lose their effort and endurance, forfeited confusion and delusions. Nowadays, people sacrifice sleep because of a difference - work commitment, fun, worry, etc. Good quality of sleep is very important for the proper functioning and regeneration.

Examining of the quality of sleep is currently most widely used in the research area. Becomes the object of interest as the population of young athletes and college students (see the author's publications relating to cooperation in sleep research - Harada, Krejčí 2007-2011) in connection with the creation and production of melatonin and serotonin. Fořt (2005) states, that the description of the hormone melatonin effects is mined in the area of sport performance directly revolutionary. And not only that - it's an extremely important hormone for anyone. The problem is its wider use. According law in many countries is not permitted melatonin for sale in the form of food add. Melatonin molecule is chemically simple, arises from the essential amino acid tryptophan - way through serotonin. Melatonin production is highest in infants (which area reason, why they are sleeping too much), so this hormone in cooperation with the high production of growth hormone ensures rapid physical development. High production of melatonin is maintained in the range from one year up to about 15 years, followed by a rapid decline, so in the age of 50 years is one sixth of the original. With advancing age continues to drop, and its in correlation with insomnia and depression in the
elderly. However, melatonin production is adversely influenced by many factors, especially certain medicines. Melatonin is primarily a regulator of the so-called internal biological clock.

Melatonin is often referred to as "anti-aging hormone" because its production is minimized in elderly. It is also one of the most effective antioxidants. Melatonin reduces the risk of arthritis, slowing down the natural aging process, removes disorders resulting from shift work, supports the immune system, reduces the negative effects of prolonged adaptation when traveling across several time zones, eliminates most cases of insomnia, limits negative effects of radiation, reduces the risk of cataracts, acts as a preventative agent in the case of a genuine risk of breast cancer and as a treatment for women affected by cancer, limits the negative effects of chemotherapy the treatment of cancer, lowers cholesterol, and even reduces high blood pressure, eliminates problems with premenstrual syndrome, applied it in combination with minimal doses of progesterone in menopausal women.

Substances causing the decline of melatonin:

- Non-steroidal anti-inflammatory drugs - aspirin (in large doses causes a chronic decline by up to 75%);
- Ibuprofen and Indomethacin completely stop nocturnal melatonin production;
- Beta-blockers - completely block the production of melatonin;
- The anti-anxiety - (Diazepam, Alprazolam further) block the process of melatonin production;
- Antidepressants and inhibitors - fluvoxamine, desipramine (Pertofran) and MAO inhibitors (Nardil) increase the production of melatonin, but fluoxetine (Prozac) blocks him;
- Vitamin B12 - large doses reportedly reduce the production of melatonin. (This is a problem for bodybuilders and other athletes who use vitamin B12 and its derivatives - dibencozid);
- Caffeine - Caffeine reduces excess levels of melatonin, thereby causing insomnia, anxiety, arrhythmia, and stomach problems;
- Corticosteroids - causes sleep disorders by reducing melatonin;
- Tobacco - reduces the level of melatonin;
- Alcohol - reduces melatonin levels, when consumed just before bedtime.

Measures to increase the production of melatonin:

- Expose to intense sunlight during the day;
During the night sleep must be absolute darkness;

- Hot bath before bedtime (the procedure is questionable since congestion increases brain and body temperature, reducing fatigue, and thus will not only increase the production of melatonin, but also growth hormone) (Fořt 2005).

This is an equilibration between the activities of environmental effects on the organism and the organism environment. This equilibration involves the acquisition of a state of equilibrium, where the existing schemes (mental frameworks, ways of thinking, response) when confronted with stimuli from the environment and adapt to them are adequate, or later in the assimilation consisting in the implementation of information if perceptual diversity does not fit into existing schemes and finally in accommodation, i.e. transformation and overcoming existing schemes and to restore mental balance through differentiated and specialized Response to stimuli from the environment.

The processes of assimilation initiate enhanced level of thinking and higher levels of adaptability than the previous one, and result in restoring bio-psycho-somatic balance. The word hygiene comes from the Greek word "hygieinos" i.e. "salubrious" and a doctrine of healthy life (both in individual and social context). Hygiene is possible to sort the fields. The most common division is the general hygiene, occupational hygiene and epidemiology. Terms physical and mental hygiene, which are used in this book, cut virtually all of these fields and also extend to other non-medical disciplines, e.g. psychology, sociology, etc. Contribution of mental hygiene is to prevent somatic and psychiatric diseases, in good sport performance as a balanced person is able to concentrate on the good work and relaxation, as well as in the functioning of social relations in which a person who is mentally healthy, positive impact on their environment in terms of inducing and support experience happiness, satisfaction, mental and physical strength and power.

Hošek (2001) presents biological consequences of the energy change in the athlete’s organism and neurohumoralresponse when the first stress stage increases the activation level of the organism. Transmission of information between the reticular formation and cortex is increased alert organism and activities (part of the alarm reaction, the onset of the order of seconds after detecting a stressor), which is reflected as a activation for easy tuning of emotions. Humoral response, functioning on the basis of connections between the cortex with the limbic system and the pituitary gland, it is slower and its purpose is to activate the cardiopulmonary system and ensure the supply of energy for muscle work (kind of catecholamine hormones, as well as adrenaline, hydrocortisone, etc.). This reaction is innate,
given the phylogenetic development at a time when any stress led essentially to escape or attack, i.e. the intense muscle work - so alert, increased heart rate and glucose muscles. There is currently no muscular work only effective solution to stress, but stress is still activating factor in muscle activity and, if not delivered energy consumed, its residues over time contribute to so-called civilization diseases (Hošek, 2001).

If the behaviour of the individual meets with obstacles in the way, there is a situation of barrier frustration. External manifestation of the frustration is frustrated behaviour that carries certain typical characteristics. This behaviour results from the intrapsychic state of frustration, the essence of which can be implemented as moral scruples satisfy some needs and the achievement of objectives. A special case is the reactance of social frustration - responding to loss and deprivation of liberty, which may take various forms: from the feeling of oppression when buying one vendor persuasion, to the actual loss of freedom). Frustration resulting from delaying the decision for a hearing, is suspended achieve the objective, which may lead to neurosis (e.g. if it is not able to deal with conflicting individual life). Basic common response to frustration represents an effort on defence (ego-defensive mechanisms):

- Frustrated individual trying to break the barrier or challenge source of frustration;
- Compensation (a substitute object);
- Disparagement (Damages unreachable goals);
- Regression (infantile compensation, such as an escape to a person with parental behaviour);
- Rationalization ("explain" the failure or failure);
- Aggression as the most common response on frustration and various kinds of delusions.

Frustration tolerance is the ability of an individual to resist frustrating situation. Children generally have lower frustration tolerance than adults. Collective frustration is more bearable than individual frustration. Extending the frustration leads to deprivation, resulting in a neurosis to psychosis. Neuroses are treatable without consequences, neglecting, however, become chronic and cause great hardship human life. In particular, there is a great danger to children who are long time exhibited any mental stress. Their body is in development and long-term psychological stress the risk of reducing the overall personality development. It is not - if met some of the basic needs, they lose interest in intellectual stimuli, a process of learning and action becomes instinctive. The most common symptom of neurosis is physical
restlessness and various manifestations of psychological stress - such as problems with concentration, involuntary movements, biting your nails, etc. Less common symptom is pulling her hair. A common problem is indigestion - morning vomiting, inability to eat breakfast, loss of appetite, pain. Among speech neuroses include stuttering, mutism (e.g., child refuses to talk with other people than with family members). In the background of this disorder is often hidden emotional conflict. Furthermore, here we classify neurotic disorders of sleep (late sleep, restless sleep, nightmares).

Among the mood disorders is included depression, which is a pathological sadness. The principal manifestations are hatefulness and anger, apathy, lack of concentration, drowsiness and weakness and long-lasting headache, talking about death or suicide. Accompanying phenomenon can be any physical pain, pessimism. One of the first signs of mental imbalance is anxiety, sadness and self-deprecation, "learned helplessness". Typical psychological disorders linked to early adolescence include behavioural disorders. Furthermore, we here should include eating disorders, for which the age of puberty and adolescence is typical, but there are other forms as well as in young age. Today, a widespread problem, which is usually diagnosed in school-aged children (but also occurs during the first years of life), is called hyperkinetic disorder (ADHD), formerly known as minimal brain dysfunction - LMD - sometimes also uses the term "attention deficit ." It is characterized by excessive activity, poorly controllable behaviour and significant inattention. The causes are not known, but considering the combination of inborn disposition, possible complications during pregnancy and childbirth. Hyperkinetic disorder occurs more often in boys than in girls. The right educational leadership with the support of sport can be partially corrected. During adolescence nervous system matures and the problems disappear. In contrast, in adult sportsmen are common mood disorder or psychotic disorder like fatigue syndrome and syndrome of burn-out. In addition resignation, sadness and depression come, manifested physically and psychologically: abdominal pain, headache, nausea, loss of appetite and sometimes an increased activity, irritability, aggression, and sleep disorders, exhaustion, reduced immunity. For all these psychological problems, the foundation is strong feelings of fear or anxiety (often in children separation anxiety) and subjective state of emergency.

From the above it can be concluded that any change in the internal or social environment in which a person sees through cognition and social perception, has the effect of psychosomatic response in the body with certain health impact. Changing the situation is first evaluated using the "mental filter" with subsequent exposure and effect in certain areas of health (e.g. physical health), either in a positive or negative sense, depending on whether the
situation is subjectively perceived as threatening or whether evaluated favourably. It is a completely subjective evaluation depends whether the reaction will ultimately positive or negative in terms of impact on the health of humans. It is - if the situation is evaluated as threatening, sympathetic response is mobilized along with blasts of noradrenaline and adrenaline. It does not - if at that time the possibility of human locomotors release, which in today's sedentary lifestyle typical (at work, while driving, watching TV, etc.), scored a biological reaction to all the negative effects on the cardiovascular system and other organs. Repeats - if threatening conditions are often subjective, or - if perceived as a burden or a long-term threat is mobilized additional hormonal response of the body, especially the adrenal cortex (glucocorticoids, mineralocorticoids) and other endocrine glands. It has a very negative impact on the immune system, the emergence of some diseases and allergies. However, it is important to work on the transformation of "Self", which allows to maintain self-control and self-esteem, and the perceived variability of situations in life in a broader context of understanding and insight. The prerequisite for strengthening self-esteem is self-knowledge. Self-knowledge is a prerequisite to be able to relax. Self-knowledge is human consciousness becomes richer and more objective. Self-awareness makes people more open to personal experience and has a positive effect on the level of social contacts. Self-awareness plays an important role, because the deeper one discovers himself, the better is its adaptation in the environment (Rogers 1998).

When it comes to self-knowledge, mental hygiene in historical context, then one of the oldest systems in the health care system is the so-called integral yoga, which includes links to all major groups of yogic techniques. All yoga practices are aimed in the same, to acquire, how to make "yoga", which means to carry out "union" or "connection", i.e. to harmonize - reset psychosomatic well-being. Integral yoga underwent a test of time and as a uniquely sophisticated bio-psycho-somatic system is in the postmodern era is now increasingly used to improve physical, mental, social and spiritual health.

Ancient Greece created ideal "calocagathia" which expresses bio-psycho-social harmony and balance. The central theme of calocagathia was never ending diligence to ensure that the constantly harmonize these two dimensions of a person - mental and physical. Emphasis was placed on harmonizing these two dimensions in a union, which is necessary to "balance" the person does not fall into either one extreme - or to escape to the soul, not in materialism. Only between these two extremes, man becomes a man.

Humanism, which denied the medieval church scorn body, ideologically followed the ancient ideal of calocagathia. A major promoter of healthy lifestyle at that time was Jan Amos
Comenius. His instructions to take care of health, their topicality surprise today: "We are obliged to protect the body from illnesses and injuries. First, as is the abode of the soul, and only after his ruined soul must immediately move from the world ... Secondly, the same body is made not only abode, but also a tool of rational soul, without which it cannot hear anything, see anything, nothing to talk nothing to do, or even think ... therefore violates the brain, and the ability to break the introductions, and the affected limbs of the body, and spirit is interfered with."

The current definition of health by the World Health Organization surprisingly coincides with the ancient ideals of yoga, calocagathia and humanism. Foundations for a healthy life are created from birth. Parental care and love, harmonious relationships in a family environment, mutual respect and tolerance, easy going and chummy suitable environment for leisure, regular physical activity with sufficient movement in nature, good nutrition and more - these are ideal conditions for healthy child development Purposefully and meaningfully applied prevention of pathological behaviour of individuals towards their own health and the health of others through education on mental hygiene in children, adolescents and adults is in the interest of each company. It is a primary, secondary and tertiary prevention. The impact of preventive interventions, the greater the affect multiple systems and what is their impact on the system permanent. The newest trend is "community based prevention" or prevention of a whole society.

Primary prevention should be the entire company prophylactically, i.e. trying to prevent behavioural disorders. It means to create optimal conditions for the development of the child's personality. The starting point for primary prevention is parallel effects on children and adults (parents, teachers). Given the nature of the contemporary family, which is not always able or not even interested in creating the necessary conditions and stimulating environment for the healthy development of the child, it is essential that this area of primary prevention has been the subject of increased interest of professionals and amateurs from the public. Sports and activities can play an important role. For example, the leisure activities of children and adolescents, in particular neighbourhoods in large cities, etc. Responsibility for these activities takes over the municipal council. Another crucial role in primary prevention should play a primary school. Dovalil (2002) states that the school would be much more involved, or assume responsibility for the movement regimen of youth. Efforts should lead to the gradual implementation of the recommendations of doctors, who, for all youth considered optimal 8-10 hours a week adequate movement regime. This means in particular extend the range of sports clubs, but at the same time, especially for large group less physically talented
up and lead to a much larger number than ever amateur sporting rings directly to schools. One of the other equally important ways is to make sports equipment for schools spontaneous physical activities for children, youth and family members. For children and youth is naturally necessary to prefer their active participation in sports activities led by coach - trainer.

Well-organized sports activities (training, competition) is beneficial not only for the development of body and personality, prevention in the fight against some of the negative social phenomena, such as smoking, alcoholism, vandalism, crime, drugs, extreme forms of entertainment, etc. In addition, the school practice, strong reserves in terms of diagnostic changes in child behaviour and changes in his mental state (Liba 2007).

Secondary prevention involves screening of health disorders and general care of them so that they did not develop further. To take the form of removing the causes of socio-pathological behaviour, the diagnosis of negative factors is very complicated, because the short, medium and long-acting factors are closely linked. The main objective is therefore early detection of symptoms of behavioural and moral hazard. On the basis of teaching, special education, psychological, medical and social diagnosis are then searched the optimal form of corrective action. There is a clear fundamental shift in the overall concept of the work, and away from isolation to socialization, from uniform attitudes and goals of the individual programs from directive leadership to fellow child relationship. The importance of sport activities such as supporting the development and harmonizing factor is not yet with us in the secondary prevention of damage mental health fully appreciated. Appropriately chosen physical activity may be at a qualified lead source of learning, diverse ideas and positive emotions. It can be an important tool in the social teaching of the individual, the emotional development and in shaping the value system. The theoretical justification must be empirically verified. We believe that also in the secondary prevention will find its place yoga exercises and relaxation and concentration techniques. Effectively constitutes a natural counterpart of sporting activities. As already mentioned above, the stress load leads to sympathathetic which may be in their negative health implications. Man is "ready for battle" (high blood pressure, muscle tension, heart palpitations and other symptoms), but it is not used. During aerobic sports, especially running, swimming, cycling, but under certain circumstances, in games and gymnastic exercises is to release tension (due to secretion of endorphins). But in the extreme case occurs when aerobic exercise to overload anti-stress system, the exhaustion of the seized up. Yoga exercises lead to the regulation of breathing and massage internal organs, optimizing the endocrine glands. Maintain the health of joints and spine. The movement is slow, typical endurance are also in place.
Tertiary prevention is aimed at preventing the recurrence of symptoms and problems. Risk factors in the behaviour of young sportsmen can touch their own health and the health of others. The origin of problems with health risk can be in the own family (e.g. families, where addiction to alcohol or to drugs exists, families with unclear rules and behaviour, unable to saturate the emotional and other needs of the child, etc.) in the school environment, the influence of peers and the wider community. An alternative remedy is probation or supervision, special projects volunteering, etc. Transformations in society are most strongly reflected precisely in people's behaviour. For this reason, the focus of discovering new concepts problematic behaviour as a mirror of what is happening in the wider context, irresponsible behaviour as a reflection of negative changes in the company. For coaches it means that the interpretation of pathological behaviour is essential to thoroughly examine of the social context, circumstances and situations in which the health pathologies action. In this context, it is necessary to take into account different individual traits determined genetically, disease or mental disorder, as well as manifestations of generational protest, rejection of authority, influence and part of group activity, boredom, but also inappropriate way of leisure time. Low level of education and socio-cultural environment and the lack of moral, ethical and legal education are often mentioned related to health pathologies. According to the humanistic psychologists, instructional strategies for teaching mental hygiene easiest, most meaningful and most effective when conducted in an atmosphere free from all threats. Pupils should not be motivated through fear of failure, but through a desire to success.

1.2 Self-transformation model in the sport milieu application

On the base of research projects results the “Continuum of Self-transformation” in the sense of procedural changes of the individual was established (Krejčí 2005-2011 – GAČR 406/05/1685, GAČR 406-08-0352, the cross-border cooperation ESF PACZion “The Passau-Budweiser Union for Health Promotion”). This continuum can be well applied in the field of young athlete’s mental health support and its bio-social consequences. The continuum comprises sectors: Relaxation - Adequate exercise regimen - Nutrition – Prevention medical care service - Personal salutogenesis. Continuum of the Self-transformation is arranged in a circle, which is optimal for repeatability of the continuum in coherent cycles.

1.2.1 Relaxation

Among the phenomena accompanying our time include stress and tension. The stress factor may be also a lack of exercise – hypo kinesis. As a result, increasing restlessness,
inability to concentrate, restlessness and verbal motion frequently observed in children at school because of their resistance to stress is lower. Psychological effects of stress on one side of irritability, anger, aggression increased, but also the anxiety and fear of the other. The opposite of stress is relaxation, and therefore increases the importance of controlling relaxation and meditation techniques. Teachers and parents should be able to recognize the signs of fatigue in children (among them there are relatively large individual differences) and allow them to rest and relaxation. Reduction of needs means reducing of burdens and stress, burden lighter grades actually enhance personality.

### 1.2.2 Adequate movement regime

The second sector of the Continuum Self-transformation is an adequate movement regime. Parents and teachers often complain of increased psychosomatic children restlessness and aggression. Negatively in this issue certainly shows hypo kinesis that as in adult manifests by impulsivity, irritability, decreased ability to concentrate and control. Hypo kinesis in children, unlike adults is not entirely "normal" for their age. Experience adventure in children previously implemented in a variety of games and physical activities in recent years, replaced by a virtual experience at the computer with minimal physical activity. Matějček (1999) states that if someone from the second children's classmates mocked it for its physical clumsiness, awkwardness, clumsiness, weight, etc. It is recommended not to underestimate this fact. Ridicule and rejection group are experienced sharply.

Hošek (2001) in line with the previous states, that depressing and frustrating exercise is not healthy. It is based on the definition of health, which is counted as a necessary part of the state of psychosocial wellbeing. Matějček (2003) recommends that a child in the early years of schooling at least acceptably learned to swim, bike and ski or skate, which skills are highly prized among children. A child can show their skills without having to compete with anyone. The author proposes to teach the child a few exercises that are unusual and second child wakes as a surprise, interest, and thus respect. From this point of view can be very useful yoga exercises, especially if it is not a mere mechanical exercise, but also other qualities such as proper breathing, develop concentration, creativity and self-knowledge. Faulty posture is fairly widespread among children of school age. It is an example of muscle imbalance. To do this, in varying degrees associates a number of other factors - inadequate movement and life mode, single load the lack of proper motion compensation, as well as family and social influences, disease, birth defects, and emotional lability. With the increased psychological stress automatically increases muscle tone, which is the default voltage for
subsequent muscle contraction. Coordination and reaction time movements are affected by mental stress. Adequate movement regime learns to control body, improve exercise and other deviations: posture, balance, perception of body schema. Any adequate regular physical activity strengthens the skeletal and muscular system, improves the function of the cardiovascular system and strengthens the lungs. Positively influences human feelings that causes increased production of endorphins. Physical fitness (which can only develop physical activity) supports the healthy development of the organism, develops positive personality, enhances the performance of physical and mental activities, facilitates the release of tension and helps to mental balance.

Bolach, B., Bolach, E. and Kielan (2008) observed differences in the level of physical fitness of students in special schools (with a variety of mild mental handicap) in comparison with ordinary primary school pupils aged 9-15 years. The authors emphasize the need to ensure quality access to sport and physical activities in special school pupils because of their physical condition was detected at very low levels.

Proper movement patterns lead to spontaneity in movement expression, which is very important for physical release. Physically release is leading to the mental release. Conversely, well-being retroactively positively affects the body schema and regenerate body tissues. The results of research projects GACR 406/05/1685, GA CR 406-08-0352 have confirmed that physical deficiency is the cause reduced availability of physical activities in general, and that the motion is damped learning since childhood. Adequate means appropriate – according age, abilities, needs, etc. It is based on experience peace, joy, and also playfulness and creativity. Move while you play and can form either by yourself or with someone else. Its basic features, but also in terms of principles in order of importance and continuity expressed in the following points:

- Manageability - the basis of the scheme in terms of the individual mastery and mastery of movement. What is a simple one, for another can be challenging. Role playing condition, age, health status, type and degree of disability, etc. manageability of physical activity is very important basis for the re- implementation, which is the basis of progress in motion learning.

- Spontaneity - in the sense of feeling of freedom, lightness and joy in movement or digestion "flow" effect (i.e. be moving literally kidnapped, completely absorbed). Mastered motion a whole is characterized by spontaneous loco motor expression, which is a prerequisite for a desirable sense of fulfilment.
Saturation - in the sense of happiness, fulfilment during physical activity and after it. Gives one a sense of fulfilment and self-affirmation, a person tends to repeatedly return of the activity.

Repeatability - in terms of desire to return to the physical activity and improve to a higher level. In this stage is possible to start with increasing load. One is physical activity so glad that he is willing to discomfort greater burden in their training cycle.

Adjustments - in terms of volume of physical stress due to health and physical proportions person 's age, gender, etc. alternating load, a training effect and some positive dependence on the physical activity.

Availability - in terms of the possibility of applying regular motion, anytime, anywhere and best day (depending on the nature, timing, financial, legal and other conditions). Here begins the selection of other appropriate activities and combinations thereof (e.g. skiing + cycling, etc.). The result is an adequate exercise regimen.

Security - in terms of accident prevention and protection from injury in the implementation of the motion (or the application of help), the principles of safety in physical activity. Only safe physical activity is adequate. Plays the role of age, gender, disability, current condition, availability of equipment, helping, and rescue, self-rescue.

On the basis of adequate movement regime can be best utilized and improved down innate psychic ability and managed burn-out syndrome in sportsmen. As it already was mentioned, all what in the sport young sportsman learns, should be usable in his everyday life like an active rest adequately to the individual needs and abilities, such as learning to swim, good bike, get rid of stress (relax) perceive the joy of physical activity. It is a good result, if in the individual adequate movement regime like predominant or at least represented an adequate physical activity, which can be realised in nature. Adequate physical activity associated with the fresh air is irreplaceable, has a very salutary effect on the level of somatic, mental, social and spiritual.

According to the adequate movement regime principles, it is not necessarily to be all time compared with others. Each person is different and some young people can prefer non-competitive physical activity like active rest and compensation of tension. Therefore, the correct choice as non-competitive activities as for example bike ride, water sports, snowboarding, etc., which may be measured forces with someone else, but rather it's about overcoming of the Self. Adequate physical activity when a person called "fit" is adapted to the
needs and particularities of the environment, time and financial possibilities and it is not boring. If adequate movement regime operated with friends, family members, is enriched by unforgettable experiences affirming friendships and relationships with possible extension to other generations.

The purpose of that is to consider the motion learning as a means of education and self-realisation; it allows strengthen the social ties and contacts. The most important of them is to obtain feedback on their own behaviour. Social learning should, therefore, continue to be a sort of accompanying by-product controlled motor learning that occurs seemingly automatically. Social learning in young athletes sport training can become a targeted means of prosocial behaviour development and thus correspond fully with the modernization of educational content in terms of health promotion and wellness aspects in sport.

Mode or mode of work and rest with adequate movement regime is closely related, is an essential part of a healthy lifestyle. It consists of proper and regular arrangement and classification of activities within 24 hours. The basis is the biological rhythm of the human body.

1.2.3 Nutrition

Another sector Continuum of the Self-transformation is "Nutrition“. The diet should be in terms of a positive impact on the mental health of a person is always freshly prepared and a significant proportion should also have a raw diet (fruits, nuts, vegetables, milk, muesli, etc.). It is in fresh diet are well represented enzymes that are catalysts of biochemical processes in the body (bone structure, muscles, haematopoiesis). In contrast, semi-heated food, old food, foods with chemical additives has a negative impact on human health and cause mental and physical weakness and fatigue. This is how the athlete feels after the mental and physical very closely related to its diet. Healthy diet helps in the prevention of acute and chronic diseases and potentiates not only physical, but also mental development of young athlete; it can only strengthen his mental balance, and increase resistance to infection and increase training efficiency. The basic task of proper nutrition is to ensure optimal intake of energy and nutrients in the form of macro and microelements, as appropriate to the age, health and lifestyle.

In the Czech Republic after the second war for the last 60 years increased consumption of animal protein by 90 % and the related consumption of animal fats by 70 %. But a consumption of vitamins (except vitamin A), iodine, calcium, and fibre practically unchanged. Higher prices and a wider range of food products in recent years after 1990 has brought a
decrease excessive consumption of meat, eggs, milk, dairy products and animal fats and positive increase consumption of vegetable fats, fruits and vegetables. This increase, however, is not yet sufficient and negative nutritional trends persist. This is still an excessive intake of meat and meat products and excess salt consumption, low consumption of vegetables, fruits stagnant consumption, increased consumption of snacks and sugary drinks - especially in the case of children pubescence.

A common mistake in the nutrition of young people including the young athletes is insufficiently rich disproportionately hearty breakfast and dinner. Also rush to the enjoyment of food, a small concentration of food (talking, reading, television ...) thrive well received and the use of supplements. At optimum nutrition there is no consensus. Yet we can find some expert advice unity in the fundamental rules of good nutrition – the human diet should be varied, that should include all the important parts.

The principles of proper nutrition due to mental hygiene and well-being of young sportsmen is necessary to emphasize the correct drinking regime. Adequate intake of water is needed for the production of energy in the body, for thermoregulation and excretion of waste products from the body. The human body contains adult about 60 % water. Part continuously excreted and loses, therefore, be it in the body constantly supplied. Daily should drink as a complement to the organism approximately 2.5 to 3 liters of liquid. Today, unfortunately, most of the students in schools used the popular but unhealthy drinks high in carbohydrates (various flavoured soda-water), caffeine, which can become addictive "drug" (coca-cola), quinine (tonic) or by a unilateral supply of minerals in drinking one type of mineral water. There are in the market also new types of drinks that are presented as a drink that provides energy. In young sportsmen gained a reputation of some new drugs. These include “Red Bull”, “Erectus” etc. These drinks contain mostly caffeine, like coffee and Coca-Cola, or substance guaranin, whose composition and effects are similar to caffeine. In a big number of school age children has been provoked the habit to drink "child’s Coke. Some drinks contain more taurine, which is not a drug but an amino acid that helps the regeneration of the body (i.e. the substance for our body quite useful). This drink is not suitable to consume in large quantities, they may like coffee cause insomnia, heart palpitations, headaches and other adverse conditions. These energy drinks do not deliver, it only allow you to draw more than our bodies normally admitted.

Anorexia or bulimia suffers from over six per cent of the population. Only about one-third are able to completely heal. Six per cent of cases end in death. The risk of suicide is affected by up to two hundred times higher than in the general population. In connection with
these facts, it is important to remind coaches and teachers to be observant characteristic signs and alert parents. Important changes in nutrition and overall lifestyle: Trying to balance the energy balance, intake should correspond to output. Consider reduction of total energy intake (mainly limited fats and simple sugars free) and especially try to implement appropriate physical activity, which should help to “consume the received energy” (Fořt 1995). Nutrition is also related to allergies caused from food. Headache, hives, asthma, eczema, fatigue, diarrhoea, respiratory problems, migraines, and many other problems can be retrieved, possibly exacerbated by the body’s response to certain foods. This is an unusual symptoms and pain caused by diet. Although the professionals know exactly why some people with food allergies come from, one thing is certain: the facts and their recognition have helped solve many health problems. If people have adverse reactions to certain foods overlooked, can it results in wasted years in illness.

Recognition of the existence of these "strange allergic" to certain foods has direct revolutionary significance. Some prominent scientists believe that a number of diseases are often implicated in covert intolerance to certain foods. These reactions, although the generally allergies say, not the classic definition of food allergy. Experts are often referred to as „intolerance“, „hypersensitivity“, „metabolic response“ or simply „rejection - intolerance“. In a classic case of food allergy, the immune system over-reacts and produces antibodies called immunoglobulin E. Soon often dramatic reactions can come such as painful sensation in the mouth, itchy red skin rash, asthma attack or even anaphylactic shock.

Following the release of histamine in the body and other substances causes in the allergy symptoms. Theory of allergy, intolerance, or more accurately known hypersensitivity says that after ingestion of the organism "inappropriate" food arrives only mild and less detectable reaction. This may occur after several hours or days after an even longer time. On the elicitation should eat more of the food. The immune system in this reaction does not have to involve a typical manner. Some scientists believe that these delayed hypersensitivity to certain foods contribute to a number of problems such as lethargy, headaches to migraines, mood swings, loss of concentration among pupils in school, hyperactivity, eczema, as well as protracted conditions, such as the articular rheumatism and syndrome irritable bowel syndrome. In many cases help effective diet with certain allergenic foods.

Although they are so diverse diseases, food concerned, be few - mostly those are cereals (wheat), dairy products, caffeine, yeast and citrus fruits. After removal of some or all of these foods from your diet symptoms subside. Allergy at school, even hidden, constantly
increasing. The range of causes elicit allergic manifestations are diverse. Severe symptoms are especially breathingsymptoms.

These substances are also long-term enjoyment to the health harmless. However, there are a number of sensitive subjects, in which some of them may cause some problems for people with allergies, asthma, hyperactive syndrome, children with ADHD. These children need a short nap will not last sit still, often suffer from eczema and bronchial asthma. The older they are more vivid, often injured, have difficulty keeping balance; often have speech problems, learning problems, even if their IQ is high. Suffer from increased thirst and tend to have more allergic symptoms and affection for diseases of the upper respiratory tract. In England in 1977 based interest group of parents of these children to help themselves, which beverages containing artificial colours or flavours, glutamate, nitrates, nitrites (nitrates, nitrites), some antioxidants and other substances. Not suitable compound for these children is benzoic acid and its salts. It is therefore recommended these children omitted from the diet all foods and beverages, where these are used as preservatives. Likewise suitable are salicylates, chemically identical to aspirin. Most of soft drinks contain Salicylates manufactured in the Czech Republic under license or are imported.

The best health benefits are achieved through freshly prepared food consumption, not in consumption of semi-heated compartments meals. For young sportsmen it means to eat a diet rich in proteins (milk, yogurt, nuts, soya beans and lots of vegetables), fruit, carbohydrates (cereals, potatoes) and fats (butter, oil). As already mentioned, it is very important to be a meal in a good state of mind. Feelings of fear, anger, depression, etc. during the eating cause in the conversion of good food to a "poison”.

1.2.4 Preventive medical care

Preventive medical care in the Czech Republic is based on European traditions of healing and is at a very high level. It is very reasonable and desirable to use (not overuse) the possibility of preventive examinations and treatments tailored to the individual needs of man. In terms of health education and active lifestyle is necessary to emphasize that (according to WHO) preventive health care can affect the health of the population of only about 15 -20 %. The larger part can only affect the healthy lifestyle of the individual, which falls into the active lifestyle, including an adequate movement regimen.

The Czech Republic almost all facilities have a contract for the provision and payment of health care, health insurance and provide patients insured by the health insurers without direct payment. Health services provides a system of outpatient care, institutional care
(inpatient) care, equipment preventive care, urgent care facilities, facilities for transport sick, injured and pregnant women, spa treatment facilities, facilities providing pharmaceuticals and medical devices and dental products.

As for outpatient care in case of illness, the patient usually turns to the primary care physicians who work in the area of his residence. These are general practitioners for adults, general practitioners for children and adolescents, dental practitioners (dentists) and female doctors (gynaecologists). If the patient does not know of any reason your doctor or health care facilities may inquire at the local municipal office. It is also possible to ask advice from your health insurance company or alone for a doctor in the phone book. When choosing a doctor is necessary to keep in mind that you can only log on to the doctor, who has a contract to provide health care insurance for which the insured person.

For all primary care providers, the patients must first register. The doctor may refuse to register only in cases where acceptance would mean for doctors such a workload that he could not provide adequate care to the patient or other patients already in his care. The doctor cannot refuse treatment in cases of urgent care (injury, acute illness), after this treatment, however, the patient is transferred to the attending physician. In case of refusal, the patient is entitled to the refusal in writing. If the primary care patient, becomes the registered doctor shall issue a registry entry and is committed to the on-going care of the patient, i.e. to provide basic care (including home visits) and, if necessary, to ensure special care from a specialist or in the hospital.

If the patient's condition requires specialized care that he cannot give her registered primary care physician recommends relevant specialized medical equipment, which has a contract with the patient's health insurance. In this case, however, the patient has the right to free choice of medical facilities and physicians. Registered physician issues a recommendation for specialist care or request a referral. Specialist physician is registered with a feedback on the findings and treatment procedures, and recommend further treatment procedures, and makes recommendations regarding the patient's ability to work.

1.2.5 Personal salutogenesis

In the sense of professional salutogenesis it is very important for humans to analyse the working environment and the mode of their profession and consider the risk factors in the context of individual health and the health of others. On the basis of this analysis can then be incorporated into the lifestyle salutors that offset the health risks of the profession - as for example overloading of voice in trainers, coaches, stretching compensation in young athletes.
during long sessions in special oriented training process, etc. Salutogenesis is a term describing a theory in which centre is person as a holistic entity of human health and the fact that it is real and possible to help, to prevent, to manage the disease.

Salutogenetic thinking is different from pathogenesis. It can be with success applied in young sportsmen as well. It is a fact that the man did not seek just how out of one’s life to eradicate pathogens (that he cannot succeed as well), but as in life look salutors, i.e. elements increasing the potential health of the concrete man (Hošek 1993). Salutogenetic way of life can be promoted in sport education, particularly in the subjects of sport training.

It is certain that primarily family might contribute to the salutogenetic path of life. Salutogenetic approach involves the whole personality and lifestyle. It leads step by step the young sportsmen to understand salutogenetic techniques and ideas aiming to improve their lives. It leads to understanding conscious connection, orderliness, joy of understanding and coping leads to good nutrition, active life without ties to the consumer, hypokinetic lifestyle. It leads to environmental responsibility of young people as well.

According Hošek (1993), there are three Salutogenetic approaches, which can be developed in the sport and training process:

1. Harmony of mental and physical development. It is all about overcoming the idea of exercise as a mechanical ritual repetition, but the idea of experience, reflection, or by action of the body to the spirit and the spirit to the body (this is actually to evoke a warm, heady feelings blasts endorphins).

2. Principle of Salutogenetic triad, which builds on the importance of energy balance, hardiness and health. The triad can be imagined as a triangle, where between nutrition and exercise is the part representing the power of man. Between movement and hardening is the part of activities and the remaining side is human self-control.

3. The principle of "Through discomfort to comfort" when such artificially induced hunger, cold and fatigue can be understood as the price later in the comfort Salutogenetic benefit.

Salutogenesis is especially widespread in Austria and developed Europe states. It is a reaction to too much consumerism of contemporary society. Salutogenetic approach leads to the formulation of the problem and gradually coping (Antonovski 1987). The term salutogenesis first appeared in 1987 just in the book of Aaron Antonovski: Unravelling the Mystery of Health. The term salutogenesis in its base consists of two words: salus = health,
welfare, etc. genesis = origin, evolution, origin, etc. Generally speaking salutogenesis means the principle of the origin and rise of human health, its appreciation and support.

The classic way of the medical approach defines health and disease as two completely different categories (biomedical approach to the problem), thus to the patient. The physicians are testing and searching for specific causes of the disease on the principle of direct connection. As already was mentioned, in the contrast the principle of salutogenesis states. Within the framework of health and illness are defined holistically, interconnection, and at any moment a person is at a certain level. Salutogenesis focuses on the monitoring and description of human health, studying individuals who show clear signs of health, focusing primarily on those who survive in extreme environmental health situation and trying to figure out what it is that their health is so good.

2 Aim, Hypotheses

The main aim was to gradually master the basic strategies of mental hygiene skill through participating trainers and coaches in young sportsmen. Another aim was to learn the techniques of mental hygiene in elementary schools in non-sportsmen.

In the both samples were used control breathing techniques, relaxation and other psychological stabilizing techniques based on integral yoga in the integration intervention program "Development of the Rainbow" (In the Czech language “Program duhy” = “Program of mental hygiene”). The intervention program was presented in 3 variants of training methods and strategies for 3 different age groups, i.e. the Sample S1 with 9-10 years old children, Sample S2 11-13 years old children, Sample S3 14-16 years old children.

The intervention program consisted from effective mental health technician from clinically proven procedures, processed in the program corresponding to a range of 2 x 12 weeks. The program included the palliative exercises that lead to release tension and create experience of wellness, as well as exercise of concentration and self-control (Self-regulation, Self-motivation) and exercise of Self-analysis and Self-perception.

2.1 Hypotheses

H1 The intervention program will eliminate psychic problems in young sportsmen and non-sportsmen like depression and negative thinking.

H2 The intervention program will shape the Self-control and Self-motivation in young sportsmen and non-sportsmen.
The intervention program will experience in all samples of participants the sense of fulfilment in task.

3 Research Procedure

3.1 Organization of research, characteristic of samples

118 teachers (92 women and 26 men) teachers (of PE in primary schools, grammar schools) and coaches from different regions of the Czech Republic were trained to implement the intervention program "Development of the Rainbow" in their education process. In the total 2367 pupils (sportsmen and non-sportsmen, pupils of primary schools and grammar schools in the age range 12-16 years old participated in the intervention program. From that 385 randomly selected pupils (186 males, 199 females) in the age range 12-16 years old were monitored during the intervention program "Development of the Rainbow" and were tested before and after the intervention program.

The intervention program "Development of the Rainbow" ("Program of Development of Mental Hygiene") based on the theory of Self-Transformation in two successive coherent cycles, when the first cycle of basic education is more or less general nature, in subsequent cycles is compounded education towards individualisation and emancipation, i.e. independence on the person of educator (teacher, trainer, coach). The ultimate goal of the intervention program was the complete independence, when the individual is able to:

- To use autonomously breathing and relaxation techniques to overcome mental fatigue and stress;
- To plan and implement adequate movement regime;
- To know the benefits of healthy eating, focus on the issue of drinks and food;
- To know importance of health sleep habits for success in tasks and effort;
- To demonstrate the necessary degree of restraint, such as recognition of tricky advertising in connection with business interests that are not in compliance with health;
- To know the health risks associated with salutogenetic triad.
3.2 Methods

Follow methods were used during the research process:

- Intervention program "Development of the Rainbow" (Krejčí, 2011);
- Intentional observation;
- Test of circadian typology "CIT" (Czech version of Krejčí, Harada 2010);
- Test "POMS" Profile of Mood States (Czech version of Man, Stuchlíková, Hadgvet 2005);
- Biofeedback "Schulfried 2000x" - psychosomatic indicators monitoring;
- Analysis of school environment and benefit - weekly records and analysis;
- Statistical methods - Data were statistically processed by SPSS Kruscal - Wallis test, Fisher's exact test and of Wilcoxon test. Statistical data processing was carried of Akane Kobayashi and Miyo Takeuchi from Kochi University in Japan.

4 Results

In our intervention program and research applications of yoga techniques as a mental training for young athletes, developing of the concentration, rehabilitative effects, etc. were repeatedly rendered positive changes in emotional states. Changes in mood and emotional states after relaxation and breathing exercises tested by the method POMS, showed the significant positive changes in the all tested factors (Table 3). We can say that after the intervention program "Development of the Rainbow" positive changes in the emotional state of young athletes were found out. By the intervention program "Development of the Rainbow" Research assumptions were confirmed and behavioural problems were eliminated,
especially the psychic states like depression, negative thinking, dissatisfaction, conflicts. Improvement of the self-control and self-esteem in participating athletes were experienced. The techniques of relaxation and concentration reduce stress and mental tension and are guiding to help to develop self-esteem and satisfaction, evoke happiness. The relaxation and concentration techniques open the way to self-analysis (compare the technique of "Self-inquiry meditation" – Maheshwarananda, 2006), as well as yoga physical exercises (sarvahittaasanas) are manifested in physical fitness and muscle strength, enhances of mental parameters (memory, reaction time, etc.).

After the intervention program were participants could use relaxation techniques to overcome mental fatigue and stress, and then started with mental training independently individually in sport.

It was found that non-sportsmen participants of secondary schools felt overburdened more than sportsmen. All participants reported that they usually ashamed of shortcomings in their health and do not like to admit it. Parents entrust health problems less frequently than in childhood. All participants – sportsmen and non-sportsmen were dissatisfied with the regime of leisure time. They reported lack of time for friends, family, and would welcome more time for walks, rest and sleep. All participants – sportsmen and non-sportsmen liked much to learn techniques of mental hygiene, particularly techniques which removes fatigue.
Table 3 Significant differences in POMS test after the Intervention program
(N=385, 186 males, 199 females)

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<th>Factor</th>
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<th>M1</th>
<th>M2</th>
<th>M1 SUM</th>
<th>M2 SUM</th>
<th>shifting</th>
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Explanation:

T = Tension - Anxiety characterized by somatic tension, that may not be observable (tense, restless, nervous). This factor is denoted as T - "Tension".
D = Depression- Dejection represents depressive states accompanied by feelings of personal inadequacy (sad, useless, despondent). Designation of the factor is D - "Depression".
A = Anger - Hostility stocks of anger and antipathy to others. Identification of this factor is A - "Anger".
V = Vigour - Activity (vitality) is defined adjectives describing vigour, to some extent, non-specific positive emotion (lively, energetic, cheerful). The designation of this factor is V - "Vitality".
F = Fatigue - Inertia represents weakness, lethargy low energy (worn, tired, exhausted, etc.). The designation of factor is F - "Fatigue".
C = Confusion - Bewilderment characterized by confusion, cognitive inefficiencies associated with the inability to control attention (confused, inability to concentrate, etc.). The designation of this factor is C - "Confusion".

(Stuchlíková, Man, Hadgvet, 2005).
Coaches reported that athletes could not require any special motivation or "pressure" to teach relaxation techniques and mental hygiene. All participants – sportsmen and non-sportsmen were very proactive in learning of mental training.

Modes of analysis in non-sportsmen participants identified in 72% disorders of the circadian rhythms (late sleep, interrupted sleep, lack of sleep) and improper dietary habits. On the other hand, surveyed non-sportsmen participants spent the day very long time playing games on the computer and the internet communications.

In this context, we continue in the report of statistical analysis compared the relationship of active lifestyle in the research groups of participants: Athletes versus Non-sportsmen.

![Figure 1](image)

**Figure 1 The differences in BMI of observed male and female students**

BMI of the female athletes was significantly lower than BMI of monitored male athletes (Mann-Whitney U-test: \( Z = -5.65, P < 0.01 \)) - see Figure 2. In contrast, no significant difference was found in BMI in male sportsmen and male non-sportsmen (Mann-Whitney U-test: \( Z = -0.41, P = 0.680 \)).

A significant gender difference in preferences ME was found (Mann-Whitney U-test: \( Z = -0.87, P = 0.381 \)). But, male sportsmen were significantly more morning typed then male non-sportsmen (Mann-Whitney U-test: \( Z = -2.20, P = 0.028 \)).

All studied females (sportsmen and non-sportsmen) interviewed about health with their parents significantly more often than watching males (\( \chi^2 \) test;\( \chi^2 \)cal = 25.1, df = 5, P < 0.001) – see Figure 3.
Figure 2 *Gloom and depressed mood in monitored sportsmen - boys and girls. Girls experienced significantly more depression status than boys* 
($\chi^2$ test: $\chi^2$ cal = 18.1, df = 3, $P < 0.001$)

Figure 3 *Gender differences in monitored boys and girls of the frequency in interviews with parents*

We tried to find a positive correlation between sporting and non-sporting participants and mental health (frequency state of depression, anger, irritability). Surprisingly there were found out no significant differences between the sportsmen and non-sportsmen in the monitored boys and girls. It means no significant differences in the quality of mental health (frequency of state of depression, anger, irritability). ($\chi^2$ test:$\chi^2$cal = 8.47, df = 4, $P = 0.075$). It is a very important result of the research procedure. Probably the competition sport brings
disorder situations with negative impacts in mental state. It is also an important argument for mental training implementation in young athletes training process, because they have not enough empirical experiences how to overcome and manage stress situation and state-anxiety.

But the reason of the psychic disorders (depression, anger, etc.) of monitored male and female young participants we can search in sleep disorders and in evening typology, which is developing with age very clearly (see Figure 4).

![Figure 4](image1.png)  
**Figure 4** *The correlation between M-E score and age of the respondents*

The average of M-E score decreases in all monitored boys and girls with age (age group 11-16 years) - Kruscal-Wallis test, $\chi^2 = 43.3$, df = 7, $P < 0.01$.

![Figure 5](image2.png)  
**Figure 5** *Comparison of the frequency of depressive states to M-E score in the investigated respondents (Kruscal-Wallis test, $\chi^2 = 16.6$, df = 3, $P < 0.01$)*  
*Note: The lower value of the score presents the higher rate of Evening type.*
It seems to be very interesting correlations between mental states and ME typologies of students. M-type = morningtype, E-type = eveningtype. The current life style of young evening typed girls and boys (chat, SMS monitoring, computer games until midnight and after midnight). It disturbed sleep before midnight, and thus the production of melatonin. Can develop sleep disorders and mental health in theb tendency to irritability, anger and depression. Our monitoring of these facts confirmed an important part (especially in boys) of the educational strategies in mental health promotion. Mental training effects in sport clubs have strong positive influence on sleep habits.

Diverse interpretations of the concept of social learning in sport appear in the content, methods, and particularly targets. Diverse concepts exist in relation to the performance requirements. On the one hand, it is understood deliberate social learning as opposed to specific performance requirements, on the other hand is lifted as a correction that performance in sports and in life firms. As emphasized focus on performance in terms of orientation on adequate motion sequences, the experience of perfectly mastered physical structure.

The preceding information indicates that "no-social" learning cannot exist. Everything comes from social learning and social aims. Common being not only a source of inspiration, but also guaranteed the possibility of learning. Social environment, social atmosphere and contact with the environment are equally important. In this sense it is possible to watch the movement of learning from two angles and their importance for the practice to express questions: Is currently operational emphasize only biomechanical, sensorimotor or neurophysiological models in motion without considering the learning motivation and influence of the social environment? Or integrate functional for use in practice in the both approaches? Also Véle (1995) states in his conclusions that under the locomotive behaviour we can infer that the mental processes of the reference person, his intellect, motivational processes. Author points out that the physical behaviour is the importance of communication. The movement is a means of communication that can convey information. Communication importance of movement leads to the fact that the activity of the individual motion system adjusts the activity of others. This results in addition to individual motor behaviour and intra-individual social behaviour.

The speech behaviour depends on the degree of excitability of the nervous system, which can be facilitated or inhibited by the degree and type of motivation negotiation, i.e. the functional level of the limbic system. Psyche and its symptoms are always related to motivational headquarters, which not only controls the overall level of excitability, but lays.
the groundwork for the formation of memory traces and thus fix the physical chains that characterize a certain type of behaviour. Teachers, trainers and coaches should be alerted to the fact that the physical learning not only mediates changes in motor skills, but also influences changes in the psyche and social behaviour.

The main objective of intentional social learning is presented in learning of mental hygiene and social skills of young athletes. From the perspective of role theory is socially competent individual can take and formulate the role, i.e. to adapt to change, but also a role reject. To be able to refuse a role is particularly important in the socialization process of children prone to pathological phenomena in behaviour. Intentional social learning in mental hygiene leads to release from stress and getting rid of fear, to build self-esteem and develop communication skills and this is very important. With the increased psychological stress automatically increases muscle tone, which is the default voltage for subsequent muscle contraction. These phenomena are engaged myosceletary medicine. Every human movement, but also delivering a static position uses a different amount of energy and does not look like it - the motion carried with a balanced psyche and the mental tension. Coordination and reaction times are affected by mental stress.

![Graph showing frequency of depressive states in correlation to ADI score](image)

**Figure 6** Frequency of depressive states in correlation to my score in the investigated respondents (Kruscal-Wallis test, $\chi^2 = 12.7, df = 3, P < 0.01$)
How frequently do you get irritated in usual life?

**Figure 7** Correlation between mental health - frequency relieve irritation and ME score in the investigated respondents (Kruscal-Wallis test, $\chi^2 = 20.8$, df = 3, $P < 0.01$)

**Figure 8** The correlation between BMI and the frequency of irritable state of the monitored respondents (Kruscal-Wallis test, $\chi^2 = 20.8$, df = 3, $P < 0.01$)
Figure 9 The correlation between the frequency of consumption of sugary beverages and M-E score (Kruscal-Wallis test, $\chi^2 = 20.3$, df = 3 P < 0.01)

Figure 10 The correlation between the frequency of consumption of sugary beverages and BMI (Kruscal-Wallis test, $\chi^2 = 13.7$, df = 3 P < 0.01)
Figure 11 The correlation between enjoyment of sweets and mental health - Frequency of depressed mood ($\chi^2$ test: $\chi^2_{cal} = 24.7$, $df = 9$, $P < 0.01$)

Figure 12 The correlation between enjoyment of sweets and mental health-frequency rage ($\chi^2$ test: $\chi^2_{cal} = 22.6$, $df = 9$, $P < 0.01$)
Figure 13 The correlation between enjoyment of sweets and mental health - Frequency of irritable condition ($\chi^2$ test: $\chi^2$ cal = 15.6, df = 9, $P = 0.075$)

For a more arguments about the positive effects of adequate movement regime attest to the health of the pupil still selected results for the adequate movement regime, when the survey attended by 536 pupils from schools we monitor (265 boys, 271 girls), again in the age range 11-16 years.

For all respondents a questionnaire about corresponding motion mode was applied (Krejčí 2010) containing 10 questions. Statistical analysis of the data was performed by t-test, Fisher's exact test. According to Fisher's exact test was demonstrated significant difference in activity" physical education" for the last year and last week, $P < 0.0001$. Over the last three months and the last year has not been demonstrated significance of $P = 0.0793$. School physical education certainly plays an important role in obtaining adequate variety of physical activities that respondents of both sexes widely used, as evidenced by the data for the past week. In retrospect activities for the last three months and the last year of school physical education gradually "fade" and entry activities carried out in the past year occurs sporadically. It is not sure that it would at the time respondents did not make, but simply not considered as physical activity, which is necessary to mention.
Conversely, physical activities such as sports games, swimming, cycling, and skiing were reported. In terms of mental health, it is a very appropriate physical activity for adolescents, and to examine the possibility of implementing the natural environment and in terms of the compensation effect of swimming, cycling on the human psyche (see Figure 14).

According to Fisher's exact test, it was demonstrated significance in challenging activities between both time and finances \( P = 0.0018 \) and the consideration of time and distance \( P = 0.0031 \), for it was acceptable between finance and the distance \( P = 0.0013 \) and between time and distance \( P = 0.0013 \). The results confirmed that the biggest problem for the respondents to organize physical activity time. Unfortunately, the answers to "How often have you done some physical activity in the past week," a significant percentage of respondents replied that they did not find time for physical activity or one day (see Figure 15).
On the other hand, it is gratifying high number of respondents who take the time to exercise every day. This shows the positive impact of our intervention strategies in the field of mental hygiene and adequate movement regime for participating students. These results also shows a very good capacity management schools in relation operation of leisure and physical activities are a sign of the adequacy of impairments respondents.

Further results show that the vast majority of clients are not a problem reachability favourite physical activity, and the major, dominant feelings during physical activities are joy, the joy of the game, changing the mood-compensation. Only about 10% of the examined children tiredness is captured. These results suggest spontaneity and adequacy of physical activities with high mental health effect and a positive mental realignment (see Figure 17, 18).
Further analysis of the results revealed an interesting contradiction in the fact that the most popular physical activity to which the respondents desire to come back, are often not mastered the appropriate level of physical education. Respondents report value of grades 3 or below. The remarks and values are obvious for swimming and skiing/snowboarding and surprisingly even for the ride a bike. Yet there were swimming and skiing/snowboarding by respondents of both sexes along with cycling the most popular physical activities.
Certainly in terms of security is downhill skiing and snowboarding fully proven adequate to assess the level of mastery, but apparently it is the age-motion learning still unfinished, and may be an appropriate incentive "challenge" to improve their implementation and enforcement.

Nevertheless, we recommend that teachers and parents to support the movement of primary school pupils learning an appropriate methodical guidance to avoid both unnecessary injuries and the risk of it, and to consolidate the wrong engrams. Poor exercise habits do not allow spontaneous implementation and saturation - see page 6 of the text - and may be the cause of reduced self-confidence and fear of failure.

A popular physical activity, to which the youth tend to come back, is dancing, which certainly has a positive effect on mental health and it is possible that interest educationally widely use in school children. However, it is necessary to take into account the risks, especially discos, with the risk of addiction and other risk adolescents.

The final result of that, here again, and that was the same for both sexes, preference is the time when the physical activities performed by respondents. For both sexes equally dominated the preference of afternoon and evening exercises. This result is very surprising and rather indicates a low level of knowledge about the health benefits of morning exercise than a lack of time in the morning. These benefits are highlighted especially for weight reduction.

There is a morning fitness activities effective in terms of mental hygiene for the good feeling of freshness and harmony throughout the day. Also, research on circadian rhythms confirms meaningful and positive health effects of morning exercise (Harada et al, 2007). In our observation in 2010 in a group of 738 primary school pupils (from different regions of the country, of which 358 boys, 380 girls) showed that students who engage in sport (regularly train - 269 boys, 262 girls) are significantly more morning types no sport than boys (89 boys, 118 girls) - Mann - Whitney U-test: Z = -2.20, P = 0.028. Yet in terms of BMI was no significant difference between sportsmen and non-sportsmen (Mann - Whitney U-test: Z = -0.41, P = 0.680).
**Figure 18** The correlation between depressive states and ME type \( (N = 738, 358 \text{ boys}, 380 \text{ girls}) \) - Kruscal-Wallis test, \( \chi^2 = 16.6, \text{ df} = 3, P < 0.01 \)

**Figure 19** Anger correlated to ME type \( (N = 738, 358 \text{ boys}, 380 \text{ girls}) \) - Kruscal-Wallis test, \( \chi^2 = 12.7, \text{ df} = 3, P < 0.01 \)
Discussion

Accretion of the economic costs in the area of healthcare in all European countries, including the Czech Republic, at the turn of the 20th and 21 century appears the necessity of cooperation of the EU in dealing with the negative consequences of lifestyle on health.

Mental health has been declared in the EU in 2008, a fundamental human right. He stressed the strong influence the state of well-being on the quality of human life and human health. Good mental health improves learning ability, and work is the basis of prosperity. The level of mental - mental health and mental state of well-being in the population is therefore crucial for the successful development of the EU, education, social and economic aspects.

Developing the mental health of the EU population, including all age groups, gender, ethnicity and socio-economic layers requires support quality intervention programs. As a priority issue resolution of the depressive disorders and prevention of suicidal behaviour was declared. As another priority it was declared to care for the mental health of young people in relation to education in the field of health promotion.

More than 50 % of mental disorders occur during puberty and adolescence. Mental health disorders suffer from 10 % to 20 % of young people in the EU. It is necessary to start with education and training in mental health in the school education, and has been, if possible, from pre-school. In this context, a very important place have also movement games on different bases, i.g. martial games (Bartík 2010).
In the years 2008 - 2009 by the authors of the project GACR 406/08/0352 research carried out in collaboration with a Japanese university in Kochi. Cerci, Harada, Wada (2008 - 2009) conducted research in Czech and Japanese children aged 3-8 years. The authors examined 697 Japanese children (360 girls, 337 boys) and 627 Czech children (305 girls, 322 boys) in collaboration with parents standardized questionnaire circadian typology (Czech version Krejčí, Harada 2010).

The research analysed the lifestyle, nutritional habits of children, sleep and mental condition. The results showed that Czech children were more morning types than Japanese children, while Czech parents were more evening types than Japanese parents (Mann - Whitney U - test, Z = -12.33, P = 5.97x10.) Czech children were more depressing than Japanese children who had a higher degree of irritability and anger expressions. Children who were depressed or had a higher degree of irritability and anger expression were significantly evening types , in both countries ( Mann - Whitney U test , Czech : $\chi^2$ - value = 13.02 , df = 3, P = 0.0045; Japan: $\chi^2$ - value = 12.87, df = 3, P = 0.0049). The results confirm that the resynchronization of circadian rhythmicity is associated with emotional instability and tendency to unrelieved symptoms (Wada, Krejčí et al. 2009). Intervention programs to promote healthy lifestyles and sleep in the development of mental health are very important and useful and should be part of school education.

Therefore it seems essential in the school environment to monitor and influence marks somatic and psychosocial development of appropriate regulatory teaching strategies in the field of mental hygiene (relaxation techniques, breathing exercises, introspection and concentration exercises and autosuggestion).

The situation perceived as a threat to personal integrity affect the reduction of self-esteem and self-image , which subsequently leads to undesirable changes in behaviour in terms of health care and support - such as lack of interest in diet, physical activity on any level, violations of circadian rhythms, excessive or inadequate food intake, drug use, etc. An important part of prevention is adequate exercise regimen. The basic educational strategy, there is intense activity in the periphery, i.e. the physical apparatus of the young man. This can affect mental and functional ability of adolescents and thus can withstand stress without health risks. However, it is important to work on the transformation of "Self", which allows you to maintain self-control and self-esteem, and the perceived variability of situations in life in a broader context, i.e. with understanding and insight.

Humanistic psychology is based on the thesis that man is a unique and free being, with a tendency towards personal growth and continuous development. The man is in terms of...
teaching strategies in the field of mental hygiene to maintain a holistic approach (holistic, shape and aspect system of mental hygiene) with emphasis on the present. At the change of school education towards health promotion (area "People and Health" in primary and secondary schools - the introduction of the subject "Health Education") opens the opportunity for learning self-regulation techniques (in particular, relaxation and breathing techniques) that are valuable throughout life person. Self-regulatory techniques lead to improved homeostasis and positive effect on biological rhythms, including sleep and breathing rhythms. So each student can be heartfelt and enjoy close links with the psyche of the physiological response of the body and motor peripheral areas.

It is the area of mental health - issues of self-acceptance and self-realization adolescent, negative stress factors in the development of personality, self-control and self-control in stressful situations, resolve conflicts in the past have not been in school education intentionally addressed in terms of education, in terms of training. However, mental health is closely related to social health - networking, communication, relationships, and education to the environment - and physical health - fitness, vitality, immune system health. Partial research shows that the mere knowledge of how to take care of your mental health is not in them very effective. The most promising is the teaching of specific mental hygiene practices, together with the strengthening of self-confidence, dignity and autonomy. Anyone who respects “Self” can be more easily motivated to make something useful for themselves and the health of others. The presented research projects analysed motivational and emotional resources optimization strategies for education on responsibility for their own health, in the context of ontogenetic and sexual peculiarities of man. To obtain the necessary professional competencies of teachers involved in the application integration program was set up training facilities psychological and ethical therapeutic in the form of lectures, seminars, practical exercises and courses for teachers.

Self-Control and physical and mental balance of pupils and teachers were trained in the school curriculum.

- Stage 1: training of the teachers, model verification teaching mental hygiene in the school environment in selected primary schools;
- Stage 2: verification of teaching strategies of the mental hygiene in all primary schools participating in the research project, working with teachers in their educational practice, data collection, analysis and comparison of the results of the experience.

Description of integrative yoga techniques used in the intervention program should be personally authentic, enough empathic and accept full. Yoga leads to the perception
of internal sensations during movement (tension and release) and to assess their reactions. Do not force self to constant comparison with others. This will affect in a positive sense of self-regulation and self-esteem. Anxiety or fear as subjectively perceived state of emergency may be the cause of many diseases (stomach problems, allergies, asthma, as well as poor body posture, etc.).

Integration intervention program was implemented in individual schools in two consecutive three-month coherent cycles. Once per week took place in the teaching of health education lecture or discussion on a chosen topic and then followed by practical training unit. Participants learned here that you can perform at home every day. The optimal length of the joint meeting (lecture, discussion) is 45 minutes and 45 minutes training session. Integration intervention program consisted of physical yoga exercises - asanas with a strong self-regulatory effect (anti-stress), in sequence from simple yoga exercises dynamic nature of the demanding āsanam power and balančního type, followed by breathing exercises, relaxation techniques, training techniques, concentration and self-examination ("Self-inquiry meditation"). Under the two groups of students was applied to individual teachers access (tutoring, consultation under the specificities of particular participants). Lectures and discussions have been focussed on the moral - ethical aspects of human life, regulation and restriction of stressful situations, nutrition and fluid intake, prevention of ill health.

In stress situation defence mechanisms is applied that allow survival of the organism exposed to danger. Stress response then activates the sympathoadrenal axis. It stimulates the sympathetic activity, i.e., a branch of the autonomic nervous system, which do not control their will. Neurotransmitters, substances transmit nerve impulses to sympathetic governments, as noradrenaline (norepinephrine). The second component of the vegetative nervous system, the parasympathetic nervous system, has a predominant influence in the organism and controls vital functions. Sympathetic and parasympathetic aspect influences on the internal organs, depending on whether the body is at rest, or serves some power.

Stress in the teaching profession is also a vocal exercise. Speaking exhausted. The brain activates the axis hypothalamus - pituitary - adrenal glands. The hypothalamus is the part of the brain where there are various control centres, among other things, also controls the levels of various hormones in the blood. If necessary, sends chemical signals to the pituitary gland which reacts blasts hormones directly affect the activity of other endocrine glands.

In the case of the stress response is stimulated by the adrenal glands. Adrenal medulla released into the blood adrenalin (epinephrine), which is structurally similar to norepinephrine
and has similar (though not exactly the same) effects. Cortex produces adrenal steroid hormones called glucocorticoids - cortisol and cortisone, which play an important role in regulating metabolism. Adrenalin and glucocorticoids are among the so-called stress hormones (norepinephrine, which carries nerve impulses - neurotransmitters). Increased sympathetic activity and stress hormones affect the activity of most organs in the body. This increases the blood flow (but actually diverts blood from the digestive tract as a limiting his activity), stress stimulates the heart and increases blood pressure, precisely because of security adequate distribution of nutrient circulation. There is a release of energy reserves of the organism, primarily glycogen breakdown, from which it releases glucose into the blood. This whole process is very energy intensive and result in physical condition and mental exhaustion.

According Jahodová (in Mareš 2002) are signs of mental health summarized in six points. They can be used to determine the characteristics of the mental health of teachers:

- The attitude towards self (awareness of past and present; healthy person knows where is going and has no doubts about identity);
- Growth, development (self-realization in the growth and development);
- Integration (unity, wholeness) - balance mental strength, frustration tolerance;
- Autonomy, independence and self-determination (the ability to control his behaviour, control your actions - the emergence of self-confidence and self-assurance);
- Adequate perception of reality (real, objective view of the world);
- Manage their environment (the ability to love, to adapt).

Evaluation of stress profiles observed teachers enrolled in the project PACZion showed physical level as the most affected by stress. The average stress profile observed teachers from 31% concentrated in the physical level, from 28% in emotional level, from 24% in cognitive level and 17% at the social level. It can be said that the problems related to the perception of stress in the teaching profession are felt in the greatest degree as physical (fatigue, susceptibility to disease, sleep disorders, somatic complaints, and loss of physical strength). To a large extent they are perceived as problematic emotional issues related to their superiors teachers (feelings of sadness, helplessness in conflict situations, feelings of anxiety and fear and lack of recognition and awards) - see Kornatovská (2011). The least were disrupted social relationships (to students, to colleagues, to other family members). It is
evident that educators are trying to fulfil their professional mission, despite considerable mental and physical exhaustion.

Based on the obtained results, we recommend including of mental and relaxation techniques training into the school program. It is highly recommended to work on the optimization of circadian rhythms and adequate exercise regimen. Based on an appropriate exercise regimen can utilize and improve the innate ability to move and pay attention to preventive health care for adolescents. Paradigm for the regulation of well-being and wellness progress is a continuous transformation of “Self”.

For mental health is essential to strive for harmonious living, have the time and emotional support for rest and lead a life in the family so that it does not loads and stresses. Active pursuit of adequate physical activity in an adequate kinetic scheme not only increases the level of physical fitness, but also affects the psyche (self-esteem, self-assessment and evaluation of an individual by others) and may also affect social relationships and strengthening ties between teachers, between teachers and parents and between teachers and students.

6 Conclusions

Prevent the effects of stress is easier than removing them. Mental health and wellness status is closely linked with the system of values. Each person should himself clarify what is for him a valuable target to which it will focus its efforts, what will be preferred. Also satisfactory social and emotional relationships are an important part of life and strengthen resilience to physical and mental stress. Mental hygiene should become an essential part of the training of young athletes. This training is actually transformed into purposeful work on the Self, into purposeful education to wellness.

Learning is one of the basic human activities and can say that it is part of the human personality. The process of learning is reflected previous experience, knowledge, skills, attitudes, characteristics and emotional - motivational component of a specific person. Learning is inseparable from education. However, it should be an intentional action in order to achieve a positive development. The intentionality of learning and education results from an explicit goal or goals. Explicitness means that the objectives are clearly spoken or written and systematically collated.

Setting of goals does not automatically follow that it is familiar with both sides of the educational process. Some trainers recommend that sportsmen presented the objectives of the knowledge and skills objectives while focusing on attitudes and values has to know the
teacher or parent who chooses appropriate situations and conditions for their achievement. The phrase "positive development" that the person to whom it is caused to be passed to the next level, expand their horizons of knowledge. In the teaching of mental hygiene should be emphasized that all students have the right to develop in this area, regardless of their ability, age, physical condition, although development will not always have the same tempo and results for individual young athletes.

The most important phase of teaching mental hygiene should take place from early childhood in the family. In the school environment should be respected uniqueness and particularity of each person, as guaranteed by the Convention on the Rights of the Child. Teaching Mental Hygiene is educational in nature and as such is part of the "way of life" (Říčan 2006) with a specific use in life stages of man. It is also important to realize, teaching mental hygiene is part of the human heritage, which are frequently used techniques, and activities proven centuries, set in modern living context of the current generation and its further development. Mental hygiene, as it was already mentioned is closely related to the process of adaptation to the internal and external environmental conditions. Since school education is teaching more and more enriched auto education and gradually turning into self-education. One becomes more autonomous in the techniques of mental hygiene, realizing the objectives to which he wants to come and choose the appropriate means to achieve them. At the same time, of course, making continued influence of social environment - family, partner, children, employers, communication, etc.

Nešpor et al. (1996) provides evidence of the usefulness of relaxation exercises and yoga for other reasons. They can be as moderate as psychosomatic complaints such as headaches, replacing the addictive painkillers. Zemánková (1995) dealt with the use of yoga in hyperactive children with attention disorders. From the psychological point of view it is important that the change in mental status, the child actively involved, which enhances his self-esteem and confidence.

It is essential to research of leading experts on the impact of yoga techniques to functional changes in the autonomic nervous system. Team of authors Kolisko, Dostálek, Selinger, Tillich, et al. (1997) managed by spectral analysis of heart rate variability non-invasive way to monitor functional changes in the autonomic nervous system during yoga exercises. It was found that the influence of yoga exercises there are significant changes in the actual function of the autonomic nervous system in favour of increased activity of parasympathetic. It is very important for the overall health of the individual, since optimal
functional state of the autonomic nervous system modulates the activity of vital organs and endocrine glands.

Dostálek (1996) states that it is a system of yoga are very elaborate system of physical and mental exercises, which if properly applied, can induce positive changes in health status in severe disease. Changes in activity of the parasympathetic and sympathetic nervous system are associated with changes in the body hormonal activity of the body. To register these changes the functional state ANS pre, post and during yoga exercise can clarify the effect of exercise on functional changes of ANS during yoga positions, breathing exercises, but also in mental exercises such as during relaxation and meditation techniques. In comparison with conventional means of physical education, exercise endurance character as they have in the regular implementation of a positive effect on the normality of the functional state ANS, yoga achieves a similar effect an appropriate combination of other techniques that are diametrically opposed. Increased parasympatikotonie as a result of yoga exercise has a positive effect on psychosomatics.

During the above research revealed significant changes in the functional state of the autonomic nervous system among a group of people exercising yoga and people no practicing. Increased parasympathetic activity in the experimental group highlights the important role of training and correct position with a feeling of muscular and mental relaxation. Due to improper muscle activation it can provoke different effects to character rather gymnastic fitness exercise. This effect highlights the particular importance of technology implementation, especially the consistency conscious movement with breathing.

As it was already discussed above, in mental training in young sportsmen a special attention is giving to the breathing and there is a wide range to master breathing techniques, which according to modern physiological knowledge affect the current operational status of ANS and its overall tuning. Dostálek et al. (1996) focused on examining the impact of the full yogic breathing on the autonomic nervous system.

6.1 Recommendations to auto regulation techniques practicing in sport training

Very significant differences in momentary functional state of ANS revealed just depending on respiratory rate. It was found that the respiration frequency and spectral performance parasympathetic components of the ANS and an inverse exponential dependence. Individuals with a reflective pattern idle slow deep breathing was found in the frequency spectrum of ANS increased spectral power of the frequency components and a relatively high proportion of frequency components, which very likely related to
parasympathetic activity. Individuals with a reflective pattern have faster breathing frequency and spectral power is significantly lower in the parasympathetic components.

The formula the full yogic breath characteristic rhythmicity breath has a significant influence on the course of heart rate, which leads to synchronization of breathing pattern during the heart rate (respiratory arrhythmia), which is associated with increased activity of the vagus nerve, as a result of rhythmic changes in pressure in the chest. From this perspective, shows a significant influence respiratory rate and breathing techniques on the overall tuning of the autonomic nervous system towards parasympatheticus (decrease in blood pressure, heart rate, skin resistance changes, changes in EEG rhythms), which usually are found in healthy individuals exercising yoga. It is obvious that this long-tuning ANS also related to changes in catecholamine levels and can cause relatively greater emotional stability organism of the person practicing yoga exercises. Due to psychogenic stimuli from cortical parts of the CNS can be condensed in a state of consciousness during relaxation and meditation techniques targeted to achieve significant changes in the functional state of ANS. Using spectral analysis of heart rate can be monitored by changes in the functional state of ANS and use this method for objectification of the effect of exercise on the body as a method of biofeedback.

According Polášek (1995) we can observe during training follow positive effects:

**The effect on muscle tone**

Muscle tone is resting tension which remains in muscle, even if we are in a relaxed state such as sleep. Its level depends on the state of our psyche. When we are in mental tension, we cannot well be released or physically ill sleep and wake up in the morning like broken. Yoga exercises are performed with maximum relaxed muscles. It is deliberately stretching for some muscle groups. These muscles are stretched and thereby tensions are lowers in resting. This in turn affects the psyche, which adapts to the new level is muscle tension.

**The effect of the internal organs**

As is well known internal organs cannot control the will. Functioning of internal organs, however, closely related to mental state. If a person such as anger, fear, joy or see if something good or bad has an effect on the internal organs. The manifestations of this effect may be redness, pale, rapid breathing and heart frequency. Some individuals may even lose consciousness. In resting, relaxing positions (asanas) there is a change of pressure conditions in some internal organs and thereby changing the mixing ratios which affects the rhythm of their activities. This change in turn influences the respective centres of the brain which is
reflected in the mind, especially the subconscious. This is in addition massage of the internal organs and stimulation of the activity, of the subconscious to remove long-standing tensions.

The effect on the emotional state

Mental balance is closely related to the ability to concentrate. Restlessness of man is a lot of energy because they have to think of many things simultaneously. He works in a hurry and distracted and more mistakes which are reflected back on his mental state. Improving of the concentration ability leads resistance increasing against external and internal interference phenomena. All yoga techniques present also special concentration exercises. Use the knowledge that an individual restless difficult to maintain body balance, and that the reverse process, i.e. practicing physical balance, it is possible to retroactively affect the mental balance.

The difference between yoga exercises and European physical education can be by Votava (1988) simply characterized as follows: The physical education is primarily focused on the rapid contractions of skeletal muscles and raises during and after the exercise transient increase in sympathetic activity. The immediate consequence of such an exercise is fatigue. On the other embodiment of yoga exercises leads to increased equilibrium of the organism. After exercise, the practitioner feels refreshed and comforted, because a set of exercises inches vegetative state system rather toward parasympathetic predominance.

Increased sympathetic activity and stress hormones affect the activity of most organs in the body. This increases the blood flow (but actually diverts blood from the digestive tract as a limiting his activity), stress stimulates the heart and increases blood pressure, precisely because of security adequate distribution of nutrient circulation. There is a release of energy reserves of the organism, primarily glycogen breakdown, from which it releases glucose into the blood. This whole process is very energy intensive and result in physical condition and mental exhaustion.

As mentioned in the preceding chapters, adequate exercise regimen is clearly defined characteristic features. Adequate exercise regimen is also appropriate to add motion activities that can be operated in nature. Adequate exercise regimen is essential to promote and develop human health, including optimization of circadian rhythms, development of physical education and compensation of fatigue and neuropsychological load.
6.1.1 Release technique

Relaxation is the “cleansing” of the body from the so-called residual muscle and mental tension. In the central nervous system of humans are designed sensations from various parts of the body in proportion to the area and weight. The projection physiological scheme shows that it is useful to pay more attention to other toes and fingers and toes, part of the face (cheeks, chin, tongue), i.e. those parts which for the greater part of the motor and sensory areas of grey matter.

Very short relaxation can be classified like short refreshment during the day or it is inserted between the sport training periods. Short relaxation requires some experience with relaxation at all. The muscles of the better releases present the prior of practicing.

For relaxation is important to the overall atmosphere of the space, light, air quality, etc. Relaxation should operate in a peaceful environment where they feel comfortable with the certainty that nothing disturbs suddenly. It is not necessary to provide for relaxation absolute silence, you need to try what works best for us. For relaxation you can use an appropriate musical accompaniment. We should not, however, become addicted to music, to the extent that without musical accompaniment we would relax successful. In the choice of music is also a need for caution. We should consider what we leave to enter the conscious and subconscious mind.

Relaxation should not be stopped suddenly. Before concluding relaxation deepen your breath. Emphasize and lengthen breath. We realize where we are, in what direction it lies. Then start slowly loosening your toes and hands, then the whole body as we move further hint slowly (even with eyes closed) in sitting position. It is pleasant and beneficial to the conclusion rub hands together to warm up and then attach them to the eyes and let the warmth flow into the eye and the head area. Eyes are opening slowly. Looking first to the hands and then into the room. After relaxation participants have a pleasant, almost festive feeling, which in itself is kept long after exercise. It's about to move to the next business was slow.

Following relaxation, if possible, can be applied in "inner silence" state (Antaur mauna).

Examples for practice in sport mental training:

A. "Relaxation with the imagination of the bright shining point"

The best location for its implementation is lying on the back. First, we will release the entire body. Furthermore we try to imagine the idea of luminous point inside the body - the location is arbitrary. We can imagine spreading of the rays through the body, including its
outlying areas, and their penetration into the area. Along with the idea of beam spreading through the body, we experience relaxation, a feeling of cleanliness — no any "dark corners" into us, everything is drenched, clean. After reaching of deeper relaxation and a sense of purity, we relax of any ideas and experience just a pure relaxation and a feeling of energy.

B. "Relaxation with the imagination of the Sun"

The relaxation procedure is in addition to opportunities for relaxation and a means to vitalize the body. The best position is lying on the back. First, make a short relaxing the entire body. Furthermore we image an idea of the solar disc in yellow, gold or orange and place it in the solar plexus. The idea in us does not create a sense of tension. With every breath we focus in an imaginary solar disc in the abdominal and feel here instead of concentrated energy. With every breath this energy imaginatively is penetrating throughout the body, including its outlying areas. Along with the idea of heat and light radiated body, we experience relaxation, revitalization, healing.

6.1.2 Breathing techniques

Breath is one of the fundamental biorhythms, which can be easily monitored. It connects perfectly physical and psychological areas. Of breath we can regulate own health, but also our emotional expressions and movements (such as fear, anxiety). Life is not possible without breath. A short and shallow breath is unhealthy. Such breath causes restlessness, nervousness and tension in the body. The healthiest is calm, deep and slow breathing, which is characteristic for a balanced and stable person. It is good to learn to breathe properly and use the full capacity of the lungs. We distinguish three types of breathing:

- Subclavian breathing is the least healthy breathing. It is short and fast. Short and rapid breathing associated with a short life.
- Chest breathing is the most common way of breathing in sport activities. Breathing is slower, but still shallow. The result is tension and nervousness.
- Abdominal Breathing is the most effective of the three methods. It is slow and deep. Deep and slow breathing is an important prerequisite for a healthy and long life.

To have the full benefit of breathing, we should be able to reconcile all of these ways of breathing into a single unit, the full yogic breathing. However, fundamentally breathe through your nose and try to gradually lengthen breath and slow down. Breathing exercises deepen the effect of physical exercise and also works well on cardiac function, blood
circulation, on respiratory system and have a balancing effect on the autonomic nervous system.

Emotional stress has a negative effect on the rhythm and depth of breathing. But it does mean that it can also adversely affect the regulation of breathing through intentional mental state. Controlled breathing can dissolve the consequences of untreated stress, activate attention, moderate pain, can overcome fatigue, facilitating peaceful sleep and calm aggression.

Breathing is a process driven visceral nerves, it is largely unconscious act. However, as breath can control play, is initially unaware of the motion to transfer the conscious activity. Therefore, the mere mechanical breathing exercises, without internal concentration, they are not effective enough. It is crucial, with the attention and experience breathing exercises are performed.

Kubičková (1996, 1997) reported that only few people today breathe properly and so virtually everyone is necessary re-education of breathing patterns. The condition is full, slow and rhythmic breathing through the nose with a relaxed diaphragm. The author also points out that culture is breathing received little attention. Today, only a few people breathe fully and deeply, slowly and rhythmically, as it should match the structure of the human body and the demands of a healthy lifestyle. Correct breathing perhaps only very small children, adults only sleeping. Wind mechanisms depend largely on the mental equilibrium, are often from childhood so disturbed that they cease to be harmoniously. This causes to very rapid, shallow, or irregular breathing.

All breathing techniques with calming effect with the following recommendations: The breath should be slow, rhythmic, full and deep. The first step to correct the distorted wind patterns is to restore breathing through the nose and then replace the emergency breathing through the mouth.

Mouth breathing in childhood is one of the causes of poor performance of child, affects concentration, thinking and overall behaviour. The consequences of improper breathing may be reflected in the nasal mucosa in the form of adenoids, which then becomes the main obstacle breathing.

Improper breathing is also reflected in the open mouth open, designated posture of shoulders hunched backs, tight chest, shoulder blades protruding, flabby belly and generally clumsy movements. With proper breathing through the nose, the air warms up and read in three transverse interconnecting channels of the nose. Mostly, however, is used only channel bottom, which is the result of misuse shallow breathing. Most usually neglected passage is in
the upper nose. It is precisely this passage of air just below the ridge of the nose is very important. This full breath is achieved mild irritation of the pituitary gland, which affects the activity of the endocrine glands and hence the overall psychophysical balance.

Another consequence of improper breathing pattern is broken rhythm of breathing. With proper breathing exhalation is always longer than the breath that could occur after a momentary pause, required for new muscle tension and thereby to facilitate a deep breath. Rhythm harmonizing breath should reflect the ratio 3-5 times 5-7 times to inhale exhale. Inhalation is always associated with the activation and voltage, exhaling with release and calming.

Breathing is only vegetative function that can directly influence in organism. Significance breath is that it enables intervention in an otherwise uncontrollable clearance activity of internal organs and thus opens the way to their possible regulation. Yoga breathing exercises affects not only the respiratory function, but also affect the psyche, muscle tension and the other internal organs in the chest and abdomen. Central control of breathing has a significant effect on the whole central nervous system.

**Exercises for development of breathing control:**

**A. "Observation of breath"**

Lie on your back, arms loosely at your sides, palms up. Legs bent at the knees, feet on the mat. The whole body is relaxed.

**Variation A**

Put a hand on stomach and observe the movement of the abdominal wall during inhalation and exhalation. Put the palms on the part of the ribs (toes pointing towards the sternum) and observe whether and how far the ribs under palm widening and download again.

Put a hand just below the collarbone and perceive movement in the chest.

**Variation B**

Quietly and breathe deeply, realize all the feelings associated with the breath. After five to six breaths put arm abovein an angle of about forty-five degrees. Arms are lying on the mat. After another five to six breaths move the arm on the mat for another forty-five degrees, until stretched out. Continue to move until throw up. Whenever you change the position of the arms we see how it changes the feelings associated with the breath and how it deepens breathing. With exhalation put arms down. Legs stretch and loosen up.
B. Right nostril breathing ("Sun Breath")

Exercises performed in any sitting position, on matt, on a chair, etc. The important thing is to sit straight, but relaxed. Index and middle finger of his right hand we put together, attach it to the front and close with other finger the left nostril. We provide right nostril breathing - inhale and exhale – maximally 10 - 20 times advanced. This exercise is useful for fatigue removing, has strong stimulating, activating effects.

C. Calming and concentration up breathing (Udāji technique from yoga)

Exercises performed in a sitting position in a supine or in other positions. It is a deep breath with the concentration of the throat, the airways that narrow down the field of vocal cords, so when you inhale and exhale creates a sound like faint snoring. The mouth is closed, breathing is realising only through the nostrils. This is a very soothing exercise. It prevents diseases of the lower respiratory tract.

D. Activating breathing (Bee breathing)

Exercises performed in any sitting position. We breathe through the nose. On the exhale of the soft palate and pharynx we are creating a sound like buzzing bees. When you exercise your fingers close the ears. We concentrate on the sound that arises in the head. The exercise is good for stimulating, activating to performance, suitable for fatigue, malaise, depression management.

Emotional stress has a negative effect on the rhythm and depth of breathing. Breathing is a process driven visceral nerves, it is largely unconscious act. However, as can breathing play a role of control, initially unaware of the movement can be converted in a conscious activity. Breathing exercises for wellness development is based on principle that exhalation should be slightly longer than inhalation.

The basic postulates of so called “Psychology of breathing”:

Breathing plays an essential role in all yogic techniques and exercises. Research has shown that most people breathe too shallowly. The body insufficient oxygen reduces the metabolism and consequently greatly harms physical health. Due to the specific relaxation, physical and breathing exercises realize it naturally deeply. Regular exercise will gradually learn to eliminate bad breathing habits and replacing them with a deep relaxed breathing. Retrieve only the physical and mental health; clearly reinforcing the vitality and the body’s defences.

- Breathing is controlled centrally and peripherally, affects all cells in the body.
- Breathing is directed to all parts of the body can be any part of the body (relaxation, pain relief, etc.)
Breathing is continuous. We can recognize it in every moment of life.

Breathing can influence emotions, memories, thoughts, physical symptoms, self-esteem and self-image and even change the personality.

Breathing may be available, and limited, conscious and unconscious.

Breathing is important for maintaining homeostasis - acid-base balance, electrolyte balance and oxygen and glucose).

Breathing is very important for social contacts in verbal communication.

Breathing is reflective nature complex, however, connects humans with the environment.

When a condition called "over breathing" may be seriously impaired acid-base balance. It can manifest itself as "unexplained" hypocapnia, but basically it comes to acute or chronic stress, although the cause is sought elsewhere. The consequences can be complicated. In this area offers yoga exercises that help at least some risk factors minimized. Easy, step-ranked physical exercises again stabilize blood circulation, strengthen the vascular system and improve the work of the heart. Special breathing exercises improves the flow of oxygen and release carbon dioxide from the body so the body can gradually again to restore the natural balance between the need and supply of oxygen. Relaxation exercises can help to achieve physical and mental relaxation.

Basic overview of breathing exercises suitable for teaching in mental training. Their mutual ratio, the number of repetition, rhythm, length, traps occurs activating or inhibiting effects. Breathing exercises may be carried out separately, preferably in a quiet, once, if necessary several times a day. Technique of breathing affects not only physical health, but also the emotions and mental harmony. During stress, fear or anger is breath shallow and fast, then released during deep and slow. Conscious and volitional deepening the breath, one can turn in stressful situations acquire serenity. So we can learn to respond for help calm breathing freed from the burdens and problems of everyday life and professional life, and thereby positively affect their mental balance. Breathing exercises can help relieve breathing and healthier people with respiratory diseases such as asthma or chronic bronchitis. Breathing is truly unique in its effect on the body performance and psychic benefits. Highlighted by the psychology breathing and highlights the inseparability of human physiology and behaviour when breathing plays a key role in both homeostasis in biological terms and in terms of self-regulation of behaviour.
7 References


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USING OF ANTHROPOLOGICAL METHODS IN EVALUATION OF CHILDHOOD OVERWEIGHT AND OBESITY

Pavel Bláha

Abstract: The problem of childhood obesity is at present of major interest. Obesity is characterized above all by excessive body weight associated with cumulating of body fat. This is associated with cumulating of risk factors some of which are manifested already in childhood. The prevalence of obesity is increasing steadily in advanced countries as well as some developing countries. This trend is manifested the cause is in the imbalance between the energy intake and energy output, however, relationships only respective. Obesity is multifactorial disease. The simplest manner of defining obesity is provided by selected methods of clinical anthropology, e.g. using of Matiegka’s formulas. This method analysed body composition, is non-invasive, easy to use in the field, suitable for short-time examination of patients and relatively cheap.

Key words: overweight, obesity, anthropological methods, BMI, Matiegka’s equations.

1 Introduction

Obesitology is a branch of medicine that provides a wide field of application for methods of clinical examination under the overall heading of physical anthropology. Its scope of study is represented by harmful and excessive overweight, which is regarded as one of the most severe disorders troubling modern civilisation in developed industrial countries. In the past decade its occurrence has risen dramatically in most western societies, making it an alarming and predominant phenomenon as early as at the first stages of childhood. Its expansion is conditioned primarily by the social and economic status of human populations, especially by their lifestyle and standard of living. However, it depends chiefly on a number of individual factors, on a person’s specific disposition, on the body build and genetic inheritance. Last but not least, family upbringing and schooling play a significant role.

A typical trait of obese individuals is seen in an abnormal body build showing a remarkable predominance of excessive fat development. The quantification and qualification of obesity (in the sense of distribution of subcutaneous fat in the body) poses a difficult
problem to tackle by scientific research. Its difficulty is not lessened by the wide scale of theoretical methods applied. An obese subpopulation represents a serious problem for all age groups, because the ontogenetic development of obese individuals diverges from the normal population as early as the first stages of childhood.

The simplest manner of defining obesity is provided by selected methods of clinical anthropometry. In combination with biochemical methods and other procedures of clinical examination, they enable us to detect the precise somatic composition of an obese individual. They make it possible to control his biochemical status, propose a convenient reduction diet and check the success of treatment on his figure. The main advantage of anthropometrical methods is their non-invasive character. They are not time-consuming, expensive or extremely demanding. Since they rely mostly on clinical examination, they do not require extensive field research.

In estimating and monitoring the somatic habitus of an obese individual as well as in evaluating the success of reduction diet, it is beneficial to choose anthropometrical measurements that do not require the presence of a professional anthropologist. Such routine measurements adhere to simple characteristics such as the BMI index, selected girth parameters and skinfold thickness measured by a Best or possibly Harpenden caliper. Such elementary examination may be completed by measurements requiring a qualified anthropologist’s attendance in interpreting data obtained. They establish proportions for determining components of the somatic composition of a body according to Matiegka’s equations, selected indices of body mass, indices of centrality and others.

Nearly 80 years ago, the Czechoslovak anthropologist Jindřich Matiegka proposed a method for the anthropometric fractionation of body mass into four main components: skeletal mass, fat mass, muscle mass, and residual or vital organ/visceral mass. He was a kinanthropometrist concerned with determining the physical efficiency of an individual. He was interested in particular in the estimation of muscular strength from anthropometric estimates of body mass. A few investigators, such as Pařízková, acknowledged their debt to Matiegka, but many other investigators working in the field of body composition appear to have overlooked his insightful work.

2 Aim

Evaluation of the degree of obesity in children by means of anthropometric methods has many variants. The variants differ as to the degree of differentiation of different body constituents and thus also the number of parameters included in the list.
3 Methods descriptions

Possible anthropological assessment of obesity in children:

A. **BMI – In the child and adolescent population the usual categories of BMI** (e.g. according to Knight) cannot be used. However, we are faced increasingly with the necessity of categorization in the child and adolescent population. For the obese Czech child and adolescent sub-population classification of obesity grades was lacking. Therefore values of the 3rd, 25th, 50th, 75th, 90th and 97th empirical BMI percentile of the obese subpopulation were calculated for age groups from 6 to 18 years, separately for each sex. This enabled us to define three grades of obesity by BMI in relation to sex and age. As liminal values of BMI defining the lower borderline of grade 1 we took values of the 97th percentile of different age groups of the Czech reference population (5th Nationwide Anthropological Survey in 1991). The upper borderline of the first grade of obesity are values of the 50th percentile of the sub-population of the investigated group of obese subjects (8237 probands). The second group comprises subjects with BMI values between the 50th and 90th percentile of the investigated obese sub-population. The third grade of obesity comprises probands with BMI values above the 90th percentile. We wish to present therefore to the professional public for practical use a table 3 „**Limit BMI values defining values of 3 grades of obesity in the Czech child and adolescent population“**.

B. **BMI differentiated into two components: body fat and lean body mass**

However, the BMI is not sufficient for the evaluation of the degree of obesity and its changes during reducing treatment. Attempts to solve the dependence of BMI on height by some compromise cannot be rejected but the body fat and lean body mass component should be considered separately in a given index.

\[
\text{BMI} = \frac{W}{H^2} = \frac{F}{H^2} + \frac{\text{LBM}}{H^2}
\]

W – Body weight in kilograms
H – Body height in metres
F – Body fat mass in kilograms
LBM – lean body mass in kilograms.
C. Matiegka’s formulas for estimation of body components

\[ W = O + D + M + R \]

\( W \) – Body weight in grams
\( O \) – Skeletal mass in grams
\( D \) – Mass of the skin and subcutaneous adipose tissue in grams
\( M \) – Muscle mass in grams
\( R \) – Residual mass in grams

SKELETAL MASS – \( O \)

\[ O = o^2 \cdot H \cdot k_1 \]

\( o = \frac{o_1 + o_2 + o_3 + o_4}{4} \)

\( o_1 \) – width of the distal humeral epiphysis
\( o_2 \) – width of the wrist
\( o_3 \) – width of the distal femoral epiphysis
\( o_4 \) – width of the ankle
\( H \) – body height
\( k_1 = 1.2 \)

All measurements are in centimetres.

MASS OF THE SKIN AND SUBCUTANEOUS ADIPOSE TISSUE – \( D \)

\[ D = d \cdot S \cdot k_2 \]

\[ S = 71.84 \cdot W^{0.425} \cdot H^{0.725} \]

\[ d = \frac{1}{2} \cdot \frac{d_1 + d_2 + d_3 + d_4 + d_5 + d_6}{6} \]

\( d \) – Sum of skinfolds in centimetres
\( d_1 \) – upper arm skinfold above biceps
\( d_2 \) – anterior side of the forearm at maximum breadth skinfold
\( d_3 \) – thigh above the quadriceps muscle halfway between the inguinal fold and the knee
\( d_4 \) – calf (medial)
\( d_5 \) – thorax at the costal margin halfway between the nipples and the navel (chest 2)
d₆ – on the abdomen in the upper third of distance between the navel and the superior anterior iliaca spine
S – Body surface area in square centimetres (3); can be assessed by means of a nomogram (figure I. 5. – 1)
W – Body weight in kilograms
H – Height in centimetres
k₂ = 0.13
Skinfold thickness in centimetres. MUSCLE MASS – M

\[ M = r^2 \cdot H \cdot k_3 \]
\[ r = \frac{r_1 + r_2 + r_3 + r_4}{4} \]

r – Representing the radii calculated from circumferences in centimetres
H – Body height in centimetres
k₃ = 6.5

The circumferences must be corrected for the thickness of the subcutaneous tissue + skin (fat).

Formula for computing of radius (rₓ) of circumferences (Crₓ) corrected for fat:

\[ rₓ = \frac{Crₓ - 3.1416 \cdot \text{skinfold}}{2 \cdot 3.1416} \]

Cr₁ – circumference of the relaxed arm in centimetres
Cr₂ – maximum circumference of the forearm in centimetres
Cr₃ – median circumference of the thigh in centimetres
Cr₄ – maximum circumference of the calf in centimetres

RESIDUAL MASS – R

\[ R₁ = b \cdot H \cdot k₄ \]
\[ b = \frac{b₁ + b₂ + b₃}{6} + \frac{b₄}{2} \]
\[ R_2 = W - (O + D + M) \quad \text{R Matiegka} = W \times 0.206 \]

R – Eligible:

\[ R_1 \] – residual calculated in grams
\[ R_2 \] – mass of the remainder in grams (residual supplemented)
\[ R_{\text{Matiegka}} \] – residual calculated according to Matiegka (5)

H – Body height
\[ k_4 = 0.34 \]
\[ b_1 \] – biacromial width
\[ b_2 \] – bicristal width
\[ b_3 \] – transverse diameter of the chest
\[ b_4 \] – sagittal diameter of the chest

W – Body weight in grams
O – Skeleton mass in grams
D – Skin and subcutaneous adipose tissue mass in grams
M – Muscle mass in grams

All measurements are in centimetres.

For practical application of Matiegka’s equations see table 4.

4 Discussion

Applications of anthropometrical methods in obesitology may be summarised in the following items:

(1) The advantage of classical anthropometrical methods is their non-invasive character; most of them are relatively cheap without requiring extensive field research and time-consuming activities.

(2) The ontogenetic development of obese individuals diverges from normal populations as early as the first stages of childhood. It involves all somatic characteristics manifested in the acceleration of growth in childhood and excessive development of body mass (Tables 1, 2).

3. In order to attain higher objectivity, it is beneficial to make use of the BMI index:

(a) In children and adolescents the values of the BMI index vary significantly with age, and therefore it is not permissible to apply to children populations methods of
(b) We recommend using the percentile graph BMI (Part 4.3 -Figure 1a, Figure 1b):
90\textsuperscript{th} – 97\textsuperscript{th} percentile BMI – excessive body mass, BMI over 97\textsuperscript{th} percentile – obesity;

(c) Degrees of obesity in obese individuals at the age of 6 to 19 may be determined according to the table ‘Limit values of the BMI index defining 3 degrees of obesity in the Czech population of children and adolescents’ (Table 3);

(d) If we have at our disposal information about fat component, we should divide the BMI index into the fat component and the component of ‘fat-free body masses.

(4) The WHR index provides limited information on degrees of obesity; in the latest literature it is recommended to evaluate girth parameters separately.

(5) The component of fat in the somatic composition is estimated as follows:
(a) In order to estimate the total amount of the fat component by measuring skinfold thickness, in common practice it is recommendable to use calipers;

(b) It is common to use calipers of the BEST or HARPENDEN brand (different pressure, different sizes of surface); it is not permissible to use values obtained by one type of caliper for calculating values obtained by another caliper; transformation of values between two different types of calipers is carried out by means of conversion tables;

(c) The BEST caliper is more suitable for measuring skinfold thickness in obese individuals, because it covers a considerably wider range of values;

(d) Owing to uneven distribution of fat in various parts of the body it is convenient to apply the method that includes more skinfolds into calculation; usually is used examination according to Matiegka’s equations, adult populations may also be examined with the aid of Pařízková’s regressive equations.

(e) Bioelectrical impedance may be used only if we observe the regime of examination strictly. Its use for obese populations of children is controversial. If there is no convenient software, it is not appropriate to use it for populations of sportsmen and for normosthenic populations of children either.

(6) Indices of centrality give a precise approximation of the distribution of subcutaneous fat.

(7) Matiegka’s equations provide an efficient tool for a more detailed analysis of body fat composition on the basis of measurements of given parameters.

(8) The success of treatment by reduction diets aiming to reduce the amount of body fat may be evaluated according to the decrease in selected girth parameters and skinfold
thickness, providing we respect the hierarchy of their mutual importance. More detailed subsequent evaluations may observe differences in body fat composition determined according to Matiegka’s equations. The decrease of the body fat component should exceed seven times the decrease of muscular mass.

5 Conclusions

We have proved Matiegka’s equations like usefulness both theoretically and for practice. Why to use Matiegka’s equations? They are based on European populations. The method is non-invasive, easy to use in the field, suitable for short-time examination of patients and relatively cheap.

We recommend using Matiegka’s equations for evaluation of reduction of body mass, as they are based on easily measured anthropometric parameters, which enable us to specify the mass of skeleton, muscles, fat and residual tissues. The methods are suitable for rapid examination of probands and relatively cheap.

As for the Body Mass Index, we recommend to differentiate between the fat component and lean body mass.

6 References


Bláha P., Vignerová J. at. al.( 2002) Ingestivation of the growth of Czech children and Adolescents. Praha, SZÚ; PfF UK.

Bláha P., Krejčovský L., at. al. (2006) Somatický vývoj současných českých dětí; semilongitudinální studie ( Somatic development of contemporary Czech children; Semilongitudinal study) Praha PfF UK, SZÚ.


7 Contacts

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### Appendix

**Nomogram for determination of body surface from height and weight**

<table>
<thead>
<tr>
<th>Height (cm)</th>
<th>Body surface (m²)</th>
<th>Weight (kg)</th>
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</thead>
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### Table 1 Basic body parameters
(sample of Czech obese children) Boys (n = 3039)

<table>
<thead>
<tr>
<th>Age/ years</th>
<th>BOYS</th>
<th>Body height (cm)</th>
<th>Body weight (kg)</th>
<th>BMI (kg/m²)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>x ± s. d.</td>
<td>x ± s. d.</td>
<td>x ± s. d.</td>
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<tr>
<td>6.00 – 7.99</td>
<td>88</td>
<td>127.7 ± 9.63</td>
<td>41.8 ± 8.10</td>
<td>25.7 ± 3.00</td>
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<tr>
<td>8.00 – 8.99</td>
<td>99</td>
<td>137.8 ± 6.32</td>
<td>49.6 ± 8.42</td>
<td>26.0 ± 3.41</td>
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<td>9.00 – 9.99</td>
<td>198</td>
<td>143.6 ± 6.20</td>
<td>54.9 ± 9.73</td>
<td>26.4 ± 3.72</td>
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<td>10.00 – 10.99</td>
<td>347</td>
<td>148.5 ± 6.90</td>
<td>59.3 ± 10.05</td>
<td>26.8 ± 3.15</td>
</tr>
<tr>
<td>11.00 – 11.99</td>
<td>529</td>
<td>153.6 ± 7.06</td>
<td>65.0 ± 11.12</td>
<td>27.5 ± 3.46</td>
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<td>12.00 – 12.99</td>
<td>600</td>
<td>157.8 ± 7.87</td>
<td>69.8 ± 12.16</td>
<td>28.0 ± 3.63</td>
</tr>
<tr>
<td>13.00 – 13.99</td>
<td>626</td>
<td>163.7 ± 8.14</td>
<td>77.5 ± 12.43</td>
<td>28.9 ± 3.73</td>
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<td>14.00 – 14.99</td>
<td>326</td>
<td>168.0 ± 8.17</td>
<td>84.8 ± 15.55</td>
<td>29.9 ± 4.32</td>
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<td>15.00 – 15.99</td>
<td>95</td>
<td>171.6 ± 7.74</td>
<td>-0.15 ± 19.02</td>
<td>31.6 ± 5.16</td>
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<td>16.00 – 18.99</td>
<td>131</td>
<td>177.6 ± 8.44</td>
<td>105.6 ± 19.23</td>
<td>33.2 ± 4.61</td>
</tr>
</tbody>
</table>

Z-score calculated in relation to reference values of normal child population of corresponding age groups (Bláha et al. 1986, Lhotská et al. 1993)

### Table 2 Basic body parameters
(sample of Czech obese children) Girls (n = 5198)

<table>
<thead>
<tr>
<th>GIRLS</th>
<th>Body height (cm)</th>
<th>Body weight (kg)</th>
<th>BMI (kg/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>x ± s. d.</td>
<td>x ± s. d.</td>
<td>x ± s. d.</td>
</tr>
<tr>
<td>6.00 – 7.99</td>
<td>175</td>
<td>129.1 ± 7.51</td>
<td>41.0 ± 8.07</td>
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<td>8.00 – 8.99</td>
<td>172</td>
<td>138.4 ± 7.62</td>
<td>48.1 ± 9.56</td>
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<tr>
<td>9.00 – 9.99</td>
<td>330</td>
<td>142.4 ± 6.75</td>
<td>52.4 ± 8.95</td>
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<tr>
<td>10.00 –</td>
<td>457</td>
<td>148.3 ± 7.05</td>
<td>57.3 ± 9.83</td>
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<tr>
<td>11.00 –</td>
<td>744</td>
<td>153.6 ± 7.04</td>
<td>63.6 ± 11.22</td>
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<td>12.00 –</td>
<td>785</td>
<td>158.7 ± 6.40</td>
<td>71.3 ± 11.61</td>
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<td>13.00 –</td>
<td>102</td>
<td>161.9 ± 6.44</td>
<td>77.2 ± 12.14</td>
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<td>14.00 –</td>
<td>812</td>
<td>163.7 ± 6.80</td>
<td>80.3 ± 13.21</td>
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<tr>
<td>15.00 –</td>
<td>294</td>
<td>164.2 ± 6.80</td>
<td>81.8 ± 14.16</td>
</tr>
<tr>
<td>16.00 –</td>
<td>401</td>
<td>165.0 ± 6.50</td>
<td>85.6 ± 15.20</td>
</tr>
</tbody>
</table>

Z-score calculated in relation to reference values of normal child population of corresponding age groups (Bláha et al. 1986, Lhotská et al. 1993)
Table 3 Limit BMI values of 3 grades of obesity in the Czech child and adolescent population

<table>
<thead>
<tr>
<th>Age/ years</th>
<th>BOYS</th>
<th>GIRLS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grade 1</td>
<td>Grade 2</td>
</tr>
<tr>
<td>Mild obesity</td>
<td>19.6 – 24.8</td>
<td>24.9 – 28.8</td>
</tr>
<tr>
<td>Medium obesity</td>
<td>20.2 – 25.0</td>
<td>25.1 – 29.2</td>
</tr>
<tr>
<td>Severe obesity</td>
<td>21.1 – 25.3</td>
<td>25.4 – 30.4</td>
</tr>
<tr>
<td>Mild obesity</td>
<td>22.2 – 25.7</td>
<td>25.8 – 30.5</td>
</tr>
<tr>
<td>Medium obesity</td>
<td>23.3 – 26.2</td>
<td>26.3 – 30.9</td>
</tr>
<tr>
<td>Severe obesity</td>
<td>24.3 – 27.0</td>
<td>27.1 – 32.0</td>
</tr>
<tr>
<td>Mild obesity</td>
<td>25.1 – 28.6</td>
<td>28.7 – 33.5</td>
</tr>
<tr>
<td>Medium obesity</td>
<td>25.5 – 29.3</td>
<td>29.4 – 34.7</td>
</tr>
<tr>
<td>Severe obesity</td>
<td>26.2 – 31.0</td>
<td>31.1 – 39.6</td>
</tr>
<tr>
<td>Mild obesity</td>
<td>26.9 – 32.5</td>
<td>32.6 – 38.3</td>
</tr>
<tr>
<td>Medium obesity</td>
<td>27.6 – 33.5</td>
<td>33.6 – 40.4</td>
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</tbody>
</table>

The table was elaborated on the basis of the reference group of 8237 obese Czech children and on data from the 5th Nationwide Anthropological Survey 1991. © Bláha P. 2001

Table 4 Other investigated parameters
Selected parameters listed according to paired t-test
Czech obese children (6 – 16 years)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>BOYS</th>
<th>GIRLS</th>
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<tr>
<td></td>
<td>Paired t-test</td>
<td>Difference</td>
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<td></td>
<td>n =</td>
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<td>Weight</td>
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<td>Calculated weight</td>
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<td>19.44</td>
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<tr>
<td>Muscles (Matiegka) – kg</td>
<td>9.24</td>
<td>3.89</td>
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<tr>
<td>Muscles (Matiegka) – %</td>
<td>28.62</td>
<td>12.02</td>
</tr>
<tr>
<td>Fat (Matiegka) – kg</td>
<td>55.35</td>
<td>23.27</td>
</tr>
<tr>
<td>Fat (Matiegka) – %</td>
<td>50.47</td>
<td>21.21</td>
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<tr>
<td>Sum of 10 skinfolds</td>
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<td>29.92</td>
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<tr>
<td>% of fat (Pařízková)</td>
<td>45.34</td>
<td>19.69</td>
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<tr>
<td>BMI</td>
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<tr>
<td>Rohrer index</td>
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<tr>
<td>Ponderal index</td>
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<td>30.03</td>
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<tr>
<td>WHR index</td>
<td>15.81</td>
<td>6.23</td>
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</tbody>
</table>
Conversion table of skinfold thickness values assessed by a best caliper to values of a Harpenden caliper

The skinfold thickness assessed for estimation of the body fat percentage is measured by a Best caliper or Harpenden caliper. These calipers differ above all by their shape of contact surfaces and also by a different pressure. For calculation of body fat on the basis of skinfold thickness a number of regression equations or tables are used which were designed for a specific type of caliper. Therefore it is not permissible to assess the body fat from values measured by a Best caliper according to equations or tables for a Harpenden caliper and vice versa. As the majority of departments possess only one type of caliper, we prepared a conversion table (table I. 6. – 1).

The percentile thicknesses of selected skinfolds, which are presented in chapter I. 4. were measured by means of a Harpenden caliper. The mentioned table thus makes it possible to convert values assessed by a Best caliper to values of a Harpenden caliper. Every skinfold behaves differently in relation to the caliper, therefore conversion values are given separately for each skinfold.

The submitted table is the result of regression analysis, which was implemented on the basis of parallel measurements of selected skinfolds by both types of calipers. In this way 2898 probands were examined (1363 boys and 1535 girls) aged 3 to 18 years. Analysis revealed that skinfolds measured by both types of calipers behave similarly in boys and girls (correlation coefficient \( r = 0.98 \)). Thus the table makes it possible to convert values regardless of gender.

Example of use:

Using a Best caliper for the skinfold above the biceps a 10 mm value was assessed. In column I of table 5. – 1 we look up value 10. In this line in column 2 (biceps) we find value 10.4. The latter value corresponds to the value we would obtain by measuring the skinfold above the biceps by a Harpenden caliper. The table can be used also for conversion of values obtained by a Harpenden caliper to values of a Best caliper.
Table 5  Conversion of skinfold thickness values assessed by a Best caliper to values of a Harpenden calliper

<table>
<thead>
<tr>
<th>Values measured by a Best caliper</th>
<th>Biceps</th>
<th>Triceps</th>
<th>Suprailiacae</th>
<th>Subscapulare</th>
<th>Frontal thigh</th>
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WELLNESS: ITS ORIGINS, THEORIES AND CURRENT APPLICATIONS IN THE UNITED STATES

Jana Stará, Michal Charvát

Abstract: In the Czech setting, wellness is known as a synonym of spa facilities, but the former concept of wellness, as it evolved in USA in the 70’s, is a holistic model of health which serves as an alternative to traditional perception of human health. Knowledge of the origins, former theories and current application of wellness is necessary for healthy development of this industry, not only in the Czech Republic.

Key words: Wellness, holistic health, workplace wellness, wellness coaching, wellness tourism.

1 Introduction

A usual question to open this article could be: What is wellness? The term wellness is very often used by healthcare professionals, as well as by the general public, but usually it lacks deeper understanding. Absence of generally accepted definition of wellness leads to a confusion among both professionals and clients and it decelerates the development of a sound body of scientific knowledge related to wellness. At the same time, the deficiency of clear explanation might lead to misinterpretation of the whole concept of wellness (Corbin & Pangrazi, 2001).

In scientific literature the term wellness is used in the same context as well-being. Authors Gord Miller and Leslie T. Foster, in their article “Critical synthesis of wellness literature” (2010) confirm that those terms are being used interchangeably. We can also find simplistic explanations of the evolution of the term wellness, such as connecting words well-being and fitness (Poděbradský, 2008), where the loose translation would be “move and be OK”. There are no evidences of such formation of the word “wellness” in the original literature, and from its nature, this explanation is far too reductionist. It limits the holistic and multidimensional concept of wellness to only two dimensions – physical and psychological, even though models of wellness have several dimensions, according to Stanford Research Institute (2010), some have up to fourteen dimensions.
To reveal the meaning of wellness, it is not enough to study the evolution of this word (we would find out that the Oxford English Dictionary dates the first use of this word to 1654), more importantly, it is necessary to study the origins of the whole concept of wellness.

2 Ancient origins of wellness

Original sources of wellness ideas can be found in deep history, thousands years ago. Traditional cultures had sophisticated health care systems that respected and aimed for balance of human body, mind and spirit and perceived human health from its holistic perspective (Cohen, 2010; Strohecker, 2010).

Indian Ayurveda, traditional Chinese medicine, or ancient Rome and Greece, who put foundations for today’s medicine and often to the mentioned ideal of Kalokagathia - these traditional systems had many aspect in common. Except for curing a disease, they focused on its prevention and among other included as well some religious or philosophical system, which interfered with the societal context. Common was also the individual approach to the patient, so different from current medicine.

These traditional healthcare systems emphasized one’s lifestyle – nutrition, physical activity, quality sleep, moderation, ethical behavior, development of positive thoughts and emotions through prayer of meditation. These are simple tools to keep balance in one’s life, even in the 21st century (Strohecker, 2010).

3 Twentieth century – era of modern medicine, societal changes and wellness

Holistic medicine stood for a long time side by side its younger, more “scientific” sibling that we call biomedicine, allopathic medicine or modern health care. Holistic medicine was a common practice still in 19th century and new therapies like homeopathy, neuropathy, chiropractic or osteopathy were just developing. However, scientific discoveries of Louis Pasteur, Robert Koch or Wilhelm Konrad Roentgen moved the modern medicine far ahead.

In the first decades on the 20th century, it even seemed that modern science provided answers to all questions and cures to all illnesses – it was enough to find the right substance. The first sign of more humanistic approach to health care was the definition of heath from World Health organization in 1948. The real shift started in late 1960’s, when the modern medicine neared its limits. Resistant microorganisms were developing more quickly than new pills and majority of American population was dying on diseases caused not by viruses, but by people’s lifestyles. It was not enough to change the cure, but also to change to way people live (Travis & Callander, 1990).
As stated in the official Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention (1979):

“The health of the American people has never been better. In this century we have witnessed a remarkable reduction in the life-threatening infectious and communicable diseases. Today, seventy-five percent of all deaths in this country are due to degenerative diseases such as heart disease, stroke and cancer. […] Further improvements in the health of the American people can and will be achieved – not alone through increased medical care and greater health expenditures – but through a renewed national commitment to efforts designed to prevent disease and to promote health”.

The positive definitions of health, the attitude of the World Health Organization together with official political documents were the first steps ahead. It changed the perspective from which we perceive human health, and the topic of health promotion and prevention became usual. However, these official statements and documents are “only” recommendations and the path to objectively enhanced quality of life of the whole population was very long.

This was the starting point and the context of rising wellness movement. The concept of wellness is an application of the positive definition of health, but according to Donald Ardell (n.d.), it extends beyond prevention and health promotion. The main goal of prevention is to avoid illnesses, but wellness aims for a happy, balanced, quality and fulfilled life. To understand this difference, let’s have a look at former theories of wellness.

### 3.1 Halbert L Dunn

The first person who used the term wellness in modern context was Halbert L. Dunn, MD, expert in the field of vital statistics. Dunn used wellness as an absolute opposite of illness. Except for the fact that the Western world divides men on the physical part that is cured by doctors, psychological part, cured by psychiatrists, and spiritual part, cured by priests. Dunn emphasized also the impact of environment I which certain person lives. (viz. Obr. 1)
In his Health Grid Model, Dunn takes into account the impact of external factors on one’s wellness and quality of his life. Equally important is the person himself, who should endeavor for personal mastery in all aspects of human life. Dunn’s wellness is about using options available at the very moment. The Peak wellness on the right end of the graph is a “performance at full potential in accordance to the individual's age and makeup” (Dunn, 1959, s. 787).

Miller (2005) noted that Dunn himself was not a practicing physician, which might have allowed him to see health from far deeper perspective than just fighting diseases. As a statistician Dunn more intensely reflected the impact of chronic diseases and demographical changes, and thus he called for a new, more integrated approach to human health.

The need for change in how we perceive health has to be viewed in the context of societal and cultural changes in the second half of the 20th century. This era entailed changes in understanding the role and position of man in the society and in the world. Dunn summed these changes up as follows: “It is a shrinking world. It is a crowded world. It is an older world. It is a world of mounting tensions.” (Dunn, 1959, s. 786–787) These phenomenons are
valid even today, plus we can add the topic of collapsing healthcare systems, that can’t hold the onslaught of ageing and chronically ill population that needs to be cured (SRI, 2010).

Halbert L. Dunn highlighted the rising numbers of chronic and mental illnesses already in the 50’s. Together with the neurotic and functional diseases, these are very malicious, because they don’t directly endanger human life, but they have a huge impact on its quality. Dunn’s ideas were published in 1961 in book *High-level wellness*, which didn’t get much echo on the public, but the book found its way to the hands of John Travis.

3.2 John Travis – the founding father of wellness

John Travis, a doctor who displeased his role of almighty physician. Inspired by Dunn’s ideas, contemporary humanistic psychology and many other influences, Travis launched the very first wellness center in Mill Valley, California. In this center they offered an eight-months-long wellness program for 1,500 dollars. The program covered weekly group meetings and individual sessions, and the clients learned how to “relax, experience themselves, remove barriers, improve communication skills, enhance creativity, envision desired outcomes, take full responsibility for themselves and love themselves” (Ardell, 1977, s. 9).

Although Travis focused particularly on wellness in practice, he and his colleagues have developed a tool to assess one’s levels of wellness (named Wellness Inventory), but more importantly he has developed theoretical models explaining the links between human health, medical care and wellness.

![Illness-Wellness Continuum](Image)

**Obrázek 2: Illness-wellness kontinuum (Travis & Ryan, 2004)**

The main objective of the Illness-wellness continuum (viz Obr. 2.) is that mere absence of illness doesn’t bring wellness, doesn’t mean quality of life, and it is rather a neutral point in the middle of the graph. The modern medicine, labeled the Treatment
paradigm, can bring its patients to this neutral point, meanwhile the wellness paradigm extends over both sides of the continuum. The concept of wellness aims to help people in achieving higher levels of wellness, more quality lives, no matter what their current state of physical health is – according to Travis, even physically ill person can live quality life.

Obrázek 3: Iceberg model of health and illness (Travis & Ryan, 2004)

The second model, the Iceberg model of health and illness (viz Obr. 3), illustrates wellness as a practical application of the above mentioned positive definition of health. The state of physical health at the top reflects Maslow’s principle of interconnectedness between the dimensions – the tip of the iceberg is a result of fulfilling or suppressing needs on the lower levels.

Travis’s wellness center together with his clear theoretical concept of wellness created the foundations for rising wellness movement in the United States. From the unfamiliar word that was used on the west coast in the 70’s, wellness became a national phenomenon in the 80’s, mostly thanks to the work of Don Ardell.

3.3 Donald B. Ardell – the speaker of wellness

Donald Ardell is the most often heard advocate of wellness thoughts. His dissertation mapping wellness was published in the 70’s and became a bestseller. Since then Ardell devoted his life to promoting wellness. His approach to wellness is best described by the sentence „Wellness Is Too Important To Be Presented Or Lived Grimly“ (Ardell, n.d.a). Don

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1 The Iceberg model covered the spiritual dimension of health already in 1978, when it was first published. The former WHO definition contained only three dimensions – physical, mental and social. The spiritual dimension was officially added in 1998.
Ardell has gained broad attention for the wellness ideas and up to these days is an active speaker.

According to Ardell (in Monroe, 2006), “Wellness got stuck in the health field, which has more of a disease/treatment framework. But wellness could just as well be founded in psychology, sociology or even public policy. I think it’s often easier for people to think of wellness in terms of quality existence rather than health.” Except for medicine, Ardell is a fierce critique of corporate wellness programs, but more on that in chapter 4.1 Workplace Wellness.

3.4 Bill Hettler – voucher to the academic field and foundation of NWI

The last of the mentioned founders of the wellness movement is Bill Hettler, former physician at the University of Wisconsin – Stevens Point who created the first faculty wellness program and introduced the concept of wellness into the academic field. Hettler and his colleagues founded the National Wellness Institute (NWI) in 1977, a nonprofit organization that connects and provides further education for health promotion and wellness professionals and organizes annual international conference.

Wellness in the context of health promotion, prevention and public health became then a part of university curriculums in the US – for example, the above mentioned university in Stevens Point offers an online bachelor program, Science in Health and Wellness Management.

4 Wellness in the 21st century

Almost 40 years after its foundation, wellness doesn’t have one broadly accepted definition and is explained by many people in many ways (Corbin & Pangrazi, 2001). Since the first wellness center on the west coast, the concept became a part of American and global culture including professionals, clients and scientists – in scientific databases there are thousands of records under the term wellness (Miller & Foster, 2010).

Especially in practice, wellness is often simplified and becomes a synonym of everything that makes one “well and healthy”. There is wellness pet food, wellness fitness centers and even gardening companies offering “wellness” services. This trend is international, as in US as in Czech Republic one can buy wellness shower gel or wellness tuna fish.

Except for this marketing misuse of the term, Don Ardell (2004) defines more deep distinction between various interpretations of wellness concept. He describes it as a schism
between quasi-spiritual wellness and secular wellness. „The former [quasi/spiritual wellness] is based on faith, emotions, supernaturalism, the recovery movement, wishful thinking, weepy/swaying hand-holding, New Age mysticism, guru-worship and all things antediluvian and reprehensible; the latter [secular wellness] is based on science, personal responsibility, critical thinking, exercise and fitness and a conscious quest for added meaning and purpose in life“.

In the midst of these two poles of current wellness movement we can find various applications of wellness ideas, and in the following chapter we will focus on the most prevalent, namely workplace wellness, wellness coaching and wellness tourism.

### 4.1 Workplace wellness

Wellness found its place in the corporate world at the end of the 70’s, when companies started using wellness programs not only to take care of their employees, but also to reduce the costs of health insurance American employers pay for employees (Chapman, 2008). Except for positive outcomes of such programs, there are as well negative responses, saying that workplace programs became a necessary evil for employees and a duty for employers – 81% of American businesses with 50 or more employees have some form of wellness program (Ardell, n.d.b). Majority of programs focus on reducing health risks and counting ROIs while the holistic perspective on employees health is usually left out. Yet there are authors and companies who go deeper under the surface and perceive health and productivity of employees as a part of overall culture of given organization (see for example Allen (2008).

### 4.2 Wellness coaching

The principle of wellness coaching was set by John Travis in his Wellness Resource Center: “It's essentially that we're not diagnosing, treating, or taking care of the person. We're serving as a consultant, to give them more information, teach them skills, to show them how to become more aware of their past, to see what's going on inside their bodies, how to visualize, how to communicate better, how to love and accept themselves“. (Travis & Ferguson, 1978) This approach combines life coaching with principles of wellness and on a platform of individual and group sessions helps clients to discover and use their own abilities and resources that are necessary for lasting life-style change (Arloski, 2007).
4.3 Wellness tourism

Despite the fact that wellness movement in United States is not as common in the context of spa industry as in Europe, the trend of wellness tourism is global and it is appropriate to mention it here.

Stanford Research Institute (2010) in a report *Spas and the global Wellness market: Synergies and Opportunities* estimated that the wellness industry to be of nearly $2 trillion US dollars globally and in recent report *The Global Wellness Tourism Economy* (SRI, 2013) estimates the size of wellness segment of the global tourism industry to be 439 billion US dollars. There are more authors who see wellness as a gold-mine of these days (see for example Pilzer (2007).

![The Wellness Tourism](SRI, 2013)

Traditional spa services as well as wellness tourism have their place in this new rising global wellness industry, but foremost “spa leaders [should] refine and expand their vision of what wellness really is. […] There are many reasons for spas to take a leadership role in REAL wellness promotion, besides the obvious fact that there is money to be made from doing so” (Ardell, 2010).

5 Conclusion about the starting point for Czech wellness

Wellness in Czech Republic follows the trend of above mentioned wellness tourism and is tied to the context of spa resorts and wellness centers. There is a connection between spa services and the concept of wellness, but it is not as strong as many Czechs might think.

Former concepts of wellness don’t locate wellness to a concrete place but aim to apply the principles of wellness into daily life. This “American” wellness gives the responsibility
for one’s health and quality of life into the hands of every person, excluding the authority of a “medical professional” who knows what to do in every situation of one’s life. Instead, “wellness professionals” bring forward many options; encourage trying it out and serving as a source of information and motivation, especially in the moment when former determination to change one’s life is gone.

For healthy expansion of the wellness industry, not only in Czech Republic, it is necessary to know the origins of wellness as foreign model of holistic health; and being aware of its beginnings, cultural aspects and specifics of its evolution in the United States. We can’t use the word wellness just for of its marketing potential. Specifically the knowledge of former concepts of wellness and its current applications can serve as a good source of inspiration when strategically planning the development of Czech spa industry, brainstorming new services for existing wellness centers or educating staff of those facilities.

6 Resources

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AXIOLOGICAL DIMENSION OF APPLICATION OF THE ETHICAL PRINCIPLES IN A WELLNESS CENTRE

Katarina Mária Vadíková

Abstract: Paper refers on axiological dimensions of an application of defined ethical principles in the specific circumstances of a wellness centre. Author points to the axiological relevance to form a new type of ethics - Ethics of Wellness and stresses the need of implementation of ethics into the working place, specified by the notion wellness.

Key words: wellness, ethics, axiology, ethical principles, Ethics of Wellness.

1 Introduction

Any wellness centre is a special space – the wellness space. In such a place the main aim of all efforts is to provide any type of service as a care for human being and his/her wellbeing. The space is characterised by interdisciplinary spectrum of approaches to rendering of services; by trans-generational attendance; by tolerance to personal conception of the universe or to personal ideology or to personal religion; by intentionality to satisfy the psycho-physical dimension of the living one’s quality of life; by definition of the notion wellness.

Each wellness centre needs the specification of ethics – Ethics of wellness to able to implement its norms and principles. The Ethics of wellness can be understood as a part of Applied ethics. The Ethics of wellness includes an acceptation of all different historical ethical systems, principles and norms of Business ethics (Ethical codes) and respect to variability of ethical profiles of representatives of both – of service providers and of service consumers.

Axiological dimensions of applications of all types of ethics defined for such a space open the border of both – the content and the scope of the notion Ethics of wellness. In this way it is possible to say that one of the most important corrective and educative medium into the know-how of the wellness space (in way to understand it as a potentially unique place for rendering of complete physical-psychical-spiritual well care) is to map axiological variations of axiological dispositions of providers, of clients, of its common interaction and to the profile presented publicly by the head of concrete wellness centre. Dialogue and relational harmony
between personal axiologies, implemented into an ethical code or into the public profile of a concrete wellness centre, they can help to present the identity of the concrete wellness centre in public, to explain and to make attractive its services and to serve as guidance for clientele.

Regarding that, it is possible to conclude: if a wellness centre is identified as an ethical firm, it disposes of such type/types of ethical code, which is/are relevant to its specific circumstances (high degree of the implementation of ethics and high degree of application of ethical principles). If a wellness centre has no own ethical code, it is possible 1. to accept and to legalise codes of some another wellness centre, however with similar identity (similar profile); 2. to accept and to legalise codes of another wellness centre within which is actual collaboration; 3. to accept and to legalise codes of some other institutions, which provide similar types of services (f. e. hospitals, health care institutions, hospices, wellness hotels). However, the best way how to become and to stay an ethical firm is to own personal code/codes, which respect the personal axiological profile of the centre, regardless of age categorisation, or economic, social or societal status. Axiology of the wellness space can become a sort of guidance also in service providing at the wellness space. Ethics of wellness space can become Ethics of a wellness centre and vice versa - applying ethics at a wellness centre can improve norms of Ethics of wellness space.

2 Value of axiological profile of a wellness centre for the process of implementation of ethics in the wellness space

According to the fact that each wellness centre has its specific axiological profile, we decided to show in which way it is important to understand it, to make it publicly known via codes and to control its actualisation and working in all types of provided services.

Scale of values and its definition, scale of priorities and its realisation, price and ways of its actualisation – that all specifies uniqueness of all types of wellness centres and concretises their identity. Profile of a wellness centre is not only made by the web-site design, list of provided services, price list, professionalism of the staff, however it is mainly incorporated into those ethical codes, which are publicly or internally of disposal to be studied, explained and to be used in praxis and are already implemented into the praxis of the centre and into the professional erudition of the staff. To become and to stay an ethical firm it means to reflect on the request which is submitted by potential and current clientele and formulated by media according to own ethical codes (Remišová, 1999). In such a request is included the contribution of each wellness centre into the entrepreneurial sphere – its ethical professionalism.
If any firm wants to become an ethical firm, the implementation of ethics has to be planned, organised, done and controlled. Person, who is responsible for the implementation process, is manager of ethics. The notion manager of ethics means 1. the firm as such (legal person: manager of firm), 2. an owner (individual person), 3. a self-starter (individual person), 4. a head of staff (individual person), etc.

The process of implementation of ethics into the entrepreneurial space precedes an continual actualisation of mapping of the axiological content at the space an also in the space and is based on definition of the axiological profile of the firm included into the Firm Ethical code. The axiological map then helps to identify, to choose and to prefer application of relevant ethical principles. Each wellness centre has its own map – according to its profile (staff, clientele, services, etc.).

Mapping of the axiological profile is basically realised in form of ethical audit, which is possible to spread out into the social audit. Outcomes of the specific research serve as confirmation of validity of current axiological processes at the firm (preference process (priorities), evaluation process (values) and estimation process (price)). The research also verifies proper form, actualisation, function of current scale of values and priorities. The main aim of the research is to stabilise the axiological base at the space, to identify and to arrange current values and priorities into the axiological profile of the space and to specify and define relevant ethical principles. Only in such defined space it is possible to start mechanism of guided implementation of ethics, to form and to institutionalise the ethical program and to correct and to reformulate ethical codes (Details on techniques - see: Černá, 2007).

In the field of axiology the main aim of any ethical audit is to make proper and stabile conditions to implement ethics into the firm life. It is connected within final selection and arrangement of ethical principles for actual wellness space and it is needed for identification of the type of applied ethics or of applied ethical systems at the space, which have already been at work at the space or which need to establish proper conditions to be actualised and developed.

According to that we decided to characterise a couple of ethical principles at work in the wellness space in obvious, however not in their terminologically variability defined in history of ethical systems. In this way, we suppose that it will be possible to identify current ethical principles at any wellness centre. After the identification and understanding the way of the usage of actual principles at the centre we suppose that it will be possible to correct their formulation, to adjust the way of their usage and to understand how, in which way and how far they make possible the implementation of ethics into the wellness space, or not. To show
the need of such a method of identification of ethical principles at the wellness space we present in next chapter.

3 Axiological aspects of application of defined ethical principles while providing the wellness care

Any identification of an ethical principle in any space needs the basic terminological-methodological basement – apparatus. Logically, it has to be relevant and possible to use in any ethical system. That is why it is the definition of the main notions (not only terms), which is valid and will be valid in any ethical system. In this way it is needed to start with basic ethical principles, which are abstracted and deduced from moral principles.

To show how it is working we select ethical principles as follows: humanity, conscientiousness and cautiousness, justice, scrupulosity and perseverance, professionalism, responsibility, beneficence and harmlessness, morality and decency.

3.1 Humanity

Humanity is one of the basic ethical principles, needed for harmonisation of human relations and for clearing the definition of freedom there. Humanity is a moral principle. Humanity is defined by human dignity, in which every human being is understood as a non-repeatable, unique, autonomous, dialogical being, is given by consciousness and conscience, rational and emotional intelligence, memory, own history and own life-story. If the human being respects and esteems own dignity, than he/she will be able to respect and to esteem dignity of another human being. In the partial respect is included and confirmed respect and estimation towards the dignity of mankind. Humanity helps to understand boarders of freedom, responsibility, concretises rights and duties and crystallises human relations.

While humanity is applied at the wellness space that means that each provider and each consumer of services are confronted with the same question: Is the service and the way of its providing worthy of myself? Is it worthy of my dignity, or not?

Axiological aspect of humanity stresses the mutuality of relation between a service provider and a service consumer, and also f. e. refers to bio-psycho-social characterisation of the wellness space and points to requirement to respect human and civil rights and civil freedoms. A wellness space is established primary by a human being for a human being, and that logically means it is defined by the criterion of human dignity. Any interruption of such defined boarder means to attack the dignity of all of those, who are engaged at the wellness space - the dignity of mankind is attacked there. The main value, the
sense and the importance of the ethical wellness space is the human being and his/her life-
story.

3.2 Conscientiousness

Conscientiousness and humanity are interrelated. It means to use personal conscience
consciously in each decision making process. Conscientious person has stable personality,
knows own rights and duties, and at the same time understands demand of the law of decency
requested by society in public opinion, and the requirement of moral law requested by
mankind and variously formulated in ethical systems and corrected by own conscience.

Conscience is able to understand as especially human ability to recognize the truth
about what is good and at the same time as an instance in case of being alleged of moral guilt
(requirement of moral law is consciously overstepped). Human being uses own conscience as
personal source of information how to decide on problems. Conscience helps to save human
identity and integrity in the decision making process. Conscience warns on traceable measure
of freedom and tolerance according to understanding of one’s own dignity. (Vadíková, 2011,
p. 143 - 153)

Conscientiousness means to be personally engaged in deceasing; means striving for
truth; means to balance the past, presence and future into own personal life experience,
consequences and conclusions included; means empathy and sensitivity in needs; means
balanced usage of rational and emotional intelligence; means to focus on good, which is
defined by moral law and that all in one’s own name (identity, responsibility).

Developed conscientiousness helps by providing wellness care to balance eruditeness,
professional engagement, own ideas or conceptions of what is good in human relations both –
in personal relations (intrapersonal (to oneself) and interpersonal (to another person) and in
impersonal relations (social and societal relations).

Axiological aspect of conscientiousness points to the trained personal conscience,
which is daily used as an instrument in deciding on problematic situations in name of good;
stresses natural human intentionality to good; emphasises tendency to improve service
providing at the wellness space in a good repute of firm; makes possible to be personally
engaged at and also in development of the wellness space. Value of conscientious staff is not
possible to count (price), however it should be priority of any wellness space and at the same
time of any space characterised by any type of care for human being.
3.3 Justice

There are plenty of other principles included into the principle of justice (principle of fairness, adequacy, equality, constancy, uniformity, equality, etc.). Because of its variability in the history of ethical systems it is important to recognize precisely the content and the form of the notion justice. It is the key point to search for in the ethical audit: how is the notion justice in the wellness space defined and used? To say it much more easily – it is important to know firm’s strategy of principality in the field of administration.

There are various fields in which the principle of justice should be used according to actual scale of values and priorities in a wellness space – let us see some of them:

- Administration of service providing; interdisciplinarity of services; trans-generational applicability of care; interpersonality of relations;
- Administration of the wellness space as whole, security of the functionality, hygiene, intimacy, elimination of discrimination;
- Ethical profile of a wellness centre as an ethical workplace, creation of an advertisement, medial message, etc.

Just ordering of the wellness space is based on the knowledge of its lived specific unique axiology and axiological dispositions of all those, who are in some way engaged in this specific environment – that means of both – of wellness care providers and of wellness care consumers. It is important to know that their cooperation is based in fellowship and mutuality. It has to be acceptable for each of them and for anyone who is or will be touched by it. In this sense it is needed to know and to understand the axiology of a wellness space (a service provider offer), to be able to suppose possible variants of axiological profiles of potential clients (clientele’s requirements). Firm management should be able to act according to the defined axiology – to contain definition and scale of values, strategy and mechanism of their application and implementation into the life in the wellness space.

The requirement to not underestimate the axiological dimension of justice is practical and needed at the inner side of the firm – to secure functional and successful life of the firm, and also at the outer side – to realise relations towards another wellness centres or centres providing similar services, wider cooperation in the wellness space, or to improve advertisement via just cooperation with media. It is also connected with the establishment of the wellness centre at the market, status of the centre and its perspective. Just order inside the wellness centre exists primary to guide the centre and those, who are engaged there. It implies their living of own personal axiologies, it respects mutual sharing of personal axiologies. The
outcome of systematic applying justice at the wellness place is its transparent scale of values and priorities, formulated and opened to public in ethical code.

3.4 Scrupulosity and perseverance

Scrupulosity and perseverance work together while the identity of any wellness centre (obvious) and also of a concrete wellness centre, is formatted. The notion honour terminologically points to the notion human dignity. The notion perseverance comes out the characterisation of human life as continuum conditioned by eternal effort. Honest human being protects own face (identity) from outer influences via unique phenomenon – personal shield of genuineness, of autonomy and conscientiousness. Conscience helps to recognize features of own face – identity. Looking for own personal identity is continual process and is done in decision making process being confirmed all life long and is present to be proved in its partial realisations – in decisions.

At the wellness centre an application of scrupulosity and perseverance is required to live mainly at the service provider side, who may guide to it his/her client. In this way an application of scrupulosity and perseverance may improve such mechanisms of care, which deal with problems of physical, or psychical, and also spiritual pain.

Axiological dimension of scrupulosity and perseverance points to the intentionality to good and to sticking in good. This can be transformed into the sensitivity while service providing, into development of the sense for just measure and order, into process of finding proper balance of professionalism, identification and specification of individual needs at the provider and consumer sides. It refers to ego-syntonic imperative at the provider side, points to responsibility and hospitable personal approach to client, or is included into the auto-training, continual education, wellbeing, physical-psychic-spiritual fitness, communicativeness and faithfulness to the message of the wellness space (perseverance) – the space which is personalised and represented by him/herself. Value of the centre is mature, trained and adequately priced staff, which realises the axiology of the centre.

3.5 Professionalism

Professionalism forms erudition, training and ethnicity of the wellness space. Its formulation is incorporated into each catalogue of licences according to type of a service, into an ethical code (or codes set) and into the profile of the centre presented in media. It is supposed to be included into any action at the centre (way of service providing, formation of the wellness centre via price list, material-technical-hygienic security, staff, etc.).
Each member of the wellness staff is trained independently, completely, interdisciplinary and interpersonally to cope with any problem in the specific circumstances of the wellness space.

Axiological dimension of professionalism has to do mainly with the wellness space, which means value and source of values for anyone, who is active in some way there. Interdisciplinary background of the wellness space requires a mature person, who is full of knowledge, versatile and prepared to solve problems in such specific circumstances; is someone, who confirms, fulfils and ensures the value of the wellness space by daily realising of own personal axiology.

3.6 Responsibility

Responsibility means an ability to undertake all consequences and results of own acts and to face them. It is also expressed by an intuitive sense for duty, by autonomous respect towards necessity and also by personal ability to perceive relations to concretely defined aim regarding whole concrete life-story long.

Responsibility has such a structure in the wellness space: at first it touches professionalism, conscientiousness and scrupulosity of the wellness staff in intrapersonal and interpersonal way of relating, than it spreads out into a relation to the centre as such and, moreover, through this way of relating the responsibility daily lived by staff is joined by actual and also perspective clientele.

Any member of the wellness staff had already been confronted within the requirement to prove own ability to undertake all consequences and results of own acts and to face them while he had been professionally trained to understand own position at work in the wellness space (profession as personal vocation, profession as personal mission, profession as an employment) and that all earlier before it was confirmed by a licence. Responsibility is daily required and implemented into every decision of the wellness staff. And as such, it is also supposed by consumer of wellness services. On the other side every consumer of the wellness services is called to be responsible. The requirement - to respect principles of security and hygiene, it is an elementary background to relax successfully and to stay not disturbed by anything or anybody at the wellness centre.

Principle of responsibility has to do within identity and profile of the wellness centre as a firm. For example - in a case of using any speculative or alternative way of providing of any licensed technique it is ethical (responsible) to inform about that formally - in the profile of the wellness centre via media (f. e. web-site, advertisement) and it is needed.
to do so not only towards the staff, however towards every client separately before including such methods in care. In such a case it is also required to explain properly sources, links and origin of the technique and to get an informed approval to include or exclude the technique as whole or the way of its providing into the care. The agreement should be asked not only at the consumer side, however also at the staff side and at the side of the management of the firm as well.

Axiological dimension of the principle of responsibility means to connect personal axiology of any consumer of services within the axiology of the space into which he/she is coming to relax. It is important (responsible) to be informed about the space, and be sure that any possible problematic situation can be solved there. In this way each consumer of the wellness services (client) understands the profile of the wellness centre as a value and he/she is a value him/herself in the wellness space. Consumers (clientele) are called to not only used the space for own wellbeing at the wellness centre, however, regarding to their possible developing of shared interaction and understood measure of responsibility transformed in given ‘personal advertisement’, they (clientele) may develop the wellness space as such.

3.7 Beneficence and harmlessness

The essential assessment of the principle beneficence and principle harmlessness is the golden mean. Any unilateral approach to the wellness space is not ethical. Unilateral economic approach to the wellness space means to focus on benefits referring to demand and offer in material sphere. Such an approach to success includes temptation to calculate what is good, what causes devaluation – value becomes reparable, compensational and loses its uniqueness. A value is not a price. Value means to define sense and meaning regarding all life-story long – in this process becomes unique, irreparable, is not expressible in numbers.

This may have on mind the person, who prepares the profile of the wellness centre – to focus on planning services according to the axiology of the wellness centre – to organise them as values and not prices at a price list (prices depend on solvency of clientele). The person should also manage the profile of the wellness centre stuff according to the axiology (according to ethical code). He/she should spread the interest in success into physical, psychical and spiritual needs of a client, in other way it is possible that in generous harmless procedure will cause pain. He/she should have on mind that any concrete success of any member of the stuff is a benefit of the wellness centre as whole, and analogically, any success of the wellness centre, transformed into its the prosperity, causes heyday, boom of the
wellness centre what makes possible to foster the stuff in professional development and stabilisation of own personal prosperity.

It may be seemed that a solvent client may foster prosperity of the wellness centre. This is possible only under the condition that he respects the wellness space as a value. If the wellness centre is considered as compensation, it has no influence towards its prosperity. The prosperity may be related to the concrete centre, to the concrete member of the wellness staff or to owner of the centre. In this way the value of the space and also of the centre is underestimated into a price and the solvent client is able to compensate it by another centre. The wellness space loses its uniqueness. If a service providing becomes a routine, it makes the service providing foreseeable and also compensable – anyone and anywhere is able to provide such a service in that way. This is not the way how to profile a wellness centre. In every service providing should be seen the identity – the face of those, who work and also relax there – unique axiology of the space. Routine destroys complexity, variability and potentiality of the space, it brakes development. Bored client has negative impact not only to stuff, however to potential clientele, and also to owner his/herself. Regarding that it is a requirement towards the management to respect the wellness space as the first value and to direct all of efforts to build the axiological profile of the centre according to it.

It is important to understand that beneficence is connected within acceleration and purposeful direction of a life-story to the main life aim and to happiness. If any bodily or mental harm is caused - injustice is done in specific way in specific situation, in which it happens. In such a case to apply the principles of beneficence and harmlessness means to look for a compromise and to see in which way it is possible to balance them by principles of wisdom and sensibility. If a decision just seems to be harmless at the moment (in concrete circumstances), however it is not true regarding whole life long, to act according to it is sensible, however not wise. It is possible that it will cause harmful consequences at the end. The question, which should be solved here, is to recognise the measure of harm and the meaning of temporary harm regarding the main aim of touched life-story, that means the answer to question on possibility, if it is not wiser and beneficial to undertake temporary harm to be happy. The way to find consensus between an owner of the wellness centre (boss, chief manager, self-starter) and members of the wellness staff (employers) and the service providing consumers (clientele) means to wisely use the principle of the golden mean.

Axiological dimension of principle beneficence and principle harmlessness is derived out of axiological profile of the concrete wellness centre regarding its potential clientele. Value of the wellness space should be defined transparently for anyone; on the other hand it
will cause controversies. It is wise to solve all problematic, axiologically not enough explained details of service providing just at the first visit, at the first checkup, at the first entry of client into the care process. Regarding the need of personal explanation of a care process a communication should be replace by personal dialogue; impersonal approach replaced by personal approach to the client, a personal invitation included. In such a way the possible harm is able to eliminate and a chance to successful relax is able to offer. And that is what each client wants and expects at the wellness centre.

### 3.8 Morality and decency

An ability of human being to act according to moral or traditional law is possible to catch up in two notions: morality and decency. To act decently means to act according to such principles and norms which have been verified as good ones by society. They represent specific formulations of interpretation of moral law verified by many generations, confirmed by tradition, by life experience and in variable historical type of social space. To act morally means to act directly according to moral law, according to own interpretation of moral law found out in cooperation within own personal conscience (one of the main functions of conscience is to confirm if the interpretation is truly good or not). Morality calls for active cooperation within own trained conscience and decency requires respect towards public ‘ethos’ - good manners.

Both of them – morality and decency specify the wellness space. They define the way of service providing in the wellness space and also for the wellness space. To link all activities in a wellness centre together in name of good manners is possible via formal set of principles and norms formulated by etiquette; however it depends only on decent acting of all who are somehow engaged there. To make the imperative of moral law to be binding for all of them – that is a really big challenge. If it is made real, it is possible to consider the wellness centre as a moral space. In this sense it is enough if the wellness space is an ethical space – that means a space which is theoretically good, theoretically developed according to moral law what is possible to prove by relevant mechanisms and techniques of ethical systems or types of ethics.

Axiological dimension of application of decent and ethical codes at the wellness space is expressed in the measure of improvement of quality of life of its visitors. Wise adherence to ethical codes, respect to good manners, to etiquette – that all forms the space and clears the communication and care providing. Spiritual requirement to direct own life to the main aim of own life-story – to live in happiness is connected within the physical and psychical
requirement – to live in blessedness of partial nearing into the situation of happiness in its various forms. The wellness care, which is provided in the wellness space considered as a moral space, is possible to see as such an offer – to near oneself to happiness – to near oneself to the space, defined by notion good.

4 Conclusions

In our reflection we focused on description of axiological dimension of application of defined ethical principles at any wellness centre (at a wellness space). Axiological analysis of their application pointed to the need of mapping the axiological situation at the wellness space and to the need to axiologically profile the space and to understand its consequences for service providing and consuming.

In the formal selection we found interesting such principles, they have confirmed the need of formation of Ethics of wellness. It is possible to suppose that terminologically-methodological formation of Ethics of wellness as a part of Applied Ethics may help to start the process of implementation and formalisation of ethics into the wellness space, the process of coding of ethical aspects of problems of wellness (ethical codes); that it will be based on personological-antropological paradigm (holism of service providing); that it will foster interdisciplinary interpersonal, dialogical identity of the wellness space in its direction to good. In this way the Ethics of wellness may be defined as a practical love to wisdom applied by human being towards a human being in a space defined by good.

5 Literature


6 Contacts

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FREE TIME ACTIVITIES OF SLOVENIAN ELDERLY WOMEN

Rajko Vute ¹, Franjo Krpač ², Tatjana Novak ³

Abstract: The main purpose of this study was to determine the ways of spending free time among Slovenian elderly women who participated in the project Sport for Healthy Life. A sample consisted of 64 women from the Central region of Slovenia, ages 66 to 78, divided into two groups: project members and a control group. Data for this study was gathered and completed in November 2008. The instrument used for analyzing the free time activities of elderly women was A Physical Activity Questionnaire for the Elderly (VOORRIPS, et al., 1991). The data has been processed by SPSS 8.0 software for Windows programme (BRYMAN & CRAMER, 1999). The level of statistical significance was set up at p < 0.05. Basic statistical characteristics were computed (absolute, relative frequency). The probability relations among the presented variables have been tested by the Chi-square. The main aim of this research is to obtain information how elderly women spend their free time with regard to no sport or sport related activities. The most frequently reported no sport related free time activities were predictable - watching TV and gardening, while among sporting free time activities walking in various forms (walking into nature, fast walking, slow walking) dominated. The presented data suggests that, due to the popularity of walking, cycling, mountaineering and swimming, and the time needed for practicing them, we could extend the creation of free time programmes and implementation into community centres and contribute to the quality of life of a wider population of the elderly.

Key words: elderly women, free time activities, sport activities, usage of free time

1 Introduction

Many studies have been undertaken to examine the effects of various physical activity programmes on the performance of the elderly. While the young people do the sport for fun and body development, the grown ups wish to maintain the body shape and strength, the elderly hope to slow down the aging process (Ulaga, 1998). Daily activities are important for the elderly and have positive consequences on safety and independence in home
environment (Finkel, 2003). Free time activities, either not sport related or sport related among elderly women³ present valuable information which enables us to plan activities more systematically and offers us the possibility of considering the personality of the senior population and their demands.

When choosing their favorite free time activities, the elderly face both objective and subjective barriers. For the elderly population, active participation in free time activities contributes to greater independence, a fundamental factor in everyone’s life. Five lifestyle factors: physical activity, avoiding excessive alcohol, not smoking, avoiding excessive stress, and healthy diet, are all of significance in the maintenance of health and well-being (Glendhill, Mulligan, Satfery, Sutton, & Taylor, 2007). The inactive elderly had higher depression scores than more active individuals, both in terms of light and strenuous exercise (Lindwall, Rennemark, Halling, Berglung, & Hassmen, 2006). Older individuals who were physically active were more than two times more likely and those with moderate levels of activity were over one and a half times more likely to be aging successfully than respondents who were not physically active (Baker, Meisner, Logan, Kungl, & Weir, 2009).

Understanding participants’ physical activity experiences over the life course is an essential step toward the development of appropriate and effective physical-activity-promotion initiatives (Witcher, Holt, Spence, & O’Brien Cousins, 2007). The most popular activities among seniors were cycling, walking, swimming, and gardening. (Stiggelbout, Hopman-Rock, Van Mechelen, 2008). An overview of the sports activities of the Slovenian women proves that the most frequently practiced activities were walking and strolling (27%), swimming (20%), cycling (18%), mountaineering (14%), aerobics (12%), dancing (12%), morning gymnastics (12%), badminton (10%), running (9%), and alpine skiing (8%), (Sila, 2004). Active physical involvement of the elderly significantly contributes to the health status, longer living, functional abilities and subjective well-being (Chodzko-Zajko et al., 2009). Among grown up Slovenians in 2009, there were 23% inactive persons according to sport participation in their free time, while results for the European Union show the equivalent of 39% (Sila, 2010). Strojniki (2007) reported that 20% of women and 18% of men over 65 in Slovenia are practicing sport on a regular base. In the United Kingdom 10% of older adults (65+) are sufficiently active (Taylor et al., 2004) in United States this rate was 21.8% (Kruger, Carlson, & Buchner, 2007). A higher rate of sufficiently active older adults is observed in Australia, 55% (Brownie, 2005).
Findings suggest that being physically active might not only have health benefits for older persons, but also leads to lower health-care costs (Martin, Paige Powel, Peel, Zhu, & Allman, 2006). Alexandris (2003) and Tokarski (2004) reported the traditional excuses among ageing women and men for not being involved in sport related activities range from ‘I am O.K. without sport,’ ‘I don’t have enough time,’ ‘I have other hobbies,’ ‘I don’t have enough money,’ ‘I don’t find friends suitable for practicing sport together,’ ‘Sport makes me tired’ to ‘Sport activity had no positive effect on me.’ Such excuses of the elderly for not taking part in the sport related activities are de-motivational factors (Vlachopoulos & Gigoudi, 2008).

The health related quality of life of older adults is associated with both the intensity and the total volume of habitual physical activity undertaken and is significantly poorer in physically inactive older individuals (Yasunaga, Togo, Watanabe, Park, Park, Shephard, & Aoyagi, 2006). Strength and endurance for elderly could be gained through activities such are walking, strolling, stationed biking, housework, gardening, play with children, swimming and running with speed of 7 km/ per hour (Mišigoj-Durakovič, et al., 2003). Various researchers reported the unquestionable contributions and benefits of physical activity for the elderly regarding the cardio-vascular and muscular system (Oražem Grm, 2008), bone mass (Strojnik et al., 2008), arteriosclerosis (Sasaki, 2006), thrombosis (Wang, 2006), cholesterol level (Hardman, 1999) and diabetes type-2 (Ryan, 2000). Regular physical activity is also extremely important for the mental health of the elderly (Mlinar, 2007). Socio-cultural situation should be considered also when designing interventions, for example walking, to increase the physical activity in older adults (Strath et al., 2009). Walking could keep sufficient mobility level for older adults (Marsh et al., 2009). Stiggelbout et al., (2008) reported that walking highly motivates older adults and fulfils their expectation to be physically active. A study about the most desirable sports among elderly women in Slovenia showed that the most prevalent sports according to their wishes were extended from boccia, bowling, cycling, dancing, trekking, swimming, and volleyball to Nordic skiing, orienteering, and fishing (Vute, Novak, 2010).

The main aim and goals

The main aim of this research is to obtain information how elderly women spend their free time. The paper analyses the responses of elderly women in order to find out:
- structure and time spent on no sport related free time activities among elderly women who have joined the Slovenian regional project Sport for Healthy Life and elderly women from the control group;

- structure and time spent on sport related free time activities among elderly women who have joined the Slovenian regional project Sport for Healthy Life and elderly women from the control group.

The findings about structure and time spent on free time activities among elderly women should open new perspectives on planning free time programmes for an ageing population and contribute to a better general understanding of elderly and their participation on non sporting and sport related activities and, particularly from the women’s perspective.

Methods:

Participants

The research sample consisted of a total of 64 elderly women: 32 women aged 65 to 78 from the town of Kamnik who joined the project Sport for Healthy Life and a group of 32 women aged 65 to 75 from the town of Kranj who did not join the project (control group). Both towns are located in central Slovenia. The examined participants from Kamnik had scheduled physical activity classes in a school gymnasium once a week, 60 minutes per class unit. Participants from Kranj (control group) did not participate in any of the scheduled sports activities in their community centers.

Instrument

Instrument for selecting the nonsport free time activities, sport related free time activities and time spent on those activities was A Physical Activity Questionnaire for the Elderly (VOORRIPS, et al., 1991). The instrument was translated into Slovene language. Respondents were asked to mark each activity they participated in.

Procedure

Data was gathered in November 2008. All data in our study was collected by personal interview to ensure that all respondents understood the content and meaning of the questions in the survey. Ethical standards of the Slovenian Research Commission were followed.
**Data analysis**

The data has been processed by SPSS 8.0 software for Windows programme (Bryman & Cramer, 1999). The level of statistical significance was set up at $p < 0.05$. Basic statistical characteristics were computed (absolute, relative frequency). The probability relations among the presented variables have been tested by the Chi-square.

**Results**

If we want to be able to highlight the role of free time activities of the elderly women, it is important to get a clear picture of the time and ways of spending their free time. With the inside view of sport related free time activities of elderly women, we intend to open a new dimension to be discussed and evaluated. Sport for the elderly is definitely a challenge for the future for various types of professionals.

**Elderly women and their usage of free time**

Identifying the ways of spending free time is an important piece of information which could improve quality of life, especially for older adults.

<table>
<thead>
<tr>
<th>Hours per week</th>
<th>Project group N = 32</th>
<th>Control group N = 32</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Numbers</td>
<td>Percentage</td>
</tr>
<tr>
<td>0 – 5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6 – 10</td>
<td>3</td>
<td>9.4</td>
</tr>
<tr>
<td>11 – 15</td>
<td>5</td>
<td>15.6</td>
</tr>
<tr>
<td>16 – 20</td>
<td>2</td>
<td>6.2</td>
</tr>
<tr>
<td>21 – 25</td>
<td>4</td>
<td>12.5</td>
</tr>
<tr>
<td>26 – 30</td>
<td>7</td>
<td>21.8</td>
</tr>
<tr>
<td>31 – 35</td>
<td>2</td>
<td>6.2</td>
</tr>
<tr>
<td>36 – 40</td>
<td>2</td>
<td>6.2</td>
</tr>
<tr>
<td>41 – 45</td>
<td>2</td>
<td>6.2</td>
</tr>
<tr>
<td>46 – 50</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>over 50</td>
<td>4</td>
<td>12.5</td>
</tr>
<tr>
<td>over 60</td>
<td>1</td>
<td>3.1</td>
</tr>
<tr>
<td>Total</td>
<td>32</td>
<td>100</td>
</tr>
</tbody>
</table>

21.8% of the women who participated in the project spent between 26 – 30 hours per week on their free time activities, 15.6% of them spent between 11 – 15 hours and 12.5% devoted 21 – 25 hours per week to their free time activities. Among this group there were also
12.5% who filled their free time with activities in more than 50 hours per week. In the control group there were 18.8% of those who spent between 31 – 35 hours per week on their free time activities and also 18.8% of those who spent between 11 – 15 hours per week on them. 12.5% in both groups devoted 26 – 30 and 6 – 19 hours per week to their free time activities. Free time activities that extend 60 hours per week were recorded on 1 (3.1%) woman in project group and 2 (6.2%) in the control group.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours per week</th>
<th>( \chi^2 )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not practising or less than 1 hour</td>
<td>1 – 4 hours</td>
<td>5 – 8 hours</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Gardening</td>
<td>PG</td>
<td>5 15.6</td>
<td>15 46.9</td>
</tr>
<tr>
<td></td>
<td>CG</td>
<td>4 12.5</td>
<td>14 43.8</td>
</tr>
<tr>
<td>Babysitting</td>
<td>PG</td>
<td>18 56.3</td>
<td>8 25.0</td>
</tr>
<tr>
<td></td>
<td>CG</td>
<td>20 62.5</td>
<td>10 31.2</td>
</tr>
<tr>
<td>Reading</td>
<td>PG</td>
<td>3 9.4</td>
<td>16 50.0</td>
</tr>
<tr>
<td></td>
<td>CG</td>
<td>6 18.8</td>
<td>17 53.1</td>
</tr>
<tr>
<td>Watching TV</td>
<td>PG</td>
<td>- -</td>
<td>16 50.0</td>
</tr>
<tr>
<td></td>
<td>CG</td>
<td>1 3.1</td>
<td>14 43.8</td>
</tr>
<tr>
<td>Cinema, theater, concert</td>
<td>PG</td>
<td>20 62.5</td>
<td>12 37.5</td>
</tr>
<tr>
<td></td>
<td>CG</td>
<td>23 71.8</td>
<td>8 25.0</td>
</tr>
<tr>
<td>Handy crafts</td>
<td>PG</td>
<td>9 28.1</td>
<td>17 53.1</td>
</tr>
<tr>
<td></td>
<td>CG</td>
<td>17 53.1</td>
<td>14 43.8</td>
</tr>
<tr>
<td>Education</td>
<td>PG</td>
<td>19 59.4</td>
<td>12 37.5</td>
</tr>
<tr>
<td></td>
<td>CG</td>
<td>28 87.5</td>
<td>3 9.4</td>
</tr>
<tr>
<td>With friends, relatives</td>
<td>PG</td>
<td>3 9.4</td>
<td>19 59.4</td>
</tr>
<tr>
<td></td>
<td>CG</td>
<td>5 15.6</td>
<td>22 68.8</td>
</tr>
<tr>
<td>Community services</td>
<td>PG</td>
<td>13 40.6</td>
<td>17 53.2</td>
</tr>
<tr>
<td></td>
<td>CG</td>
<td>28 87.5</td>
<td>3 9.4</td>
</tr>
<tr>
<td>Going out: restaurants, sweet shops</td>
<td>PG</td>
<td>22 68.8</td>
<td>10 31.2</td>
</tr>
<tr>
<td></td>
<td>CG</td>
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<td>2 6.2</td>
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<td>10 31.2</td>
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**Legend:** GR – group, N – Number, % – percentage, PG – project group, CG – control group, \( \chi^2 \) – Chi-square, \( p \) – significance
According to the distribution of free time among elderly women who participated in the project and those in the control group, minimal differences were noticed. Both groups reached the highest scores, except in one case, in the same segments of hours spent per week on their free time activities. Most frequent spent time of 1 – 4 hours per week was recorded for: gardening (project members 46.9%, control group members 43.8%), reading (project members 50.0%, control group members 53.1%), watching TV (project members 50.0%, control group members 43.8%), handy crafts (project members 53.1%, control group members 43.8%), time spent with friends and relatives (project members 59.4%, control group members 68.8%). Activities which are not actual for the respondents or they practised it less than one hour per week reached the highest scores in: babysitting (project members 56.3%, control group members 62.5%), going to cinema, theater, concert (project members 62.5%, control group members 71.8%), time spent on education (project members 59.4%, control group members 87.5%), going out to restaurants and sweet shops (project members 68.8%, control group members 78.2%), active involvement in cultural events (project members 68.8%, control group members 93.8%), extra work for money (project members 78.2%, control group members 87.5%) and relaxing at home (project members 59.4%, control group members 100%). The only difference was calculated on the item: working at community services, where project members spent significantly (P = 0.008) more time than elderly women from the control group.

**Free time and sport related activities**

Spending time on sport related activities is an important indicator of daily routine of elderly individuals in home environments. Such information could become an initiative for establishing active life style programmes for the elderly.

**Table 3 Time spent on sport related free time activities among elderly women from project and control group**

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<th>Hours per week</th>
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<th>Control group</th>
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</table>
The most frequent zone for spending time on sport related activities is 3 – 4 hours per week and is equally distributed (18.8%) between both groups of elderly women from the project group and the control group. Active sport participation of 29 hours per week or more is also equally distributed (6.2%), the same with participation which extends up to 2 hours per week (9.4%). Small differences between both groups were noticed in all other distributions of time spent on sport related activities.

**Table 4 Structure of sport related free time activities among elderly women from both the project and the control group**

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<th>N</th>
<th>%</th>
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Elderly women who participated in the project and those from the control group distributed their chosen sport activities in various zones according to the time they spent on them. The highest scores were found inside time sequence where respondents stated that they did not practise this activity or did it less than 1 hour per week, were: bowling (project members 90.6%, control group members 100%), golf (project members 90.6%, control group members 100%), yoga (project members 90.6%, control group members 100%), alpine skiing (project members 87.5%, control group members 100%), skating (project members 90.6%, control group members 100%), rolling (project members 90.6%, control group members 100%), horseback riding (project members 90.6%, control group members 100%), boccia (project members 87.5%, control group members 100%), oriental dancing (project members

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</table>

LEGEND: GR – group, N – Number, % – percentage, PG – project group, CG – control group, $\chi^2$ – Chi-square, $p$ – significance
96.9%, control group members 100%). In category 1 – 4 hour sport activities per week the elderly from the project group marked participation in 19 out of 21 activities listed in the questionnaire whereas the control group members marked 12 of them. The difference in participation was calculated in the following activities: mountaineering (P = 0.021), swimming (P = 0.040), alpine skiing (P = 0.033) and boccia (P = 0.033) where the elderly from the project group were significantly more active.

Discussion

The purpose of this study was to examine the ways that elderly women spend their free time and particularly the structure and time spent on free time activities among elderly women who have joined the Slovenian regional project Sport for Healthy Life and those elderly women who were in the control group. Voorrips (1991) instrument was applied to get the respondents answers and round up the view of Slovenian elderly women towards spending their free time. It is important to know the range of preferred free time activities and time which they are willing to dedicate to the chosen activities either sport related or not. No doubt that participation in various free time activities makes a significant contribution to the quality of life and health of the aged. Our results on time spent on free time activities (Table 1) showed that Slovenian elderly women from the project group differ in some details from the control group. For the 21.8% of the project group members the most frequently spent time on free time activities is between 26 –30 hours per week (control group 12.5%), while the 18.8% of the control group members put time between 31 – 35 hours per week as predominant (project group 6.2%). The time spent on free time activities of the elderly combined into three categories show us that in category 0 – 20 hours per week project group members participated with 31.2% of their free time while control group members with 43.8%. Category 21 – 40 hours spending of free time activities per week is equal for both groups with 46.9%, in category 41 – 60+ hours per week the project group members are in advantage with 21.8% time while the control group stays at 9.3% of devoted time for free time activities. Evidently the project group is more active in upper level of time for the activities of their choices which could be the result of more systematic inclusion into programmed sporting activities and consequently the awareness of importance to be active. The structure of free time on non sport activities on elderly Slovenian women was observed in both groups (Table 2) although significance was reached only in the item: working at community services, where project members spent significantly (P = 0.008) more time than elderly women from the control group.
Our study confirms that gardening seems to be interesting not only because of its healthy character, but also as an open air activity which could contribute to lower the family budget. Babysitting is also traditionally positioned social contribution of the elderly to the young families. Level of recorded reading habits show that reading can provide a pleasant and useful relaxation. Watching TV is a predominant free time activity and an important daily routine for the majority of elderly respondents regardless of the participation group.

An Australian study of 3,955 women from 75 –81 shows that gardening occupied 23.3%, handy craft 14.3%, reading 7%, cooking 4.7% listening music 4.5%, voluntary work 20.1% and community services 13.5% of the elderly population (Adamson & Parker, 2006). Free time activities like watching TV, listening to the radio, art and craft, education, housework and travelling could increase the level of energy spent and contribute to relaxation of the elderly person (Ebersole & Hess, 1995).

A Canadian study (Fitzpatrick, 2009) suggested that free time activities increased physical health, reduced chronic illnesses and made positive contribution to the quality of life of elderly women in Montreal. Gautam, et al., (2007) found out that elderly from Nepal reduced the level of depression and raised the level of satisfaction with life through religious services, listening to the radio, watching TV and visiting friends and relatives. Importance of being with friends and relatives was reflected also in our survey where 31.2% project member respondents said that they spent 5 –8 hours per week or more with them while the control group score on the same item was 15.6%.

With regard to education matters, Slovenian elderly women dedicated from one to four hours per week to education (project group 37.5%, control group 9.4%) which is expression of relatively small but permanent need to gain new knowledge. Going out to the cinema, theatre, concerts or to restaurants and sweet shops reflect not only life long habits of individuals but also their financial situation. Frequencies of those events show us that four hours per week is a limit which respondents from our study did not exceed. Within these limitations was also the active involvement of elderly women in cultural events where we witness specific tradition in our society where singing choruses, drama performances, and art and handy craft exhibitions are not unknown. Money from extra work is definitely welcomed by the elderly but the opportunity to earn such extra money is relatively small which is also expressed in our research. Two other studies suggest that less education and lower income were related to less activity (Baron-Epel et al., 2005) and that financial capabilities, lifestyle and home environment have influences on sport preferences (Doupona Topič, & Sila, 2007).
Time for relaxation at home has among elderly women obviously a wide specter of possible interpretations.

The amount of time spent on sport related activities among Slovenian elderly women (Table 3) showed that dispersion of their usage of free time on sport activities was surprisingly equally distributed to up to 30 hours activity per week, regardless of the group they belonged to. Equally dominating was time span for sport related activities to 3 – 4 hours per week (18.8%). Half an hour per day for sport may not seem impressive, but makes a solid basis for all further steps up. Results proved that we found a representative among elderly women in a single time span which was listed on the table. To be precise, more than 29 hours per week for sport activities were accomplished by four elderly women (12.4%), two from each group. The overall picture of time spent on sport related activities among Slovenian elderly women confirms a high level of awareness of the importance of physical activity.

Table 4 offers a comprehensive overview of the sport activities that our elderly women do most frequently. In the current study we found four sport activities which statistically significantly differentiate both groups: mountaineering, swimming, alpine skiing and boccia. Except for boccia the mentioned sports are so-called Slovenian national sports and are practiced among the project group members more often. Results of the control group showed that boccia, oriental dancing, horseback riding, rolling, alpine skiing, yoga, golf, skating and bowling are more or less unpracticed. One explanation for this low participation is that certain risk factors such as injury and lack of partners’ support prevail. The study has also indicated that most practiced activities among elderly women were cycling and walking in nature where spending time on both activities is close to being a regular every day event. Walking in nature, cycling, swimming, mountaineering, alpine skiing are favorite sports activities among Slovenian adults (Berčič, & Sila, 2007), Pori (2010) confirms that Slovenians select walking, swimming and cycling as most practiced sports, Australian women aged 75 to 81 preferred swimming, cycling and walking ((Adamson, & Parker, 2006). Walking is known to be the most common type of activity for older adults (American College of Sports Medicine, 2009). According to Hawkey (1991) model of classification of sports the most frequent participation in sport related free time activities among elderly women in our study was athletics group. The American College of Sports Medicine (2009) stated that aerobic endurance training can slow down age related physiological changes, reverse atrophy from disuse, help to control chronic conditions, promote psychological health and preserve the ability to perform activities of daily living. Varieties of running and especially walking as typical aerobic activities are well practiced among respondents from the project and the
control group. Our impression is that elderly women know the benefits of being active and therefore use the opportunities which sports can offer.

Conclusion

In conclusion, regular physical activity of the elderly should be monitored carefully and assessed by professionals. As shown in this study, the reported structure of free time activities among elderly women helped increase awareness of importance to be active. Activities connected with sport and consequently the structure of free time indicates the level of participation of the elderly women in their daily life. A future suggestion for practitioners and health care providers is to be informed about actual findings on free time activities of the elderly. This is a good starting point for promoting physical and psychological health of the elderly. Successful application of sports activities to elderly population also depends on the respect of the personal integrity, sport tradition of the country and adaptation flexibility. Once elderly recognise the advantage of using their free time for sport related activities, they will be able to find the sufficient time and motivation for practicing. The most frequently reported non sport related free time activities were predictable: watching TV and physically active gardening, while among sporting free time activity dominated walking in various forms (walking in nature, fast walking, slow walking). Despite some limitation of the study (small sample, measurement via self report) the interpreted results reflect the structure of free time activities (no sport and sport related) of elderly women in one of the regions in Slovenia. The obtained data suggest that certain non sport and sport related activities can be used in various intervention programmes. Research findings could contribute to the creation of new free time programmes and initiate further research in the field of elderly and physical activity.

References


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QUALITY OF LIFE IN PEOPLE WITH DIABETES TYPE II
WITH RESPECT TO THEIR PHYSICAL ACTIVITY

Bartosz Bolach, Anna Żurowska, Justyna Młynek, Eugeniusz Bolach

Abstract: The term quality of life is used to assess the status and functioning of human being. Aim of the study is to assess the quality of life in patients with type II diabetes undertaking physical activity and to demonstrate correlations between quality of life and participation length in organized forms of PE. Two group of patients took part in the examination. In the first group there were twenty people suffering from type II diabetes who have been performing physical activity for two years. The second group consisted of 20 subjects performing physical activity for 2-4 years. The subjects answered the Questionnaire of quality of life SF - 36. The research revealed statistically significant differences in quality of life only on the level of physical functioning and emotional limits. Study results have also shown that the duration of the disease did not have any influence on quality of life in both examined groups. It was hypothized that the reason for such results were coexisting diseases associated with diabetes. Regarding vital energy the reason for the insignificance could have been the age range.

Key words: Quality of life; patients with type II diabetes; physical activity; the Questionnaire of quality of life SF - 36.

1 Introduction

Thanks to medical advances humans life became longer but more people suffer now from chronic diseases. Traditional treatment includes the reduction of mortality, the incidence of complications and improving body function. However, in chronic diseases, concentrating on these parameters only is insufficient. Chronic disease affects all levels of human functioning. It impairs the biological functions of human body, but mainly leads to lasting psychological changes. In patients suffering from this type of disease there is an increasing need to assess the quality of life (6,13,18).

The term quality of life is generally known and used to assess the status and functioning of human being. The term was established after World War II in the United States
and meant "good life". World Health Organization in 1949 defined the quality of life as a state of complete physical, mental and social well-being and not merely the absence of disease (12,15).

In recent years there was a lot of controversy around the question what is the quality of life and how to define it. The problem arose because the term is used to determine various factors. Despite the controversy associated with defining, most researchers assume that the quality of life is a term taking into account the subjective assessment of somebodies own life on the physical, psychological and social level (11.13).

Health is an important value of human life therefore in medical science there is a concept of quality of life in correlation with health (1).

Pasek et.al. (12), p. 4 - defined the term as "the functional effect of the disease and its treatment experienced by the patient. It covers such areas as physical mobility, mental state, social situation, economic conditions and somatic sensations". According Tylki (15), p. 51 - in order to assess the quality of life of a patient most the important are:

- more accurate knowledge of well-being of patients,
- assess the benefits and disadvantages arising from medical interventions,
- ability to anticipate the consequences of the current state of a sick person,
- to evaluate changes during disease
- selection of appropriate therapy".

One of the chronic diseases, which has a huge impact on human life is diabetes. From the perspective of the patient it is a disease, which can’t be forgotten. To achieve a good control of glucose requires strong commitment and many sacrifices. In recent years there have been many studies on quality of life of people with type II diabetes. This problem is very common, is still growing and has an economic impact. International Diabetes Federation recognizes the quality of life as one of the main goals of diabetes treatment which is as important as the metabolic control and prevention of chronic complications (13.18).

According to World Health Organization diabetes is a widespread disease, which belongs to lifestyle diseases. Studies have shown that in 1985 there were 30 million people with diabetes, over time the number of cases was growing and 10 years later increased to 135 million. In 2000, statistics have shown that 171 million people are suffering from the disease. It is expected that in 2030 the number of diabetics will be within 366 million. International
Diabetes Federation for the estimates that currently 230, 25 million in Europe, million people around the world suffer from diabetes (10).

The continuous increase of patients with type II diabetes allows to talk about the global epidemic of the disease. This disease is also widespread in Poland, where the incidence reaches about 2 million. These are people with diagnosed and undiagnosed overt diabetes. The number of people with milder disorder of carbohydrate metabolism, defined by WHO as abnormal glucose tolerance is about 1 million. The most common of all metabolic diseases is however type II diabetes – 80%. Every year about 3.8 million people die because of type II diabetes (9).

Type II diabetes, which is non-insulin-dependent diabetes mellitus occurs mostly in adults and elderly. Often this type of diabetes remains asymptomatic for many years and therefore is unrecognized. This is because hyperglycemia often is not sufficiently severe and develops gradually, and thus does not cause symptoms, which can be directly observed (5). Approximately 90% of all patients with diabetes are patients with type II diabetes. In this type the cause of increased blood sugar level is insulin deficiency, but also its inappropriate and ineffective function in human body. Probability of developing diabetes increases with age, obesity and lack of physical activity. Ketoacidosis occurs rarely in this case, if it appears mainly it is basicaly due to additional stress or illness (3). The pathogenesis of type II diabetes consists of two simultaneously ongoing mechanisms: insulin resistance and impaired function of pancreatic beta cells. It is still unclear which of them is primary (14).

Insulin resistance is a condition of inadequate blood glucose level relative to secreted or administered insulin. There is a reduced metabolic responses in peripheral tissues to normal levels of this hormone. We distinguish primary and secondary insulin resistance. The first results from a mutation of the insulin receptor, transport proteins, or proteins transmitting the insulin signal. The second type is a secondary insulin resistance. It develops as a result of obesity, aging, physical inactivity, chronic hyperglycaemia and free fatty acids in the blood. Consumption of glucose by peripheral tissues in healthy individuals is 6, 5 - 8, 0 mg per 1 kg / min, whereas in people with type II diabetes it is reduced to 2, 5 - 5, 0 mg glucose per 1 kg / min (9,14).

Diabetes has a very complex etiologic character. It is a genetic disease, conditioned multigenetic. Disorders affect many different tissues - the islands of the pancreas, muscles, and others. Predisposition to this disease is the result of interaction of many genes that regulate the metabolism of a person. Hereditary factor plays an important role. Diabetes can be passed from generation to generation, however it doesn’t mean, that all family members
become ill. First-degree relatives of people with type II diabetes have an increased risk of illness. They must be aware of this and should periodically measure glycaemia. It was found that in people with type II diabetes, more often mothers than fathers were sick (3).

Environmental factor also play an important role – they may cause deficiency or malfunction of the effects of insulin on cells and tissues. The main environmental factors are (9): aging, improper diet, obesity and overweight, lack of physical activity, infections, certain medications.

2 Purpose of the study

Aim of the present study is to assess the quality of life in patients with type II diabetes undertaking physical activity as well as to demonstrate the difference of the level of their quality of life depending on participation length in organized forms of physical activity.

3 Methods

The study was conducted in January and February 2010. 40 subjects with type II diabetes, participating in physical activity classes were examined. The subjects suffered from the disease from 2 to 23 years (mean of 8.5 years). The subjects were divided into two groups, depending on the length of participation in organized physical activity classes. In the first group there were 20 patients (age 58 to 77; mean 67, 5 years old) with type II diabetes, participating in a systematic physical activity class for 2 years. The second group also included 20 (age 57 to 81; mean 68, 6 years old)people with the participation history from 2 to 4 years.

At the beginning of the study each patient was interviewed in order to obtain the case history. All participants were retired. Patients with type II diabetes participated in physical activity classes 2 times a week for 60 minutes at the Rehabilitation Center "Salluber" and the University School of Physical Education in Wroclaw. The classes were run by physiotherapists and included a variety od exercises.

3.1 Method

To assess the quality of life in subjects with type II diabetes a shortend version of the SF-36th was used. However, in the present study a Polish version of this scale was used. SF-36 questionnaire is a tool for assessment quality of life dependent on the state of health. Over the last few years it was recognized by patients with different types of somatic and mental diseases. It contains 36 questions divided by the authors to 8 scales (13, 28):
1. Physical Functioning-PF - 10 questions: 2a, 2b, 2c, 2d, 2e, 2f, 2g, 2h, 2i, 2j,
2. RP Role-Physical - 4 questions: 3a, 3b, 3c, 3d,
3. Bodily Pain-BP - 2 questions 6 and 7,
4. General Health-GH - 5 questions: 1, 10a, 10b, 10c, 10d,
5. Vitality-V - 4 questions: 8a, 8e, 8g, 8i,
6. Social Functioning-SF - 2 questions: 5 and 9,
7. Role Emotional-RE - 3 questions: 4a, 4b, 4c,
8. Mental Health-MH - 5 questions 8b, 8c, 8d, 8f, 8h.

After completing the questionnaire the accuracy was evaluated. Then a "result of the scale" for each of the eight scales individually for each subject was calculated. A numerical value was assigned to each answer. These values were from 1 to 6, depending on the response. Characteristic of questions for each of the scales are listed in table 1. After summing of these figures, "result obtained" was substituted into the following formula (17).

\[
\text{RESULT OBTAINED - LOWEST POSSIBLE SCORE} \\
\frac{\text{SCALE SCORE}}{\text{PROBABLE OUTCOME}} = \frac{\text{RESULT OBTAINED} - \text{LOWEST POSSIBLE SCORE}}{\text{PROBABLE OUTCOME}} \\
\]

To obtain the “scale score” also the “lowest possible score,” and the "probable outcome" should be substituted to the formula. These values were established for each of the scales by the authors of the questionnaire.

Table 1 Formula for calculating the mean values of the SF-36

<table>
<thead>
<tr>
<th>SF-36 scale</th>
<th>The sum of the values after transformation</th>
<th>The lowest and highest possible score</th>
<th>Probable outcome (for transformation)</th>
</tr>
</thead>
<tbody>
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<td>Physical Functioning-PF</td>
<td>2a+2b+2c+2d+2e+2f+2g+2h+2i+2j</td>
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<tr>
<td>RP Role-Physical</td>
<td>3a+3b+3c+3d</td>
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<tr>
<td>Bodily Pain-BP</td>
<td>6+7</td>
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<tr>
<td>General Health-GH</td>
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<td>Vitality-V</td>
<td>8a+8e+8g+8i</td>
<td>4, 24</td>
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<td>Social Functioning-SF</td>
<td>5+9</td>
<td>2, 10</td>
<td>8</td>
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<td>Role Emotional-RE</td>
<td>4a+4b+4c</td>
<td>3, 6</td>
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<tr>
<td>Mental Health-MH</td>
<td>8b+8c+8d+8f+8h</td>
<td>5, 30</td>
<td>25</td>
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</table>
4 Results, Statistic Analyses

SF-36 questionnaire assesses the quality of life within the eight domains on a 1 - 100 scale. Shapiro-Wilk test was used to assess the normal distribution. Nonparametric statistics were used to assess the quality of life depending on physical activity. In comparative statistics the Mann-Whitney U test, which is non-parametric equivalent of t-test for independent samples, was used, the Spearman rank correlation coefficient was used to evaluate the correlation. From all analysed parameters only age had a normal distribution. Therefore a parametric t-test for independent samples was used to compare age distribution in the two examined groups (4). The result of these calculations was a numerical value from 1 to 100 for each scale for each patient. The values of these calculations are presented in Tab. 2 and 3. The higher value indicates higher quality of life.

Table 2 The values of the scales in patients participating in physical activity classes for 2 years

<table>
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<th>PF</th>
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Table 3 The values of the scales in patients participating in physical activity classes for 2–4 years

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<th>PF</th>
<th>RP</th>
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<td>11</td>
<td>85</td>
<td>25</td>
<td>50</td>
<td>60</td>
<td>50</td>
<td>50</td>
<td>33</td>
<td>48</td>
</tr>
<tr>
<td>12</td>
<td>80</td>
<td>25</td>
<td>20</td>
<td>55</td>
<td>60</td>
<td>37</td>
<td>67</td>
<td>56</td>
</tr>
<tr>
<td>13</td>
<td>95</td>
<td>100</td>
<td>50</td>
<td>40</td>
<td>50</td>
<td>25</td>
<td>100</td>
<td>56</td>
</tr>
<tr>
<td>14</td>
<td>95</td>
<td>100</td>
<td>20</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>56</td>
</tr>
<tr>
<td>15</td>
<td>90</td>
<td>100</td>
<td>10</td>
<td>65</td>
<td>80</td>
<td>37</td>
<td>100</td>
<td>60</td>
</tr>
<tr>
<td>16</td>
<td>85</td>
<td>100</td>
<td>60</td>
<td>60</td>
<td>55</td>
<td>50</td>
<td>67</td>
<td>64</td>
</tr>
<tr>
<td>17</td>
<td>80</td>
<td>75</td>
<td>40</td>
<td>70</td>
<td>60</td>
<td>50</td>
<td>67</td>
<td>60</td>
</tr>
<tr>
<td>18</td>
<td>100</td>
<td>75</td>
<td>40</td>
<td>65</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>64</td>
</tr>
<tr>
<td>19</td>
<td>85</td>
<td>7</td>
<td>60</td>
<td>50</td>
<td>60</td>
<td>25</td>
<td>33</td>
<td>48</td>
</tr>
<tr>
<td>20</td>
<td>100</td>
<td>100</td>
<td>60</td>
<td>70</td>
<td>80</td>
<td>37</td>
<td>67</td>
<td>60</td>
</tr>
</tbody>
</table>

Study results

It was assessed whether factors such as disease duration didn’t have influence on differences between groups (Table 4 and 5).

Table 4 Used terms

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Subjects performing physical activity for 2 years</th>
<th>N = 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 2</td>
<td>Subjects performing physical activity for 2-4 years</td>
<td>N = 20</td>
</tr>
</tbody>
</table>

Table 5 Distribution ranks for physical activity experience in two groups

<table>
<thead>
<tr>
<th>Physical activity (years)</th>
<th>Number of</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group 1</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>1,5</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>2,5</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>3,5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
Age distribution in Group 2 was shifted slightly towards higher values, which resulted in slightly higher average age in this group. But this shift was not statistically significant (Table 6 and 7).

**Table 6** The ranks of age distribution in the compared groups

<table>
<thead>
<tr>
<th>Age rank (years)</th>
<th>Group 1.</th>
<th>Group 2.</th>
</tr>
</thead>
<tbody>
<tr>
<td>55 – 59</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>60 – 64</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>65 – 69</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>70 – 74</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>75 – 79</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>80 -</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

**Table 7** Comparison of age distribution in the two groups

<table>
<thead>
<tr>
<th></th>
<th>x</th>
<th>sd</th>
<th>range of variation</th>
<th>t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1.</td>
<td>58</td>
<td>77</td>
<td></td>
<td>0,611</td>
</tr>
<tr>
<td>Group 2.</td>
<td>57</td>
<td>81</td>
<td></td>
<td>0,545</td>
</tr>
</tbody>
</table>

Distribution of disease duration in group 2 was clearly shifted towards higher values. The difference of this parameter was statistically significant. The nonparametric test (Mann-WhitneyU), was used because the abnormal distribution of the analysed parameter (Table 8 and 9).

**Table 8** Ranks of disease duration distribution in examined groups

<table>
<thead>
<tr>
<th>Disease duration (years)</th>
<th>Group 1.</th>
<th>Group 2.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>5 – 9</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>10 – 14</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>15 – 19</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>20 -</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 9  Comparison of disease duration in the two groups

<table>
<thead>
<tr>
<th></th>
<th>Range of variation</th>
<th>Manna-Whitneya U test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>x</td>
<td>sd</td>
</tr>
<tr>
<td>Group 1.</td>
<td>6,7</td>
<td>3,1</td>
</tr>
<tr>
<td>Group 2.</td>
<td>10,4</td>
<td>4,8</td>
</tr>
</tbody>
</table>

Applied Shapiro-Wilk test shows that for all domains, the hypothesis of normal distribution should be rejected (Table 10).

Table 10  Verification of the hypothesis of normal distribution of values in individual domains of the questionnaire.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Shapiro-Wilk test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>W</td>
</tr>
<tr>
<td>PF</td>
<td>0,9383</td>
</tr>
<tr>
<td>RP</td>
<td>0,8624</td>
</tr>
<tr>
<td>BP</td>
<td>0,9362</td>
</tr>
<tr>
<td>GH</td>
<td>0,9317</td>
</tr>
<tr>
<td>V</td>
<td>0,8325</td>
</tr>
<tr>
<td>SF</td>
<td>0,7217</td>
</tr>
<tr>
<td>RE</td>
<td>0,8207</td>
</tr>
<tr>
<td>MH</td>
<td>0,8567</td>
</tr>
</tbody>
</table>

In most domains of the questionnaire the group exercising more than 2 years was characterized by a higher mean value of quality of life. Only in such domains as physical pain and social functioning mean values of quality of life were very similar. However, only in two domains (physical function and importance of emotional limitations), the observed difference between groups was statistically significant. Highly significant (p <0.01) was the difference of global assessment of the quality of life (the sum of all domains) (Table 11).

Table 11  Comparison assessment of quality of life within individual domains in two study groups with different levels of physical activity.
<table>
<thead>
<tr>
<th>Domain</th>
<th>Gr.</th>
<th>$x$</th>
<th>sd</th>
<th>Range of variation</th>
<th>Difference of mean values</th>
<th>Manna-Whitney test</th>
<th>Statistical significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>min.</td>
<td>max.</td>
<td>U</td>
<td>Z</td>
</tr>
<tr>
<td>PF</td>
<td>1</td>
<td>77,00</td>
<td>12,29</td>
<td>60</td>
<td>100</td>
<td>8,75</td>
<td>116,0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>85,75</td>
<td>10,79</td>
<td>60</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RP</td>
<td>1</td>
<td>64,25</td>
<td>18,73</td>
<td>25</td>
<td>100</td>
<td>10,75</td>
<td>137,5</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>75,00</td>
<td>31,41</td>
<td>25</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP</td>
<td>1</td>
<td>38,00</td>
<td>12,81</td>
<td>20</td>
<td>60</td>
<td>0,00</td>
<td>195,5</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>38,00</td>
<td>23,08</td>
<td>10</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GH</td>
<td>1</td>
<td>55,25</td>
<td>6,97</td>
<td>35</td>
<td>65</td>
<td>4,25</td>
<td>141,0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>59,50</td>
<td>8,72</td>
<td>40</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>1</td>
<td>55,25</td>
<td>6,17</td>
<td>45</td>
<td>65</td>
<td>3,25</td>
<td>178,5</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>58,50</td>
<td>10,14</td>
<td>50</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF</td>
<td>1</td>
<td>43,00</td>
<td>9,57</td>
<td>25</td>
<td>50</td>
<td>-0,05</td>
<td>195,5</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>42,95</td>
<td>8,70</td>
<td>25</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RE</td>
<td>1</td>
<td>59,40</td>
<td>20,59</td>
<td>33</td>
<td>100</td>
<td>19,00</td>
<td>110,0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>78,40</td>
<td>24,88</td>
<td>33</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MH</td>
<td>1</td>
<td>58,20</td>
<td>4,94</td>
<td>48</td>
<td>64</td>
<td>0,60</td>
<td>185,0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>58,80</td>
<td>4,87</td>
<td>48</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domain sum</td>
<td></td>
<td>450,35</td>
<td>42,32</td>
<td>360</td>
<td>565</td>
<td>46,55</td>
<td>95,5</td>
</tr>
</tbody>
</table>

* - statistical significance $p<0,05$; ** - statistical significance $p<0,01$; (*) - statistical significance $p<0,10$.

All the designated correlations were very low and statistically insignificant. Thus, duration of illness did not affect the assessment of quality of life (Table 12).

**Table 12** The correlation coefficients Spearman's rank ordering between disease duration and values of each domain throughout the test material ($N = 40$).

<table>
<thead>
<tr>
<th>Domain</th>
<th>Correlation coefficient</th>
<th>t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R</td>
<td>T</td>
</tr>
<tr>
<td>PF</td>
<td>0,061</td>
<td>0,375</td>
</tr>
<tr>
<td>RP</td>
<td>-0,024</td>
<td>0,149</td>
</tr>
<tr>
<td>BP</td>
<td>0,079</td>
<td>0,491</td>
</tr>
<tr>
<td>GH</td>
<td>0,244</td>
<td>1,550</td>
</tr>
<tr>
<td>V</td>
<td>0,029</td>
<td>0,181</td>
</tr>
<tr>
<td>SF</td>
<td>0,102</td>
<td>0,629</td>
</tr>
<tr>
<td>RE</td>
<td>0,068</td>
<td>0,419</td>
</tr>
<tr>
<td>MH</td>
<td>0,030</td>
<td>0,188</td>
</tr>
<tr>
<td>sum</td>
<td>0,078</td>
<td>0,480</td>
</tr>
</tbody>
</table>
5 Discussion

The study revealed that patients with type II diabetes participating in physical activity classes more than 2 years assessed their quality of life higher, but just in terms of physical functioning and the importance of emotional limitations, in comparison to those practicing physical activity less than 2 years. The physical pain level and social functioning level were similar in both groups. Based on the fact that physical activity had no effect on these domains. It could hypothesized that the reason for such results were coexisting diseases associated with diabetes. In other domains, such as vital energy, general mental health, importance of physical limitations - the group of patients exercising more than 2 years had higher mean value of quality assessment in comparison to the other group. Regarding vital energy the reason for the insignificance could have been the age range. Results have also shown that the duration of the disease had no impact on quality of life in both groups.

In the literature, the authors didn’t find any similar research project. Most of the studies were associated with the assessment of quality of life in patients with type II diabetes, but in relationship to late complications. Currently, studies comparing quality of life in patients with type I and II diabetes are conducted.

Hakkinen et.al. (8) compared the quality of life of people with high risk of type II diabetes in Finnish population. The authors used a quality of life questionnaire SF-36. They also determined how often subjects participated in physical activity classes (2 times a week, 1 per week, less than 1 per week). It was shown that the quality of life in patients with high risk of type II diabetes differed significantly from the quality of life in the whole population. Subjects with high risk of type II diabetes had lower mean values of general health and pain, but higher in the sphere of emotional limitations and mental health. Among people with high risk of type II diabetes those more active were less susceptible to depression and had lower body weight. These studies revealed that benefits of physical activity were evident in all spheres of life dependent on health. It was observed that regular physical exercises and weight control can improve subjective health and reduce the risk of type II diabetes and its consequences.

Chyun et al (2) also evaluated quality of life with the SF-36 questionnaire. These studies revealed that different complication had a great impact on quality of life in patients with diabetes. Visiual impariment due to retinopathy, chronic leg pain and sensory defficits resulting from peripheral neuropathy, limb amputations due to diabetic foot. The more severe were the diabetic complications, the lower was the quality. The aim of the study was to show
the correlation between psychological factors, neuropathy, body mass index and physical inactivity.

It is known that low physical activity level contributes to the development of chronic complications in subjects with type II diabetes. As a result, the patient may become unable or partially unable to perform housework or professional duties. What can cause the loss of sense of freedom and independence. Physical activity is associated with lower risk of late complications, and thus a better level of quality of life. Probably not the participation in physical activities had an impact on quality of life, but the regularity of exercises and compliance with contraindications.

De Visser et.al. (15) conducted a similar study assessing the effects of type II diabetes on the patient's functioning in everyday life as one of the components of the quality of life. It was observed that the functional status of subjects with type II diabetes was reduced, particularly when other diseases such as cardiovascular, musculoskeletal diseases coexisted. The study results revealed that cardiovascular disease were not only the cause of premature death, but also had a great influence on the decreasing functional status.

In 1998, in UK results of studies on the relationship between intensive treatment of diabetes and the change in quality of life in patients with type II diabetes were presented. The authors sought to answer the question whether better glycemic control and blood pressure control improves the quality of life. This study included two large groups of patients. The first included 2431 patients treated for 8 years (mean age 60 years old). The second group consisted of 3104 patients (mean age 62 years old). The first group answered a questionnaire on four aspects of quality of life, the second one the quality of life questionnaire (shortened version). The studies did not reveal that better glycaemic control or lower blood pressure had any influence on those aspects of quality of life. During the test it was observed that patients with coronary artery disease and cardiac failure complained of worse overall health than patients without such complications. Based on the results the authors concluded that the late complications of type II diabetes have an impact on quality of life (7).

Systematic and reliable evaluation of the quality of life with diabetes can deliver valuable information about different areas of functioning. The impact of diabetes on quality of life manifests itself on every plane - physical, mental and social. Diabetic patients are aware of diet, insulin or other drugs as these factors may prevent from acute and chronic complications. Current medical protocols demand not only strict diet, but also medications on a regular basis and frequent blood glucose checks. Adherence to these guidelines helps to
reduce the risk of complications. It would be good if the offered treatment would improve the quality of life at the same time (13).

According Pietrzykowska et al. (13), p. 313 - "Diabetes is a chronic disease, which undoubtedly has a huge impact on life. However, this interaction doesn’t have to be negative. Effective education and therapeutic activities designed to develop effective ways of coping with the disease, are factors that may positively influence the outcome of treatment and subjective assessment of quality of life of patients with diabetes. The study of quality of life of patients with diabetes, should be a regular part of routine diabetes care".

According Żmurowska (18), p. 516 - "Comparison the subjective evaluations of health status of patients with type II diabetes and those without any chronic disease, revealed that people with diabetes, assess their health much lower, than people without chronic diseases. However, compared with those patients with potentially more life-threatening illness, diabetics assess their quality of life better."

6 Conclusions

In patients with type II diabetes participating for 2-4 years in physical activity classes age distribution was slightly shifted towards higher values, which resulted in a greater mean age in this group, but this was not statistically significant.

Patients with type II diabetes, performing physical activity more than 2 years showed a higher quality of life in the area of physical functioning and the importance of emotional limitations than patients who practiced for 2 years.

The fact how long patients with type II diabetes performed physical activity on a regular basis, had no effect on the quality of life in the sphere of social functioning and physical pain.

Duration of illness did not affect the assessment of quality of life any of the groups.

7 References


Ware J. E., Snow K. K., Kosinski M., Gandek B. (1997) SF- Health Survey


- 134 -
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AFTER-SCHOOL SERVICES OF WELLNESS ORIENTED PHYSICAL ACTIVITIES IN CHILDREN WITH HEARING AND VISUAL DISABILITIES

Zuzana Kornatovská

Abstract: The main purpose of the program “Public Health” is to guarantee healthy European society. Integration and inclusion of challenging children in local after-school programs is going out of the human rights perspective of people with disabilities and is aimed to their full health-social rehabilitation. Movement activities, and especially controlled movement activities, are defined as one of the most obvious and unquestionable tools for influencing positively human health over life (Velemínský, 2011). The aim of the study is a comparability analysis of availability in the after-school movement activities for children with hearing or visual disabilities (8 - 15 years old) in South Bohemia region of Czech Republic and in regions of selected EU states (Bulgaria, Slovenia and Great Britain). The integration process is viewed as the health-social model. The investigative research work was oriented on accessibility of controlled movement activities for challenging children and to uncover social, economic, material, organizational barriers in selected regions. It was analysed the quality of promotion and variety of movement activities offered for challenging children. Methods of exploration, interview, document analysis and content analyses of regions information systems were used during the investigative research.

Key words: Children with disability; Hearing disability; Visual disability; Controlled exercise; Wellness; Personal and social development; Health lifestyle.

1 Problem

The European commission is realising the special program oriented towards improving the public health for the period of action 2007-2013. Integration process of challenging children participation in after-school movement programmes can be described as a continuum of “no services” through “special programs of adapted physical activities” to the “inclusion in the movement activities” generally on a local scale of exercise activities for children (in the spirit of the idea “Sports for All Children”). Local after-school movement programs should
give equal opportunity to choose and to provide movement activities without any social, economic, material, etc. barriers (comp. Kornatovská, Trajková 2012, Šauerová 2011a).

In the context of health support and health development of all children is necessary to accent that not every type of movement activity can result in the health-social benefits. Uncontrolled movement activities can guide to poor motoric education level and even bring danger to health of participants.

Our preference of controlled movement activities is going out of its important attributes:

- To achieve a high level of motor learning and motor education;
  
  *The motor learning is controlled of expert in PE, APA, etc.*

- To achieve wellness state during and after movement program;
  
  *Knowingly executed movement guides to experience of harmony, saturation.*

- To eliminate or completely reduce wrong movement stereotypes;
  
  *Controlled movement activities enable amplification of pulses from the control center of the brain. Movements are more economic, surer, and qualitatively different (Věle, 2012).*

- To combine and coordinate movement activity with breathing activity.

*Controlled breath during movement activities is an important tool because during inspiration increases muscle strength, when expiration is released. Consciousness breath facilitates movement activity and enhances performance. Practicing shows that controlled breath during movement activities can be carried out to achieve performance even in very weak muscles. The focus on coordinating movement with breath, relaxes the mind while improving the ability to concentrate (Krejčí, 2011).*

Named attributes are very important for health support of children in nowadays lifestyle, which is determined of hypo-kinesis, muscle dysbalances, disruption of circadian rhythms, stress overload, and prevalence of depression states in children and youth (see [http://ec.europa.eu/health/ph_determinants/life_style/]). Controlled movement activities can promote quality of life and mental health in children with disability by giving a condition for independent movement, learning to cooperate, conveying possibilities of socialisation, controlling and understanding own body.
It is possible to use also the strategy of peer tutoring. The peer tutoring is also applied as a part of physical activities in order to create reasonable opportunities for increasing motor competencies and at the same time it leads to the improvement of self-confidence and self-control (Šauerová, 2011b).

Teacher or trainer organises and guides controlled movement activities according to individual skills and possibilities of participated children. Krejčí (2010) defines the term “adequate movement regime” like a coherent system of movement activities, which are adequate to the individual skills, inclinations, interests and which are suitable implemented in daily life. She characterizes principles of adequate movement regime (in the line according the importance and the consequence) in the next 7 points:

- **Coping** - in the sense of individual managing and mastering of movement. What for one is easy, for the second is difficult. The main role play: condition, age, health situation, impairments, etc. Coping is the base of progress in motor learning.

- **Spontaneity** – in the sense of freedom, pleasure during the movement activity, eventually to experience in the “flow”- effect. Such sense of spontaneity is a preposition for the saturation.

- **Saturation** – in the sense of satisfaction, self-realization, self-determination during the movement activity and after it. In the case of saturation child has tendency to return to the movement activity again and again. (Tůma, Tůmová, 2010).

- **Repeatability** – in the sense to develop the performance as possible. Only in this step is real to start with regular training process. The person accepts discomfort and even a pain during movement activities.

- **Training** – in the sense of the variable dosage of the intensity according to the health situation, age, condition, body structure, sex, etc. During the training process can be developed a positive dependency on the movement activity. An obstacle can be availability to the everyday movement activity.

- **Availability** – in the sense of regular, daily application of movement activity. It depends of nature conditions, time factors, solvency, laws, etc. Here usually begins combination of daily activity with season, temporal movement activities (for example yoga + alpine skiing + biking). Adequate movement regime is created.

- **Safeness** – in the sense of the accident prevention, rescue during the movement activity realization. Only safe movement activity is adequate to the person. Again an
import important role plays: health situation, age, condition, body structure, sex, availability of equipment, etc.

2 Aims, Hypotheses

The research study identified the following goals:

- To compare the availability of controlled physical activity for children with hearing, visual disabilities in selected regions of the EU: Czech Republic-South region, Bulgaria-Plovdiv region, Slovenia-Primorska region, UK- West Midlands region.
- To analyse the scale of offering movement activities for children with hearing and visual disabilities in the named regions of the EU.

On the base of goals following hypotheses were identified:

H1 Availability of controlled physical activity for children with sensual disability is significantly higher then:

H1a: UK- West Midlands region compared to the researched region-Bulgaria Plovdiv region.
H1b: UK- West Midlands region compared to the researched region in the Czech Republic-South Bohemia region.
H1c: UK- West Midlands region compared to the researched region of Slovenia-Primorska region.

H2 Availability of controlled physical activity in children with sensual disability in regions Bulgaria-Plovdiv region, Czech Republic-South Bohemia region, Slovenia-Primorska region is equivalent, without any significant differences.

3 Methodologies

3.1 Characteristic of samples:

Challenging children of both sexes were investigated, 8 - 15 years old, with a hearing disability, with visual disability.

Procedure:

Oriented basic research methodology NABS (Nomenclature pour l'Analyse et la Comparraison Budgets et des Programmes Scientiques) in the EU according the 4th Area: “Protection and improvement of human health”. In the selected regions we applied the procedure of investigative research in the form of “Investigative Pentagram” (Molnár, Z. et al., 2012).
3.2 Methods:

During the research study follow methods were used:

- Analysis of scientific references;
- Selecting of regions in EU through the stratified random selection and simple random selection;
- Investigative survey in selected regions through “Investigative Pentagram” (Autor) - Inquiring E-mails to sport clubs; Documents analyses; Literary and Internet References; Direct Interview - Telephonic Interview;
- Comparative Methods (Hendl, 2008) For the process of data comparison statistic data of the Institute for Information in Education (ÚIV, online) in Czech Republic, of the National statistical office in Bulgaria (NSI, online) and of the document “Regional development strategy for social services“ in the selected regions.
- Conclusions for health-social rehabilitation of challenging children.

The document “International Classification of Functioning, Disability and Health” (ICF) classifies the functional abilities of a particular individual. This important document contains the following chapters: 1 Human development; 2 Body Constitution; 3 Health status; 4 Disability evaluation; 5 Socio-economic factors; 6 Causality; 7 Classification; 8 Manuals. The text shows that a clear trend of health and social care in the EU is an active social participation of persons with disability in society.

In this context, it is discussed irreplaceable role of the controlled physical activities in the process of physical, psychological and social rehabilitation of children with disability. The main benefits of controlled physical activity in children with disability should be:

1. Improving of health;
2. Reducing of medicaments consumption;
3. Better medical prognosis;

However, in the Czech Republic and former post-communist countries are becoming limiting factors restricting the participation of children with disability in controlled physical activities. These limiting factors are: availability, variety of menus, amenities, social barriers.
4 Results and discussion

4.1 Regional consensus on the number of children with disability

Table 1 Sums of children according the type of disability in the surveyed regions

<table>
<thead>
<tr>
<th>Region</th>
<th>Σ dětí s disab. mentální</th>
<th>Σ dětí s disab. sluchovou</th>
<th>Σ dětí s disab. zrakovou</th>
<th>Σ dětí s disab. ostatní</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>South Bohemia</td>
<td>2812</td>
<td>100</td>
<td>1355</td>
<td>48,2</td>
</tr>
<tr>
<td>Plovdiv</td>
<td>3115</td>
<td>100</td>
<td>640</td>
<td>20,5</td>
</tr>
<tr>
<td>Primorska</td>
<td>3211</td>
<td>100</td>
<td>1417</td>
<td>44,1</td>
</tr>
<tr>
<td>West Midlands</td>
<td>2935</td>
<td>100</td>
<td>598</td>
<td>20,4</td>
</tr>
<tr>
<td>CELKEM</td>
<td>12073</td>
<td>100</td>
<td>4010</td>
<td>33,2</td>
</tr>
</tbody>
</table>

In the Table 1 we can see almost full similarity in the sums of children with hearing disability and full similarity in the sums of children with visual disability in the all analyzed regions. An interesting fact was found in the case of children with mental disability. From the Table 1 is clear that region in Great Britain (West Midlands and the region in Slovenia (Primorska) prefer “soft” classification in the case of children with mental disability. From the presented numbers in the Table 1 we cannot interpret, that in the regions of Great Britain and Slovenia fewer children with mental disability being born than in the regions of the Czech Republic and Bulgaria. From the comparison of data in the column of “Children with mental disability” and the data in the column “Children with other disability” is evident that region in Great Britain (West Midlands) and the region in Slovenia (Primorska) prefer during the process of classification to give to 50 % more children a label of “other disability”. They are going out rigorously from the document “International Classification of Functioning, Disability and Health” (ICF) and save children and their parents before impertinent attacks of others. Along with that, they are consistently looking about the childcare in the controlled physical activities. Not by chance, just in these two regions is found out the highest level of integration and supply and hence the availability of controlled physical activity for children with mental disability. It is a good example for classification process in the regions of Czech Republic and Bulgaria.
4.2 Offer and variety of physical activities for children with disability

It was found that the offer of controlled physical activities for children with sensory disabilities is in 56% bigger in Czech region (South Bohemia) then in Bulgarian region (Plovdiv). From the view of variety of physical activities for the handicapped children is the situation in Czech region 10 times better of Bulgarian region. Basic difference was found in the availability of website information, when in the Bulgarian region (Plovdiv) website information is missing comparing to the Czech Republic region (South Bohemia).

Similar situation was found out in the case of physical activities for children with hearing disability. Investigation found out that in the region of Plovdiv only 1 organization is specialised on physical activities for people with hearing disability. This club is a member of Bulgarian Sport Association for Deaf People (“Sportna federacia za gluhite“) and only on official republic website is possible to find information about this club in Plovdiv (but contact information are not valid), which has had not own websites. Information about a concrete offer and variety of the intentionally organized physical activities for children with hearing disability was necessary complete through method of direct and telephonic interview. On this base basic information were obtained – from Bulgarian Sport Association for People with Hearing Disability (BDSF), which units 10 regional organisations and sport clubs in whole Bulgaria. One of them is in region of Plovdiv, e.g. sport club for people with hearing disability (SKG – “Sporten klub na gluhii“).

From the Table 2 is evident that the best availability of the Controlled Physical Activities of the controlled physical activities for children with disability mental, hearing or visual is in Great Britain, in the region West Midlands. This finding confirms the first hypothesis H1:

Availability of controlled physical activity for children with sensual disability is significantly higher then:

- H1a: UK- West Midlands region compared to the researched region-Bulgaria Plovdiv region.
- H1b: UK- West Midlands region compared to the researched region in the Czech Republic-South Bohemia region.
- H1c: UK- West Midlands region compared to the researched region of Slovenia-Primorska region.

From the Table 3 is evident that the best offer and variety of the controlled physical activities for children with disability mental, hearing or visual is also in Great Britain, in the region West Midlands. This finding confirms the first hypothesis H2:
Availability of controlled physical activity in children with sensual disability in regions Bulgaria-Plovdiv region, Czech Republic-South Bohemia region, Slovenia-Primorska region is equivalent, without any significant differences.

Sports, which are under the sport association developed, are: athletics, soccer, bowling, shooting, table tennis, badminton, volleyball, beach-volleyball, Greco-Roman wrestling. Investigated were also associations for people deaf/blind (NASGB – “Nacionalna asociacia za sliapo-gluhite v Balgaria”) from Plovdiv and a sport club of blind/deaf (“Obedinenensporten klub na sliapo-gluhite”). In Plovdiv city (BG) similarly as in České Budějovice city (CZ) gives very good service the special secondary school for hearing disability children, which organizes physical activities for children with hearing disability in after-school time. This school has also own websites (SSUDUS “Prof. Dr. St. Belinov“ Plovdiv – “Sredno specialno uchilishte za deca s uvredensluh”). But we are streaming to give the post school chance to motor learning and social development of the children with disability. So, from this point of view is not the right way to hope in the special school activities. It could guide to social segregation.

Our investigation found out that there are no sport clubs or organizations specialised on physical activities for children with visual disability in the region of Plovdiv. From interviews resulted that there are not many children with visual disability there, the number is not so high to create for them special sport clubs. If the children are pupils of special schools, have bigger chance to be included in leisure time sport activities. If they are integrated in “normal” schools, in opposite they are dispensed from PE at school or it is offered them corrective gymnastic. It should be found possibility how these children include in the sport clubs and give them possibility full personal and somatic development.

<table>
<thead>
<tr>
<th>Region</th>
<th>∑ of offering CPA</th>
<th>Most offered CPA</th>
<th>Integration</th>
<th>Offer on websides</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Bohemia</td>
<td>130</td>
<td>Table tennis, Athletics, Swimming</td>
<td>40%</td>
<td>No</td>
</tr>
<tr>
<td>Plovdiv</td>
<td>41</td>
<td>Table tennis, Futsal, Swimming</td>
<td>0%</td>
<td>No</td>
</tr>
<tr>
<td>Primorska</td>
<td>292</td>
<td>Athletics, Swimming, Dancing</td>
<td>100%</td>
<td>Yes</td>
</tr>
<tr>
<td>West Midlands</td>
<td>368</td>
<td>Dancing, Yoga, Water sports, incl. Swimming</td>
<td>100%</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Table 3: Review of availability of the Controlled Physical Activities “CPA” in the surveyed regions

<table>
<thead>
<tr>
<th>Region</th>
<th>∑ of offering CPA</th>
<th>∑ of offering CPA in the capital of the region</th>
<th>∑ of offering CPA out of the capital of the region</th>
<th>Participation of parents in financing of CPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Bohemia</td>
<td>130</td>
<td>38</td>
<td>92</td>
<td>80%</td>
</tr>
<tr>
<td>Plovdiv</td>
<td>41</td>
<td>36</td>
<td>5</td>
<td>0%</td>
</tr>
<tr>
<td>Primorska</td>
<td>292</td>
<td>72</td>
<td>220</td>
<td>100%</td>
</tr>
<tr>
<td>West Midlands</td>
<td>368</td>
<td>130</td>
<td>238</td>
<td>100%</td>
</tr>
</tbody>
</table>

4.3 Results of compare analysis

No significant differences between Region of South Bohemia-CZ and the Regions of before socialistic states were found out in next determinants:

- In the compared regions “Regional Sections of Education” do not dispose of information about the controlled physical activities for children with the mental disability, with the hearing disability and with the visual disability in the region.

- In the compared regions there is no central evidence of organizations (e.g. sport clubs) for children with the mental disability, with the hearing disability and with the visual disability or of sport organizations accepted children with disability in training process.

- In the compared regions of Czech Republic and Bulgaria the offer of the controlled physical activities for children with hearing disability is on the same level. In both regions one sport club and one sport club established under special boarding school co-exist together. In the both regions is the offer of the named clubs concentrated in capitols what is limitation for children from others parts of region, but probably it is supposed that children absolve the schools just in the boarding regime, what means better access to physical activities and sports, but isolation from parents. The Slovenia region Primorska is on the best way to approach to give the service of quality and level of integration to the region of Great Britain.

- It can be constant that in the compared regions, where exist websites, is significantly higher integration in the controlled physical activities as in the regions without websites offering. It is very important finding with memento for future.

- It seems that the special offer of the controlled physical activities for children with visual disability is very poor. In the region of South Bohemia is only one organization
with a small offer for children till 15 years old. Much better is the integration in the sport clubs as in Great Britain and Slovenia. It is high profiled progressive way to make purposeful controlled physical activities on the high level of motor learning.

**Significant differences between GB Region and the Regions in post-communistic countries:**

- The number of organizations offered controlled physical activities for children with sensual disability in the region of West Midlands is significantly higher than in the Regions in before post-communistic states.
- The variety of offered physical activities for children with sensual disability in the region of West Midlands is significantly higher than in the Regions in before post-communistic states.
- Only in the region of Great Britain all sport clubs and sport organisations are offering controlled physical activities for children with mental, hearing or visual disability and have very clear and easily accessible websites.

**5 Conclusions, Hypothesis verification**

Both hypothesis H1 and H2 were verified. The trend in health and social care in the EU is an active social participation of persons with disability in society. In 2010 UNO validated the new version of Convention on the rights of persons with disabilities. The new version includes quite a lot of changes and especially defines the education of challenging children with an accent on the inclusion in educational system, what helps to tolerance and respect to challenging children. In the aim to guarantee the participation in leisure, sport and top sport and in all levels of physical activities states confirm to accept follow principles:

- To guarantee possibilities to organise and develop sport and leisure activities for persons with disabilities and to guarantee them possibilities to participate in these activities.
- To guarantee to challenging children equal access as to other children to participate in playing, in games, in recreation, in sport activities in leisure time as well as in school environment.
- To guarantee to persons with disability an access to service of persons and institutions organised recreation, touristic, leisure and activities

(Gasparini, Talleu 2010).
Main functions of the controlled physical activity in children with disability are same like in other children:

- to improve health;
- to reduce the consumption of drugs;
- to have a better medical prognosis.

We can conclude that it is necessary to create conditions for the irreplaceable role of controlled physical activities in the process of physical, psychological and social rehabilitation in challenging children. (Tůma, 2013).

Above rules take a part of legal order in Bulgaria and Czech Republic as well.

In the context that motoric experiences create a base of challenging children development, Válková recommends to accept disability people in sport clubs. The clubs should cooperate on the creation of new branches to be easy for people with disability to include in sport activities, whereas they could decide to join activities organized only for disabled or in activities for all. She stressed that people with disability are valid members of society and have all rights to require such forms of physical activities corresponding to their specifications and views (Válková, 2012).

6 References


7 Contacts
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MEASURING OF HEALTH-RELATED BENEFITS
OF PHYSICAL ACTIVITY IN HIGH SCHOOL STUDENTS

Petr R. Rehor, Zuzana Kornatovská

Abstract: The health-related benefits of physical activity have been researched and proven on a number of occasions over the past thirty years. Despite this large quantity of evidence, much of society remains sedentary. The present study investigated the physical activity levels, TV/Computer viewing time and prevalence of smoking of Northern Tasmanian high school students. Blair’s 7-day physical activity recall questionnaire was completed by 133 males and 129 females (N=262). The results showed that males were more physically active than females. It was also discovered that Northern Tasmanian high school students were highly physically active. There was no relationship between TV/Computer viewing and physical activity. There was also no significant difference between the physical activity levels of smokers and non-smokers. The study identified the need for future research to focus on multiple administrations of the 7-day recall questionnaire on a number of different population groups.

Key words: Health-related benefits of physical activity; High school students; Smokers; Non-smokers; Comparison of Males and Females; Blair’s 7-day physical activity recall questionnaire.

1 Theoretical background

The health benefits of physical activity are well accepted. Physiological benefits include the prevention of: coronary heart disease (CHD) (Leon et al., 2010), diabetes (Desjardins et al., 2007), osteoporosis (Bone Health and Osteoporosis, 2004), cancers (Lee, 2011), high blood pressure (Hagberg, 2010), and obesity (Baranowski et al., 2007). Psychological benefits that have been found include improvement in self-esteem, self-concept (Calfas, Bess., 2011), depressive symptoms (Kelly et al., 2006), and anxiety/stress (Bone Health and Osteoporosis, 2004).

Despite this large quantity of evidence and the public’s apparent acceptance of the importance of physical activity, millions of people around the world remain essentially sedentary. Recent surveys conducted in Australia, Canada, England, and the United States
indicated that only about 10% of the adult population of each country could be called “aerobically active” (McMurray et al., 2013).

Gender differences relating to physical activity have been found by a number of authors over the past fifteen years with females being found to be less active than their male counterparts (Pate et al., 2008). Studies further suggest that physical activity during childhood is a determinant of physical activity in adulthood (Jago et al., 2007).

A major competitor for leisure time hours is sedentary behavior in the form of television watching. Television watching alone consumes 3 hours per day in the 10-17 year old age group in America (Pate et al., 2008). The average Australian adult spends an average of 169 minutes per day watching television and videos (ABS Catalogue no. 4153.0). Of the few studies that have investigated the relationship between television viewing and physical activity in the adolescent age range all have failed to find a clear relationship (Pate et al., 2008).

Cigarette smoking has also been found to be directly related to participation in physical activity, with smokers being more likely than non-smokers to drop out of exercise programs (Pate et al., 2008). In 1996 Hill measured the prevalence of smoking amongst high school students across Tasmania. The results of the study showed that 26% of Tasmanian high school students were current smokers.

2 Purpose of the study

There were three purposes of the study. The main purpose of the study was to measure the current physical activity levels of Northern Tasmanian high school students using Blair’s 7-day recall of physical activity questionnaire. An associated purpose was to measure TV/computer viewing time of Northern Tasmanian High School Students over a seven day period and to report the relationship between TV/computer viewing time and physical activity.

Another associated purpose of the study was to measure the prevalence of smoking in Northern Tasmanian high school students and to report any differences in the physical activity levels of smokers compared to non-smokers.

3 Methods

133 males and 129 females completed the questionnaire (N = 262). The subjects were from grades 7-10 and ranged in age from 12-16 years. The average age was 14.01 years. Of
the 262 subjects 16 were 12 year olds, 71 were 13 year olds, 82 were 14 year olds, 79 were 15 year olds and 14 were 16 year old.

All subjects that participated in the study were high school students from Northern Tasmanian high schools. The subjects were a representative sample of students from the following schools: Prospect High School, Queechy High School, Brooks High School, Port Dalrymple High School, Riverside High School, Deloraine High School, St. Mary’s District High School and St. Helen’s District High School. All of the schools sampled were public high schools.

Two PE classes were selected from each school. The chosen classes were those classes which appeared first on the weekly timetable (this ensured that the class groups were randomly selected, and experimenter bias was eliminated).

Data was collected during the months of June and July by the researcher and trained Health and Physical Education fourth year student teachers completing their internship. The Health and Physical Education internship teachers received training on how to administer the questionnaire in the week prior to data collection.

Blair’s 7-day physical activity recall questionnaire was used as the assessment instrument. The questionnaire was interviewer–administered and took between 20 and 30 minutes to complete.

4 Results

The average energy expenditure of the subjects during their regular physical education class was 9.37kcal.kg.week. The average energy expenditure for light physical activity was 136.57kcal.kg.week. The average energy expenditure for moderate physical activity was 28.61kcal.kg.week. The average energy expenditure for hard activity was 33.63kcal.kg.day. The average energy expenditure for very hard physical activity was 26.03kcal.kg.day. The total average energy expenditure was 42.09kcal.kg.day. The average time spent viewing the TV or computer was 19.52hours per week (167minutes per day).

An independent t-test was used to calculate the difference between the males and females average energy expenditures (Table 1).
Table 1 Summary Table of Statistics used in Independent t-test of Gender Differences of Physical Activity

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Average(kcal.kg.day)</th>
<th>SD</th>
<th>df</th>
<th>t-score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>133</td>
<td>43.65</td>
<td>8.27</td>
<td>261 (n-1)</td>
<td>3.39* (p&lt;0.05)</td>
</tr>
<tr>
<td>Females</td>
<td>129</td>
<td>40.47</td>
<td>6.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>262</td>
<td>42.09</td>
<td>7.76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1 showed that males (M = 43.65, SD = 8.2) were significantly more active than females (M = 40.47, SD = 6.87), t (261) = 3.39, p < 0.05). Further investigation on the meaning-fullness of the t-score revealed an effect size (ES) of 0.05 that was classified by Thomas & Nelson, (1996) as very small.

The subjects were grouped into physical activity groups based on their energy expenditure (Gloria et al., 2012): Low physically active, moderately physically active and highly physically active. The distribution of the subjects across the 3 activity groups is displayed graphically (Figure 1).

Figure 1 showed that the majority of the subjects (142) were classified as highly physically active, whilst the remainder of the subjects were evenly distributed between the
moderately physically active (67 subjects) and low physically active (53 subjects) groups. The Low physically active group had the highest average TV/Computer viewing time (22.36 hours per week), followed by the highly physically active group (19.41 hours per week) and the moderately physically active group (17.51 hours per week).

A single factor Anova was used to determine the relationship between energy expenditure and TV/computer viewing time. The single factor Anova compared the average TV/computer viewing time for each of the three activity groups (see Table 2).

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>698.93</td>
<td>2</td>
<td>349.47</td>
<td>2.50</td>
<td>0.08</td>
<td>3.03</td>
</tr>
<tr>
<td>Within Groups</td>
<td>36204.1</td>
<td>259</td>
<td>139.78</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>36903.04</td>
<td>261</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results of the ANOVA found no statistically significant differences, F(2, 259) = 3.03, P = 0.08.

A scatter plot was used to show the relationship between energy expenditure and TV/computer viewing time (Figure 2).
Figure 2 showed that there was no clear relationship between TV/computer time and energy expenditure, highlighted by the large variability in the scores.

Of the 262 subjects 50 (19%) were smokers and 212 (81%) were non-smokers. An independent t-test was used to calculate the difference between the average energy expenditures of smokers and non-smokers (Table 3).

Table 3 Summary Table of Statistics used in Independent t-test of Average Energy Expenditure of Smokers and Non-smokers

<table>
<thead>
<tr>
<th>Groups</th>
<th>Count</th>
<th>Average (kcal.kg.day)</th>
<th>SD</th>
<th>df</th>
<th>t-score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-smokers</td>
<td>212</td>
<td>42.11</td>
<td>7.85</td>
<td>261(n-1)</td>
<td>0.084 (p&lt;0.05)</td>
</tr>
<tr>
<td>Smokers</td>
<td>50</td>
<td>42.01</td>
<td>7.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>262</td>
<td>42.09</td>
<td>7.76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3 showed that smokers (M = 42.01, s = 7.85) were not significantly more active than non-smokers (M = 42.11, s = 7.46), t (261) = 0.084, p<0.05.

5 Discussion

In line with previous research the results of the study showed that male Northern Tasmanian high school students were more active than their female counterparts. A limitation of this finding was the very small effect size of 0.05 that was calculated in order to determine the meaning-fullness of the t-score. The significance of the effect size was that it limits the generalisation of the finding that males are more physically active than females. For example there are some females who are more active than most males and vice versa. Therefore it could be concluded that the generalisation that males are more physically active than females 95% (as determined by the p<0.05 alpha level) of the time would be a misconception.

The findings of the present study paralleled the findings of Myers et al., (2012) who also found males to be more physically active than females. In line with the present study, they studied the physical activity levels of school children in grades 5-8 (9-15 years) in Bogalusa, Los Angeles. The assessment instrument used by Myers et al., (2012) was a 24-hr recall instrument (Self – Administered Physical Activity Checklist). A limitation of Myers’ study that was identified was the use of a 24-hour re-call. It was concluded that this time period might not capture an accurate portrait of average activity for a given individual (Myers et. al., 2012). The use of a 7-day re-call in the present study ensured that the recall was a more accurate portrait of average physical activity.

It is plausible that the gender difference could be attributed to males participating in more vigorous physical activities and sports than females. As explained by Myers et al., (2012), males tend to be involved in more team sports than females. For example males tended to participate in team sports such as football, basketball, baseball as well as running and outdoor play as opposed to females who reported jump rope, volleyball, dance and gymnastics (Myers et al., 2012).

Northern Tasmanian high school students reported an average of 167 minutes of television or computer viewing each day. This result was consistent with the findings of past research conducted in both Australia and the United States that reported values in the range of 2-3 hours of TV viewing per day.

Using the physical activity classification system of McCalister (2006) the majority of subjects (142 or 54% of the subjects) were classified as being highly physically active. From this result of it was concluded that Northern Tasmanian high school students were highly
physically active. This finding provides a positive reflection of the current health and physical education programs being administered in Northern Tasmanian high schools. A limitation of this finding was the use of physical education students as the subjects. The use of only physical education students probably provides a misleading picture of the overall physical activity levels of Northern Tasmanian high school students.

The results of the study also showed that there was no clear relationship between the average TV/computer viewing time and physical activity. The main reason attributed to the lack of relationship was the high variability in the scores. The findings of the present study matched the findings of Pate et. al., (2011) who revealed two other studies that failed to demonstrate a relationship between TV viewing and physical activity.

The results of the present study revealed that 19% of the Northern Tasmanian high school students were smokers. The results were lower than the previous findings of Bailey (2009) who discovered that 26% of Tasmanian high school students (aged 12-17 years) were current smokers. The results of the present study were also lower than the findings of the ABS (Cat No 4364.0), who discovered that in 1995, 24% of adults in Australia were smokers.

It is possible that the results of the present study are not a true indication of the percentage of smokers amongst Northern Tasmanian high school students. The use of PE students as the subjects may have provided a misleading picture of the prevalence of smoking in Northern Tasmanian high school students.

The results showed that there was no significant difference between the average physical activity levels of smokers and non-smokers. Although this seems unreasonable, the smokers may have overestimated their physical activity in order to account for their smoking status.

6 Conclusion

It is recommended that research into current physical activity levels continues so that the health related benefits of physical activity can be measured. Research needs to focus on children and adolescents because many lifestyle habits are established in the younger years. The identification of the children at risk of becoming physically inactive adults might allow intervention programs to focus on these children. It is recommended that future research into physical activity focuses on the effect other health risk behaviours such as drugs, alcohol and wearing seat belts have on physical activity.

Multiple administrations of the 7-day recall questionnaire are needed in order to determine the current physical activity levels across a range age groups and populations. An
interesting study would be to administer the 7-day recall questionnaire to high school students from different regions of Tasmania such as Southern Tasmania and North-Western Tasmania. These regions could then be compared to the results of the present study to highlight differences between the regions in relation to physical activity levels, TV/computer viewing and smoking.

It is further recommended that future research uses the 7-day recall in an interventional research design. For example, the 7-day recall questionnaire would be a reliable tool to measure the changes in physical activity of a group following the administration of an fitness unit in a physical education class. The recall is easy to administer, cost effective and is a reliable measure of physical activity which makes it is a useful assessment instrument in the Health and Physical Education learning area.

7 References


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SPORTS ACTIVITIES OF SECONDARY SCHOOL STUDENTS IN ZVOLEN DURING THEIR FREE TIME

Boris Beťák – Stanislav Azor

Abstract: The article is about sports activities of secondary school students in Zvolen during their free time. 412 students (227 boys and 185 girls) were asked how they spend their free time. The survey shows that they prefer using a computer, secondly to watch TV or practice sports or games. The boys prefer team sports while the girls prefer body-building.

Key words: sports activities, free time, secondary school students.

1 Introduction

The modern way of life is gradually lowering the initiations that people need for their physical activities. Limited physical activity has a negative impact on the organism functioning that causes various illnesses. Ludvíková (2012) presents that current lifestyle of the whole society has changed, and particularly the body movement activity has decreased. A number of research works present the fact that comfortable life is generally reducing physical and mental fitness.

As Junger (1996) reports - physical activity is a any physical action that is sufficiently increasing the functional requirements of the body, requiring higher energy expenditure than is in still state. We speak about all work activities, including housework, hobbies - gardening, fishing, hunting, beekeeping, wood carving, collecting wild fruits and herbs, as well as controlled PE and sport activities.

As Nemec - Michal (2011) present - physical activity is a vital function of each of us, whether it is performed in a large or limited form. Yes, the physical activity is a part of the healthy lifestyle of human that improves the immunity system and has positive effects on the quality of life.

According to Michal (2009) adequate movement in connection with the environment, nutrition, social interaction and cultural aspects is one of the most important aspects of life. Physical activity is one of the ways how to spend an active leisure time (Nemec, 2008).
Hofbauer (2004) sees leisure time as the time when a person does not do activities under pressure of obligations of his/her social roles, particularly from labor division and need to preserve and develop own life.

It is the time for the rest, recovery of mental and physical strength, relaxation after finishing all duties, gratification of needs and interests, place for entertainment, recreation, self-fulfillment and education - as Krystoň (2003) presents the leisure time.

Kratochvílová (2001) defines leisure time as a specific and important part of the lives of children, youth and adults - a man at any age. It is the time for rest, recreation, regeneration of physical and mental strength, relaxation after work, study, social meetings, learning about the world, life, self-realization in activities, activities according own needs and interests, wishes, desires, aspirations and values.

For optimal use of leisure time are established facilities creating conditions for educational activities in the form of leisure, recreation, amusement, entertainment, sports, education, leisure and social activities (Babiaková - Brindza - Ďurošová, 2007).

These facilities include:

- children's school clubs;
- leisure centers;
- cultural facilities;
- civic associations;
- schools in nature;
- elementary art schools (Kratochvílová, 2004).

2 Goal

The goal of this paper is to present results of research to determine the physical and sports activities of secondary school students in Zvolen in their free time.

3 Methodic

The research was accomplished in May 2013 at five secondary schools in Zvolen. The research sample consisted of a total of 412 students including 227 boys and 185 girls. Percentage of both sexes included in the survey sample is provided in Fig1. To find out the physical and sport activities of secondary school students in their free time we have used our own questionnaire that was anonymous.
Results and discussion

Pupils from primary and secondary schools have enough free time after school. The way pupils fill their leisure time clearly indicates what they do like. In their free time they have time for rest, physical as well as mental recovery. It is the time to rest from everyday school duties. This time they can devote to their own interests, needs, can meet with friends, rest, relax, have fun or spend their free time other way.

Therefore, we were interested in activities that secondary school students in Zvolen prefer to do in their free time. Students had a choice of 6 specific options and possibility ‘other’, to choose activity that was not included in the offer.

Based on the results presented in Fig2, we state that for both sexes is the use of computers and the Internet as the most preferred leisure activity. This option has chosen up to 33.48% of boys and 24.32% of girls. Similar results were also presented by Michal (2010) who found that 27.8% of secondary school students prefer the Internet. Nevolná (2013) have similar results for primary schools. The author found that 33.33% of boys, 29.88% of girls prefer computers. These results confirm the superiority of sedentary lifestyle of youth against physical and sport activities in their free time. This fact is stressed by number of pupils who usually spend their free time by watching television. This option registered 22.03% of boys and 21.08% of girls.

Reported 27.75% of boys and 18.92% of girls prefer sports. We do not consider surprising the fact that boys do sport in their free more than girls. Nemec - Nemcová (2012)
state lower percentage of interest in sport activities for girls that refers to traditional gender disparity in access to sport and sporting which can be considered as a consequence of persistent generation-stereotype trend in the family education in the process of socialization of a man.

We shall mention the fact that the "other" option registered 6.61% of boys and up to 15.14% of girls. Both sexes mostly reported this option as spending the time outdoor with friends. At this point we had statistically significant differences in the responses of boys and girls at the significance level of p < 0.01.

![Figure 2 Activities preferred in the free time of students](image)

In the preferred activities of secondary school students in their free time we do not have the most favorable results for sports. It does not mean though that pupils who do not prefer sports in their spare time, do not do sports all. Therefore, we were interested in how many times a week the students do physical and sport activities. Results are presented in Fig3.

The results show that pupils do physical and sports activities in their free time. Boys perform physical activities and sporting activities in their free time mostly 3-4 times a week (27.75%) and 1-2 times a week (25.55%), while occasionally do sport 17.62% of boys. Girls have had completely different results as they highly prefer occasional sporting, which reported 34.59% of girls and 21.62% of girls reported doing sports 1-2 times a week. Similar results for both sexes found Ludviková (2012) in her research.

It was positive for us to find that 8.37% of boys and 17.30% of girls are not interested in physical activities and sports in their free time at all. Based on the results of other authors,
as Michael - Nevolná (2012) who found 24% of secondary school students who do not do sport, we assumed worse results in our research. Even at this point we had statistically significant differences in the responses of boys and girls at the significance level of $p < 0.01$.

![Figure 3](image-url)

**Figure 3** *Periodicity of physical and sport activities of students in their free time*

We were also interested in the most favorite physical and sports activities of secondary school students in Zvolen in their spare time. Students had a choice of 7 specific options and possibility 'other' to choose activity that was not included in the offer.

The results presented in Fig 4. show that boys most likely play sports games in their free time. 34.36% of boys reported this option. Sports games dominant position for boys is also mentioned in work of Nemec - Nemcova (2012). Girls ranked sports games on the fourth place. We believe that the leadership of sports games for boys is still connected with great popularity, easy and inexpensive availability of football.

The most favorite physical activity or sport for girls in their leisure time is the gym and fitness. 22.16% of girls reported this option. We believe that this percentage is related to aerobics and Zumba escalating popularity, while significant issue for girls is definitely the interest in their health and appearance, whereas appearance in adolescence plays an important role. High interest in Zumba and aerobics in leisure time of girls reported Michal - Nevolná (2012). Interest in health and appearance also reported 17.62% of boys who mentioned bodybuilding and fitness as the second most popular physical and sport activity of their free time. High interest in bodybuilding and fitness is also mentioned in research of Ludviková (2012) and Michal – Nevolná (2012).
The third place for both sexes are winter sports that in free time prefer 14.98% of boys and 16.22% of girls. Similar results for winter sports found also Michal (2010). About the attractiveness and popularity of winter sports for secondary school student speaks Beták (2012, 2013), where attention is paid to the increasing popularity of snowboarding which is an excellent alternative in addition to the downhill skiing on the ski resort slopes.

The option 'other' have chosen 7.49% of boys and 13.51% of girls where the most frequently reported physical and sport activities for boys were tennis and cycling and for girls dancing and roller skating. Dancing and roller skating was identified as a favorite leisure physical activity among girls in the research of Nevolná (2013). Michal (2010) presents a high interest in cycling in the leisure time of pupils. Even at this point we had statistically significant differences in the responses of boys and girls at the significance level of $p < 0.01$.

**Figure 4** The most favorite physical and sport activities of students in their free time

In further research, we were interested in the level of leisure time physical and sports activities of secondary school students in Zvolen. Students had a choice of three options and organized (competitive), non-organized (recreational) and the option no sports. As the organized (competitive) option we consider registration in any of the sport clubs. Based on the results, which we present in Fig 5, we state that almost half of the boys and half of the girls devote their free time to physical and sport activities on the non-organized level. Similar results also reports Michal (2010).

The fact is that organized (competitive) sports do more boys (41.85%) than girls (32.97%), what we had expected. We believe that boys more likely associate sport with the effort of achieving self-fulfillment and success, not just an informal filling free time as girls.
No sport option has reported the same percentage of students as in Fig 3, by which we confirmed the seriousness of filling the questionnaire. Azor - Beťák (2012) have found in the research conducted at grammar schools in Martin and Zvolen that up to 43.70% of the students (of gymnasium) do not perform any physical activities out of school. The authors believe that these conditions might be related to the fact that students who attend high school mostly focus more on the cognitive aspects of their personality than psychomotor. The condition might be related to the possible demands of the curriculum content and general knowledge at grammar schools, which may cause difficulties to students to perform leisure-time physical activity. At this point we had statistically significant differences in the responses of boys and girls at the significance level of $p < 0.05$

![Figure 5](image-url)  
**Figure 5** *Level of physical and sporting activities of students in their free time*

In the research conclusion we were interested in which period of free time is the most appropriate for the students to perform physical activities and sporting activities. Students had choice of 6 options. As the best time was indicated summer for 38.33% of boys. 25.99% of boys like to do sports throughout the whole year on the second place. Girls have indicated frequently the same option. 31.89% of girls gave priority to this option not to summer. In terms of statistical significance, we observed statistically significant differences in the responses of boys and girls at the significance level of $p < 0.01$
Conclusion

Youngster’s interest in sports and physical activities is variable. The Internet, computers or television are often in the hierarchy of school activities of students on higher positions than physical and sports activities. On the other hand, we can monitor increasing popularity of sports activities such as Zumba, floorball or snowboarding. It's up to every one of us how we spend our leisure time.

Our research of secondary school students in Zvolen found preferences in using the Internet and computer than doing sports, what we could expect in this super technical age. The positive outcome, however, we consider the fact that even sport is not the top leisure activity for students, but the vast majority of students (74% of boys and 48.11% of girls) do sports at least 1-2 times a week and 17.62% of boys and 34.59% of girls do sports at least occasionally.

The most popular physical and sports activity among boys are sport games that are favorite for up to 34.36% of boys. The most interesting for 22.16% of girls is bodybuilding and fitness that is popular for leisure time of boys as well. In terms of popularity of free time physical activity and sport are often chosen winter sports.

Almost half of the boys and girls perform non-organized physical activities and sports (at the recreation level), as the best time for their free time sport activities students consider summer or all year-round sporting.

We believe that this type of research can help us to determine the orientation value of the free time activities of secondary school students. These results can also be used in
physical education practice, because we found that students devote their free time to physical and sport activities. Based on our experience of physical education practice we suggest introducing non-traditional and less typical physical and sport activities to develop the student’s need for physical activity, which could contribute in improving their physical condition and physical performance as to a positive impact on the student’s health.

6 Literature


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