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PROLOGUE

Motto:
“Habit, if not resisted, soon becomes necessity” (St. Augustin)

The first number of the scientific journal Acta Salus Vitae in 2014 presents a complex of articles related to health promotion in relation to reducing of health care costs and in relation of bad habits in lifestyle.

Risk factors in lifestyle are connected with bad habits in different population groups. Generally the burden imposed by chronic disease is driven by a small set of conditions and risk factors. The 15 most costly conditions account for more than 80% of the total cost of all chronic illnesses. They are: diabetes, coronary artery disease, hypertension, dyslipidemia, obesity, cancer, asthma, arthritis, allergies, sinusitis, heart failure, chronic obstructive pulmonary disease, chronic kidney disease, depression and back pain. Since the only way to decrease the prevalence of these conditions is to address their underlying risk factors, the goal was to map the complex interdependencies between behaviours, risk factors and disease. As part of a research project conducted by Boston Consulting Group Heathway, between 2006 and 2007, a panel of specialist doctors and epidemiologists was convened to validate the main risk factors that had identified. Eight well-known behaviours were identified as the major contributors to the most costly illnesses: smoking, physical inactivity, poor diet, alcohol consumption levels, poor standard-of-care compliance, poor stress management, insufficient sleep and lack of health screening (BCG, available at: http://www.healthways.com/adjust)

Válková describes in her article, in presented Ecology model, level of economy, norm and habits. She states that: “Physical activities as prevention of so called civilized diseases is the right of persons with mental disability and their wellbeing, too. It is not only from humanitarian reason but from economy reason (active persons need less amount of medical and social care including their families)”. Vackova opens a view on actual politic tendency at the recent World Economic Forum, which concluded in meeting 2014 that old “sick care” models have failed and are not working in the sense of health improvement of global population. The world leaders are urgently seeking new, wellness – focused strategies to implement in government policy and in workplace. The World Economic Forum is an independent international organization committed to improving the state of the world by engaging leaders in partnerships to shape global, regional and industry agendas. Incorporated as a foundation in 1971, and based in Geneva, Switzerland, the World Economic Forum is impartial and not-for-profit; it is tied to no political, partisan or national interests. (WEF - www.weforum.org)

Very new interested area is presented in the article “Wellness and sport brownfields”. Kopřiva defines that: “The name brownfield is internationally used for not well used locality, which have lost predominant function, fell into disrepair and became an urbanistic problem”. Sport brownfields are typical for countries in central and east Europe.

To promote exchange of information and best applied research outcomes in the field of care with a view to addressing the problems in achieving universal and equitable access represents the main goal and mission of the journal Acta Salus Vitae in this year.

Milada Krejčí
Vice-rector for Science and Research
University College of Physical Education and Sport “Palestra” in Prague
PHYSICAL ACTIVITY, PHYSICAL EDUCATION AND SPORTS
OF PERSONS WITH MENTAL DISABILITY IN RELATION
WITH WELLNESS
(THEORETICAL CONSIDERATION)

Hana VÁLKOVÁ

Abstract: The theoretical concept of participation in physical activities (PA) of persons with mental disability (MD) is presented. Sub-parts are oriented on explanation of basic terminology (physical activity, physical education, sport) and specific aspects of PA (evolution, movement standards, social development, sports programs). External framework of PA and their influence on personality with MD is stressed, too (legislation and environmental conditions). The benefits of PA for both psycho-social development and health related variables of persons with MD are described including frequent and recommended activities.

Key words: Intellectual disability, benefits of physical activity, environment of physical activities, health related variables.

1 The issue

In spite of the fact the term “physical activity” is understanding like “sports activity” Opportunities to engage in physical activity are varied, including work, transport, home activities and during leisure-time across all ages, gender, abilities-disabilities. The most common form of leisure-time physical activity for many people involves participation in gardening, walking, arts – crafts, cooking and exercise and sport. Exercise and sport can contribute to an individual’s health in multiple areas, including their physical, psychological and sociological health, wellbeing in complex even for persons with disabilities. Among people with a mental disability, exercise and sport offers opportunities to engage in experiences that provide multiple benefits. Physical activities (PA), school physical education (PE) and sports are considered an important part of daily life-style and improvement their adaptive skill areas: communication, self-care, home-living, social skills, community use, self-direction, health and safety, functional academics, leisure and work. Understanding the
issue of PA and sports for persons with mental disability (MD) and principles for realization of this is the main intention of presented article.

2 Basic terminology: what do we mean by exercise and sport?

Physical activity is used as an umbrella term to describe all movement activities that are linked with physical loading, using energy through movement. It can be: cooking, walking with dog, ground digging, car repairing, shopping, etc. Physical (exercise) activities are a sub-part – linked only with exercising: basic activities like walking-running, crawling, throwing, walking for purpose to walk or hiking, swimming, cycling, stretching, dancing, games playing.

Physical (exercise) activities can be divided in 3 basic domains although, these domains are not mutually exclusive and can be mixed:

2.1 Sport (means top competitive sport) - individual selection

Characteristics – predominant purpose is:

- to achieve absolute maximal performance,
- regular systematic and highly organized training (sports clubs),
- then spectators participation, emotionality,
- performance, results recording.

Top competitive sport for persons with MD is possible to realize under umbrella of Inas- II (International Association of Sports – Intellectual Impairment, former Federation of Intellectual Disability: FID) and Special Olympics International (SOI).

2.2 Physical education – compulsory

Characteristics – predominant purpose is:

- education from different aspects,
- skills, hygiene, health habits, social-team behavior, etc.,
- regularly organized related to curricula (schools, centers, army-police education, certificate agencies),
- comparison (evaluation) related to defined standards in curricula.

Physical education of persons with MD can be realized related to national school system: public or private schools, governmental and local curricula in special, parallel or inclusive education system.
2.3 Recreation activities – individual selection:

Characteristics – predominant purpose is:

- individual (relative) achievements,
- relax, fun, socialization, physical and psychical well-being, improvement,
- no performance recording, no competition – or on relative level, plays competition,
- possible mixing with arts, crafts, music – etc. activities,
- organized or not organized:
  
  - **fully organized**: by “centers”, municipalities, civic organizations, YMCA – Sokol – Scout organizations, leisure time clubs, …etc. Organization offers program, regular schedule, facilities-venues, leaders (usually certificate specialists), regular participation of interested persons.
  
  - **partially organized**: (like before) – any organization or civic organizations – foundations, parents groups, etc. – provide the program for all, usually short time like one day, weekend. Occasional activity – not regular, for all. Everybody can come and participate on his/her own risk. Examples – run activities (Terry Fox Run, Run for Health…), Children Day, Multicultural day, Celebration Days related to some anniversary, family-teams tournaments, etc.
  
  - **non-organized**: self-decision to exercise, to do something in his/her own time. Usually just families – school mates – friendly or working groups decide and do whatever: (holiday, week-ends as so as working days in leisure time).

This area is not in the center of attention of leading authorities. This is the reason it is touched with a great volunteers’ enthusiasms, low professional level and the lack of financial and material support. This is the reason the real sports not economy, room, ability and skills demanding are more popular, more frequent, more developed specially when they are based on national-cultural popularity. The recreational level is organized mostly with parents and civic organizations, humanitarian foundations.

3 The involvement of people with intellectual disability in physical activities

Persons with MD are citizens like other persons it means they have the same right to participate in all types and levels of physical (exercise) activities mentioned previously. Specifically, the right to participate in exercise and sport is proclaimed in the United Nations Convention on the Rights of People with Disabilities, Article 30 (UNO, 2007). As wide context of activities is important for healthy life-style and wellbeing of persons with disability
including culture and recreation possibilities the complete Article 30 is presented (Appendix 1).

Related to UNO as so as national legislation all types and forms of PA mentioned above is possible to realize in forms of conditions:

- Separate (special): activities are realized within e.g. special centers, schools, SOI clubs.
- Parallel: general children plays on playground or gym, children with MD play in the same location but different program. Or: two or more different groups in one facility/venue. Or: sport competition is organized for general sportsmen, after this - sportsmen with with MD use the same arrangement, extra awarding for category without and with MD. PA are realized in parallel system.
- Inclusive: the game with all children/individuals together in one game, one team.

Every human being is influenced, formed and socialized with environment he/she has been living since early childhood up to terminal life period. The equal principle is naturally functioning during life-span of persons with MD, of course. Individual is determined with biological pre-positions (e.g. somatotype, physiology capacity, quality of perception, cognitive level, etc.). In summary individual capacity is cohesive composition of abilities and limits developed first of all in microsystem (the basic family unit). Even the family context (either biological or foster family) is crucial for participation in leisure PA due to generation transmission, family interests and attitudes, broader environment systems influence the family micro-unit. Related to circles model of environment (Bronfenbrenner, 2001, in Bugatko, Daehler, 2001, 8) participation in physical activities are connected with legislation, governmental and municipality policy, economy status and transport system, sport facility, counselling, education policy and a lot of other components (see Fig. 1). Even the family (and individual) is responsible there is necessary to develop and/or improve the components in all circles in environmental system.
4 Aspects of physical activities advancement

Participation in physical exercise and sports and long-term adherence of adolescents and adults with intellectual disability are based on developmental aspects – like in general population.

Evolution aspect

Four movement phases are considered as the roots of potential mobility (McCall, & Craft, 2000, 152):

1. reflexive movement phase (primary reflexes, postural reflexes);
2. rudimentary movement phase (stability, loco-motor horizontal and upright gait, manipulative abilities);
3. fundamentals movement phase (loco-motor, object control, stability skills);
4. specialized movement phase (including sport specific skills).
Early diagnoses with early intervention (parents, medical and special education care) has to follow as prevention, physiotherapy and/or other type of therapy. The period lasts since the birth to elementary basic skills period. Elementary movement includes:

- locomotion (walking, running, leaping, jumping, hooping, etc),
- manipulation (rolling, throwing, kicking, bouncing, etc),
- stability (balance, stretching, turning, twisting, swinging, etc).

(Gallahue, & Donnelly, 2003).

Movement standards aspect

- **Motor quotient:** motor quotient is understood as the standard relevant to usual motor development, motor skills of age children majority. Those standards should be known to parents and has to be known to pediatricians, e.g.: range of locomotion patterns. (Auxter, Pyfer, & Huettig, 2005, 322.) Motor competence (different than movement competence) includes social behavior relevant to PA environment, it means to select appropriate movement act relevant to determine situation (to be motor active or quiet, to walk slowly or fast, to play or stop play, etc.), (Válková, 1995).
- **Movement competence** is a combination of applicable multi-functional knowledge and understanding, motor skills, motor abilities and human attitudes, values and norms, which are necessary for movement growth, optimum physical, psychological and motor development, motor performance, personal fulfilment, overall healthy well-being and employment satisfaction. Basic indicators of movement competence are: mobility of everyday life, manual skills, active lifestyle and its quality, prevention of civilization diseases, postural health, specific PE or sport activities, professional and inter-personal skills. Movement literacy is used as the synonym very often but the idea of mutual influence in context of learning is presented in idea “moving to learn, learning to move” (Talbot, 2005.) It involves a whole range of learning outcomes which go beyond learning how to engage in selected physical activities – social skills; managing competition and cooperation, including of use strategies and tactics; problem solving; applying moral and aesthetic judgments; and knowing when and why different actions and behaviors are appropriate and effective; including the relationship of exercise to health and well-being. Level of support of teacher, coaches, caregivers is relevant to possible limits in participation in exercise and/or sports.
• **Health related fitness:** cardiovascular fitness, strength fitness, BMI and obesity regulation, diabetes (Auxter, Pyfer & Huettig, 2005; McCall & Craft, 2000; Pitetti, et al., 1991; Sherrill, 2003; Valkova, 2011).

**Aspect of social development**

Individuals need to both move and relax. The early sports socialization is developed in early childhood in family: various indoor – outdoor activity should be applied, as so as winter and aquatics activity. Not only basic skills and latent learning is developed but attitudes to difficulties, winning-loosing values, competition-cooperation is learned through physical institutions and other settings (educational, social and cultural, public, private, commercial and voluntary systems and sub-systems), (Válková, 2000).

Essentially, there are three stages in education:
1. informal education (in family, in life situations);
2. non–formal education (in specific educational and social organizations and institutions);
3. formal education (every schools level). It can be learned, taught and developed (both indirectly and directly) in a range of forms. (McCall, & Craft, 2000). Later – sports is accompanied with transport and travel, visiting cafeterias, independent behavior during competition, daily regime.

**Aspect of physical activity or sports program application**

The WHO recommendation related to health prevention there is 30 min. of vigorous or 40 min. moderate intensity of physical activity daily for all children. Specially the children games can saturate the line: *heart – lungs – joy* for healthy oriented physical activity. Games can include either cooperative or competitive skills; social attitudes; different difficultness; complex motor acts with language, mathematic or other cognitive skills development; variants of sports games focused on basic sport skills (decision making, latent skills learning, regulation respecting), (Cheffers, 2010).

The recreation level of physical activities is provided mostly with parents, family members or civic organizations. Parents are very often exhausted with daily care or they have not too much knowledge how to participate in exercises. Civic institutions make effort to organize regular physical activities and/or weekend outdoor activities. Unfortunately sports clubs are not interested in recreation even of individuals with intellectual disabilities.
Favorite and frequent activities are:

- **games:** initiate motivation, emotion, joy. Through games self-awareness, braveness can be developed, safety behaviour can be learned, verbal – nonverbal communication has to be used and developed. Individual activities included in games are more successful than real sports games with strict rules. Examples: games with targeting – throwing, soft arrows, simply ball games, bocce, bowling;
- **loco-motor acts:** walking, swimming, cycling, cross-country skiing;
- **hiking, tourism** (one day, week-end activity, outdoor camps): cycling, rafting, car/bus transport with hiking;
- **dance:** is important domain for every individuals as creative rhythmic movement and imaginative thinking, self-discovery and self-expression. Dance can be realized in different setting: walking, wheelchair, sitting position. “Dance programming is particularly important for people with emotional disturbances, behavioural disorders, and learning disabilities”. (Sherrill, 2003, 411). Adapted dance and dance therapy are to pedagogical approaches with some similarities and some differences related to purpose, content and realization.

However the reality related to opportunities, amount and content of activities depends on social care system, culture habits and activity of people.

Systematic sports participation can be realized through two official international sports networks: Inas-II (International Association – Intellectual Impairment, former FID - Federation of Intellectual Disability) and Special Olympics International (SOI). Both World Olympic Networks (Inas-II, SOI) consisted from national programs. Both Olympic Networks are oriented on persons with intellectual disability, on skills and fitness training from beginners up to high level of advancers in competitive sport. The different philosophy is the criterion how to distinguish the sports direction.

Inas-II is based on “normative approach”, it means on principle of normality: the best sportsmen with ID continues from local level through national level up to world level. Qualifications, limits, records are recognized. Some selected sports and events are included in Paralympic Games.

Special Olympics is based on philosophy of „relative approach“, it means on the right of all individuals with ID to exercise, to train, to compete, to win. It means SOI is open to sportsman with various intensity of ID, even with multiply disability (cerebral palsy,
perception impairment) on the bases of ID. Currently there is about 3.7 million registered sportsmen around the world. SOI can be considered as the most opened sports movement for all with intellectual disability.

Level of support of teacher, coaches, caregivers during exercises and/or sports training is relevant to possible limits in participation in exercise and/or sports.

- Intermittent Level of Support: team sport, Unified Sports® (team or dyadic sports, the same or less number of partners without ID than sportsmen with ID exercise and compete as one cohesive team).
- Limited Level of Support: traditional Special Olympics sports (e.g.: athletics, swimming, cycling, table tennis, rhythmic gymnastics, skiing).
- Extensive Level of Support: adapted activities based on easy motor test in games design for training, sports design for competition (e.g.: throwing, targeting, walking, standing long jump, 50 m walk).
- Pervasive Level of Support: basic motor activities with support of physiotherapists (MATP - Motor Activities Training Program).

Beside sport training and competition the Special Olympics Healthy Athlete Program is developed. The aim of the program is screening of health problems (the status of vision, teeth, dermatology, physiotherapy, quality of feet and walking, basic fitness, health promotion and health nutrition) as well as advisory and education related to sports and health. Again, the quantity and quality of participation in Special Olympics, quality of training and/or health education depends on volunteers in national (local) programs.

4.1 The benefits of exercise and sport for people with mental disability

The psychological benefits of exercise

Recent physical activity intervention studies which present the auxiliary benefits, such as decreases in anxiety, depression, and increases in self-perception of quality of life, self-efficacy, as well as social competence and self-perception (Carmeli, et al, 2005; Carraro & Gobbi, 2012; Dyken & Cohen, 1996; Dykens et al., 1998; Harada et al., 2011; Heller, Hsieh & Rimmer, 2004; Hutzler & Korsensky, 2010; Johnson, 2009; Lante, Walkley, Gamble & Vassos, 2011; Marks, Sisirak, Heller & Wagner, 2010; Ozer et al., 2012; Valkova, 2000; Vogt et al., 2012). Studies that have assessed mood states, such as an anxiety and depression have had positive results with physical activity reducing anxiety and improvement of
concentration, motivation to be active by a clinically significant amount. The exercise programs ran from 12 weeks to 6 months with minimum of 3 days of exercise a week (Carmelli, 2009; Carro & Gobbi, 2012; Heller et al., 2004). Other studies have found evidence for increased positive mood directly after exercise (Vogt et al., 2012): decreasing anxiety, depression, scare, increasing self-efficacy, social competence (Fox, 1999; Hutzler & Korsensky, 2010; Marks et al., 2010).

Research demonstrating the positive psychological or social impact of exercise derives from a variety of sources including studies that focus specifically on the range of positive outcomes that result from participating in the Special Olympics. Special Olympics program seems to be important program which can improve physical, skill and psycho-social variables of persons with mental disability like sense of success or criticism, skill acquisition, more on task behavior, perception of health related variables (Dykens & Cohen, 1996; Dykens, Rosner & Butterbaugh, 1998; Valkova, 2011). In summary, physical exercises and sports can lead to the psychosocial benefit beyond physical improvement. Many advantages to exercise such as increase quality of life, social skills and self-efficacy and decreased anxiety and depressive symptoms have been demonstrated in the literature.

**The effects on challenging behavior**

Challenging behaviour is defined as "...culturally abnormal behaviours of such an intensity, frequency or duration that the physical safety of the person or others is likely to be placed in serious jeopardy, or behaviour which is likely to seriously limit the use of, or result in the person being denied access to ordinary community facilities." (Emerson, 2001).

These behaviours can include both negative markers of behaviour (aggression, property destruction, distraction of interpersonal and social relations, self-injury and stereotypical movements, drugs abuse) and positive behaviour in adaptive skills (daily life self-care, hygiene, household activity, safety, communication strategies, family and peers society involvement, will to learn, will to participate in leisure active life style).

Improvement of social competence and decreasing of negative markers after easy exercises like walking, running, jogging was demonstrated by several authors (Allen, 1980; Allison et al., 1991; Bachman & Slyter, 1988; Carr et al., 1999; Dykens & Cohen, 1996; Dykens, Rosner & Butterbaugh, 1998; Elliot et al., 1994; Harvey et al., 2009; Marks et al., 2010; Hutzler & Korsensky, 2010; Nankervis, Cousins, Válková, & Macintyre, 2014).

Special Olympics regular program can play important role, too. The Special Olympics has also been associated with positive benefits for the families of participants (Glidden et al.,...
2011; Johnson, 2009) specially of sportsmen’s mothers (Weiss, 2008) and communities (Harada et al., 2011). Those studies have indicated that positive benefits of participating in SO include reductions in maladaptive behaviors in youth who participate and family satisfaction in youth.

Recent published findings show the issue of challenging behavior (positive changes and development) in relation with physical activities (the type, content, frequency and intensity, length and duration) is not discover enough in research due to complicated methodology and research strategies. In spite of the fact challenging behaviours variables are often poorly managed the long term regular physical activities on moderate level can be considered as crucial predictor of positive adapted behaviour and quality of life (Bachman & Sluyter, 1988; Baumeister & MacLean, 1984; Carr et al., 2002; Eidelman, 2011; Flay et al., 2005; Jansma, & Combs, 1987; Johnson, 2009; Lante, et al., 2011; Válková, 2011; Vogt, 2012; Weiss, 2008).

**Fitness and health related variables benefits of exercise**

The importance of the role of movement, motor activities and sports of individuals with intellectual disability, for their beneficial development became the main task for the theory and field practice improvement. The topic “mobility”, “motor activity”, “movement” of different children became important since 70’s (Broadhead, & Church, 1984; Cratty, 1972; Dykens, & Cohen, 1996; Eichstaedt, & Lavay, 1992; Rarick, Widdop, & Broadhead, 1970; Roswal, Roswal, & Dunleavy, 1984; Vermeer, et al., 1990; Winnick, & Short, 1985; Wright, & Cowden, 1986).

Engagement in physical activity (PA) is a healthy behavior that has a positive impact on body composition, skeletal health and several aspects of psychological health including self-concept and self-esteem. Cardiovascular variables, strength fitness, optimal breathing, BMI and obesity, diabetes, osteoporoses markers, (in conclusion general fitness) are usually defined as health related variables (Auxter, Pyfer & Huettig, 2005; McCall & Craft, 2000; Pitetti, et al., 1991; Sherrill, 2003; Valkova, 2011). Health benefits include decreased mortality rates; lower incidence of developing diseases; enhancement in conditions such as hypertension, diabetes, and obesity; improvement in mood and well-being; and the lessening of functional decline (Murphy, 2009).

Well documented is issue mental disability, physical activity and other associated problems like congenital heart defects, muscle hypo-tonicity, joint hypermobility, low cardiovascular fitness, and decreased muscle strength (Barnhart & Connolly, 2007; Draheim,
2006; Draheim, Williams, & McCubbin, 2002; Dykens & Cohen, 1996; Wright & Cowden, 1986). Under that circumstance, participation in regular physical activity by people with mental disability is essential for their health, but this is not the reality. Physical inactivity of persons with mental disability related to fitness, health risk, obesity was examined by Fernhall and colleagues (1996), Onywadume (2008); Robertson (2000); Yamaki (2005). Problem of obesity of persons with mental disability is linked with lifestyle of population in general in recent time. Obesity of adult persons with mental disability rates 32% greater than those for general population (Yamaki, 2005). The supposed determinants are: minimal chance to be accepted in sports clubs except Special Olympics; providing board related to general economy norms with lack of vegetable in residential homes; extreme care of some parents to feed them properly; sedentary behavior and TV watching and electronic amusement (Packer et al, 2006). But biology bases has to be accepted, too (different function of limbic system – the center of happiness and connection with meal, sweet and happiness, somatotype of individuals with e.g. Down syndrome).

It is recommended that individuals should perform 20 minutes of continuous vigorous activity on at least 3 days each week or 30 minutes moderate physical activity (e.g. walking, jogging, cycling) per day to improve cardiovascular health (U.S. Department of Health and Human Services, 2008). Studies indicate that people with mental disability are less engaged in physical activity, are more sedentary, and are less likely to be physically fit than their peers (Foley et al, 2006; Frey et al, 2006; Frey, Stanish, & Temple, 2008; Johnson, 2009; Peterson, Janz, & Lowe, 2008; Longmuir & Bar-Or, 2000; Temple, Frey, & Stanish, 2006; Tudor-Locke, Washington, & Hart, 2009). It is reported (Healthy People, 2020) that 56% of people with disabilities engage in no leisure time activity compared to 36% of people without disabilities. Less than 20% of adults with disabilities engage in vigorous activities that promote fitness or muscular strength (U.S. Department of Health and Human Services, 2008). Stanish, Temple and Frey (2006) found the major sources of physical activity for adults with mental disability were walking and cycling for transport, chores and work, dancing, and Special Olympics. Walking for transport was the most prevalent form of physical activity, but studies suggest the intensity may not be sufficient to meet the minimum recommendations to achieve health benefits (Stanish, Temple, & Frey, 2006; Temple, Frey, & Stanish 2006). Findings of Czech Special Olympians research documented both male and female in adolescent age spent approximately 7,5% moderate physical activity of daily 24 hours time, it means about 53 minutes per day (Válková, 2010).
In the pilot study by Shields, Dodd and Abblitt (2009), almost 58% of children with mental disability, particularly with Down syndrome did not perform the recommended amounts of physical activity to maintain good health and none performed the recommended level of continuous vigorous physical activity to enhance cardiovascular fitness. A significant inverse association was found between the amount of activity undertaken and age, with older children completing less activity. Even the finding that people with mental disability have a lower VO$_2$peak to those without a disability, and so the levels for moderate and vigorous activity of average general public may not be appropriate for this population (Robertson, 2000).

Pirletti with co-authors (1991) assessed fitness of adult Special Olympics participants. Later (2010) he compared advantages-disadvantages between using classical pedometer, and - accelerometer, in 6-10 years aged children. Pedometer is sensitive for walking records, accelerometer for other activities beside walking. Typical movement of children with mental disability there are different type of movement, not only walking.

### 4.2 Frequent, recommended activities

Crucial principle of composing and realizing activities for persons with ID is communication (in any environment, with any leaders). There is not necessary to obtain special extra equipment or facility just understanding each other as because leaders can expect easy different thinking, a lot of speech problems.

Exercising based on natural movement and basic skills should start in early childhood as intervention program pushed with parents (Berdychova, 1969; Gallahue & Donnelly, 2003; McCall & Craft, 2000) as well as in school and adolescent age later. Those activities are typical for inclusive environment (Bielenberg, 2008).

- loco-motor line: crawling – climbing - walking – running – jumping,
- hand-eye coordination (through games): throwing and rolling - targeting,
- hand training: through table games, writing-drawing, self-service, manipulating, throwing – catching,
- individual games: sport “ABC” or “drills”, ball games, board games, sledging - specially in winter-time,
- psychomotor exercises: manipulative skills, body segment experience, hands – limbs – trunk coordination,
team games: paraschoot games, shuttle-relay games, bocce, table tennis, floor-ball, 7-side football (both in special and inclusive environment, peer support, unified design in Special Olympics),

dancing and creative activities both spontaneous with music and controlled,

yoga exercises, stretching exercises,

aquatics: games, swimming, canoeing – rafting, with assistance (Lepore, Gayle & Stevens, 2007),

cycling: with different instruments like adapted bicycles, tandems, tri-cycles, “petra-cycle”,

outdoor activities: hiking, mountaineering, camping, skiing.

Activities described above are available both for recreation level and as the bases of competitive sport. Both recreational and competitive level of persons with ID can be realized only in leisure time (Auxter, Pyfer & Huettig, 2005; Huetting, Pyfer, & Auxter, 2005).

5 Conclusion

Physical activities as prevention of so called civilized diseases is the right of persons with mental disability and their wellbeing, too. It is not only from humanitarian reason but from economy reason (active persons need less amount of medical and social care including their families). Families, community and professionals has to be prepared to realize strategies leading to participation of persons with mental disability in physical activities.

Aspects how to understand of physical activities for persons with mental disability (evolution aspect, movement standards aspect, aspect of social development, aspect of physical activity and sports program application) can be considered as the principles for healthy life style support. The benefit of exercise and physical activities has been found in influence on psychological, challenging behavior and fitness and health related variables.

Appendix 1. Article 30 - Participation in cultural life, recreation, leisure and sport (Quot.)

1. States Parties recognize the right of persons with disabilities to take part on an equal basis with others in cultural life, and shall take all appropriate measures to ensure that persons with disabilities:

- Enjoy access to cultural materials in accessible formats;
- Enjoy access to television programmes, films, theatre and other cultural activities, in accessible formats;
- Enjoy access to places for cultural performances or services, such as theatres, museums, cinemas, libraries and tourism services, and, as far as possible, enjoy access to monuments and sites of national cultural importance.

2. States Parties shall take appropriate measures to enable persons with disabilities to have the opportunity to develop and utilize their creative, artistic and intellectual potential, not only for their own benefit, but also for the enrichment of society.

3. States Parties shall take all appropriate steps, in accordance with international law, to ensure that laws protecting intellectual property rights do not constitute an unreasonable or discriminatory barrier to access by persons with disabilities to cultural materials.

4. Persons with disabilities shall be entitled, on an equal basis with others, to recognition and support of their specific cultural and linguistic identity, including sign languages and deaf culture.

5. With a view to enabling persons with disabilities to participate on an equal basis with others in recreational, leisure and sporting activities, States Parties shall take appropriate measures:
   a. To encourage and promote the participation, to the fullest extent possible, of persons with disabilities in mainstream sporting activities at all levels;
   b. To ensure that persons with disabilities have an opportunity to organize, develop and participate in disability-specific sporting and recreational activities and, to this end, encourage the provision, on an equal basis with others, of appropriate instruction, training and resources;
   c. To ensure that persons with disabilities have access to sporting, recreational and persons with disabilities have access to services from those involved in the organization of recreational, tourism, leisure and sporting activities. tourism venues;
   d. To ensure that children with disabilities have equal access with other children to participation in play, recreation and leisure and sporting activities, including those activities in the school system;
To ensure that persons with disabilities have access to services from those involved in the organization of recreational, tourism, leisure and sporting activities.

6 References


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INFLUENCE OF PHYSICAL ACTIVITY ON THE PERSONALITY OF THE ELDERLY

Běla HÁTLOVÁ, Tereza LOUKOVÁ, Iva WEDLICHOVÁ, Milena ADÁMKOVÁ SÉGARD

Abstract: Senior citizens benefit greatly from physical activities. Not only do they contribute to the senior’s physical condition, but they also help them to stay mentally fit. In Czech Republic a tradition of active lifestyle is established supported by a physical training organization “Sokol”. In our study, we observed Influence of physical activity on the personality of the Groups of senior men and women, actively participating or not participating in regular group physical training in Sokol organisation. The personality factors of seniors older than 60 and 75 years measured by questionnaire personality factors “NEO five-factor personality inventory (NEO-FFI)”.

Key words: Seniors, active lifestyle, physical training, Sokol organisation, personality factors.

1 Introduction

European and American societies have to face a dramatic population growth of those living 20 years or more beyond retirement. Hence, it must be acknowledged that current medical care is adding years to life. People who enter into retirement have varying health conditions. The needs of seniors and their demands for further living differ significantly from one individual to the next. Current health conditions of senior citizens are affected by genetic predispositions, life conditions and care invested in personal health throughout the course of life (Šmídova et al., 2009). A part of the population is already weary of life, has difficulties with health owing to previous unhealthy lifestyles, and feels tired and burnt-out in relation to active life roles (Možný, 2010). Generally, ideas about relaxation take on a passive form (sitting in front of TV with a beverage). A frequent motif of such complaints by seniors is feeling obsolete and excluded from society. Psychologists discuss leaving life roles developed in theories of disengagement. Leading seniors to autarchy is currently one of the main
psychological problems. Resigned senior citizens represent a social issue. Society should rally support for active lifestyles of senior citizens for as long as possible (Hošek 2010).

Development of a person is within the process of socialization. Human personality is formed under a constant and mutual acting of genetics and external, environmental conditions. It features individuality, uniqueness, organization and integrity. We can further observe certain consistent and stable behaviour (Nakonečný, 2009). Satisfaction with life (which determines the quality of life) is, among the aged, mainly affected by a senior citizen's personality traits and their lifetime experiences in managing situations they encountered and had to confront, either successfully or not. A number of senior citizens live their lives not only actively, but also productively to the ages of 70 or 75 years, and some even to the age of 80 and over. They have comparable needs and similar interests as the adult population (Hátlová et al., 2010).

Physical activities contribute to the overall fitness of senior citizens, not just physically but also in managing mentally and socially trying situations. Seniors whose lives involve regular physical activity benefit in that their senior period is more like an extension of their middle age. When more significant symptoms of older age appear, they are unable to manage their restrictions very actively.

Unavoidable changes of older age.

The period of older age brings an overall deterioration of health that is acknowledged by way of the body: how it feels in general, its appearance, functionality and dubiousness while moving. Subjective living of one's own body and satisfaction with it, is strongly associated with self issues, self-assessment and experiencing a state of well-being (Hošek, 2010). At this stage of life, health is interpreted as a preservation of self-sufficiency, not as the absence of disease. Psychological and physiotherapeutic literature focuses in detail on the theme of disregarding cognitive functions with a related decrease of efficiency and change in emotive functions. Cognitive functions are excluded despite the fact that their decrease is among the dominant symptoms of ageing.

Sport activity as social support

Physical activity itself does not make a lifestyle but often contributes significantly to lifestyle (Mareš, 2013). In rural Czech Republic a tradition of active lifestyle is established supported by a physical training organization “Sokol”, (Sokol was set up as the first Czech physical training organization in Austria-Hungary at the time of political liberalization of the
1860's upon the initiative of Miroslav Tyrš and Jindřich Fugner. In the past, physical training at Sokol had always been associated with social involvement. The organization used to have, and still has in some cases, the tendency not only to keep a good quality physical training program, but also social awareness of Czech culture and sociability. Senior “Sokols” over the age of 75 are a unique, historic and cultural group whose lifetime physical activity used to blend together with historical situations and their position in society (childhood during the conditions of the Czechoslovakian Republic between the Wars; early adulthood stigmatised by dogmatic persistence of national solidarity during World War II; middle-class position in post-war society during Communist control).

2 Objective, Research problem

In conducting our study, we took into consideration the fact that, in the Czech Republic, no standardized solution has been presented of an independent group of senior population in terms of personality factors. We acknowledge that our study only presents a diagnostic finding of the state of a senior population's personality, and does not offer any real solutions. However, good diagnosis provides stable footing to further the process of opting for certain interventions.

This article gives you an overview of the personality factors of seniors older than 60 and 75 years measured by questionnaire personality factors “NEO five-factor personality inventory (NEO-FFI)”.

The objective of the thesis was to record the effect of lifestyle associated with regular physical activity carried out within a social atmosphere in relation to personality factors according to NEO FFI, as a presumption of active living during mature old age.

In order to fulfil the objective of the thesis and answer the research problem, we defined the below study questions and hypotheses.


Hypotheses:

H1) Lifestyle will manifest itself in composition of the senior's personality.

H2) In male and female personalities of seniors who regularly, and throughout their lifetimes, participate in physical activity within a social atmosphere, we find the personality traits openness, friendliness and conscientiousness, higher than found in other groups.
H3) In male and female personalities of seniors who regularly, and throughout their lifetimes, participate in physical activity within a social atmosphere, neuroticism will be lower than found in other groups.

3 Methodology

Method: NEO five-factor personality inventory (NEO-FFI).

The validity of the five-factor personality model has been repeatedly confirmed by researches conducted in Europe and North America. Scales of established adjectivity are applied, based on lexical studies and classic personality tests. The Big Five is a consequence of coincidence: sophisticated statistic procedures and basal similarity of languages. It is deduced that, within language, there is a concentrated human experience which captures what we call personality (Cermak in Hrebickova, 2001, p. 6). The general lexical hypothesis (Galton 1884; Klages, 1926; Goldberg, 1993; according to Hřebíčková, 1997) is based on the presumption that the most substantial individual differences are concentrated and preserved in language. The most important dimensions, derived in the aforementioned manner, form the five-factor personality structure which was named Big Five by Goldberg (Goldberg, 1993; according to Hrebickova, 1997). He followed studies that historically dealt with this problem: Galton, 1884; Baumgartenova, 1933; Cattell, 1943; 1947; Norman, 1963; Digman, 1981; 1986; Goldberg, 1990; Costa, McCrae, 1992; Hendriksova, 1997; (see Hřebíčková, 1997).

Within the Czech Republic, studies validating the Big Five ideas have been conducted in the Czech language by the Academy of Sciences of the Czech Republic since 1992. The outcome is a standardized psycho-diagnostic method of the NEO five-factor personality inventory. Hrebickova, M., Urbanek, T., Testcentrum, Prague 2001 1st edition. In the entire group of probands, statistically significant relations between sexes are found.

Ethical problems

Probands took part in the study upon their own consent. All examined people were fully and legally capable.

Study organization

From 2007 to 2013, we conducted an individual examination of seniors over the age of 60 and 75 using the NEO FFI method. The examination was single; in terms of performance – non-performance of physical activities, blind. The lecturers who conducted the study passed a training course in the NEO FFI method application.

The study group consisted of 195 seniors; 58 men and 137 women ranging in age from 60 to 96 who were not diagnosed with dementia. They live in senior houses, with families or
Independently. The selection of people was determined by their will to testify. This was reflected in the number of probands of individual groups the study was focused on.

a) Members of the Czech Sokol Community districts (46 men and 137 women).

b) People who do not regularly attend any organized physical activity lessons, or do not perform any regular physical activity (12 men and 27 women).

Groups of probands were evaluated separately in view of sex due to different life experiences and roles. This is the reason why we state our results separately for men and women. The questionnaires were administered during the probands' free time; with those who exercised, at the end of their training hours, or at collective meetings. We present the collected data in a form in which we can compare them with the general studies (mean values) conducted via NEO FFI questionnaire, standard in the Czech Republic (Hřebíčková, 2001). We state the mean values by low number of probands in some groups. With the overall growing level of uncertainty experienced, the level of closeness and willingness to testify increases. We would also like to point out the effect of physical activity that blended all aspects of life together with historical events and social position in society. Senior Sokols over the age of 75 are a unique historical and cultural group.

4 Results and discussion

The set of all experiment groups featured insignificant age variances. Groups of Sokol male and female seniors had similar symptom levels of NEO FFI personality factors compared to the adult population measured by Hřebíčková (Hřebíčková & Urbánek, 2001).

Male Sokol members had lower levels of Neuroticism (lowest of all the study groups) and Openness; and higher levels of Friendliness and Consciousness. The extent of Extroversion was comparable. In this group, we anticipated a high level of tendency to actively control and live their lives by their own ideas; this was confirmed. As for Sokol women, we detected lower levels of Extroversion and Openness; and slightly higher Neuroticism, Friendliness and Consciousness. The measured values ranged between values detected in the adult population and in a group of women who did not regularly participate in any organized activity, and did not exercise regularly. We presume that, despite their age, the women of these groups actively participate in the run of household, families or the environment in which they live.

Discussion of measured values in individual spectra:

Neuroticism (N)
The scale investigates individual differences in emotional stability and instability. The scale further investigates how increased intensity of emotions are experienced (Hřebíčková, Urbánek, 2001).

**Men Sokol:** The groups of men manifested a moderate trend towards a lower score than it is measured in a regular population. It can be anticipated that their awareness of their own qualities facilitates to cope well with the reduction of physical strength.

**Men non-exercising:** Group of men manifested a trend towards a higher level of neurotic instability than measured in groups of Sokol men. Seniors at this age are usually more unstable due to a general reduction of physical strength (results of clinical observations). They no longer represent “who they used to be” and their self-assessment reduces significantly.

**Women:** All the studied groups of women manifested an increase to mental instability despite their active lifestyle. With gradual loss of their physical attractiveness and thus of their social standing – in their view – their self-confidence goes down. They believe that if they stop participating in managing the household, their position will drop. Therefore, the active of them trying to keep their health.

**Extroversion (E)**

Sociability, fellowship and openness to social stimulation. Extroverts are usually more self-confident, active, energetic and positive. They look for situations that bring them excitement. Introversion is the opposite of extroversion. Introverts are rather reserved, independent and individual. Their self-restraint is affected by the desire to remain independent (Hrebičkova, Urbanek, 2001).

**Men (Sokol):** We consider it an important finding that these men do not differ significantly from the adult male population. This gives evidence of their active approach to experiencing your life knowing possibilities of effect on ongoing situation

**Men non-exercising:** A significantly higher level of introversion and closeness was found.

**Women:** In all groups of observed women we noted a trend towards introversion, isolation and loneliness which was highest in non-exercising women.

**Openness (O) towards new experiences**

People described as “open” have an animated imagination, are sensitive to esthetical stimuli, and are responsive to inner feelings; they prefer diversity, are curious, have independent judgement, and often act unconventionally. They are interested in acquiring new knowledge and experiences (Hrebičkova, Urbanek, 2001). A tendency to reduced openness
to new stimuli was observed in all groups. This is a significant change in personality factors. We consider that this corresponds with totally deteriorated flexibility in stimuli processing, and creation of defences in behaviour.

**Friendliness – amicability (P)**

This is a dimension of personality between egocentrism and the tendency to help the others. Various forms of altruism, compassion-and the willingness to help or even to sacrifice themselves for another have both positive and negative aspects. It not only depends on personality presumptions but, to a great extent, on education and positively perceived values of society. It does not change in an explicit manner. It also depends on self-assessment and -evaluation of one’s own situation (Hřebíčková, Urbánek, 2001). The tendency in higher levels of amicability was observed in groups of exercising Sokol men and women 75 years, compared to other groups. This activity is a form of defense against the expected low acceptability. We believe that they actively prepare a better position for their own acceptance. This can be, to a lower extent, observed in groups of non-exercising men and women. Those actively exercising are probably more focused on their own personality, and view relating amongst their neighbourhood as a low priority. They realize that they become more and more dependent on relationships.

**Conscientiousness (S)**

A tendency to maintain self-control, control of external stimuli. This area has its positive and negative aspects. It investigates the relation to work and to fulfilling obligations (Hrebičkova, Urbanek, 2001). All observed groups of men and women featured a tendency to increase their level of conscientiousness; higher in exercising Sokol men and women. The higher rate of careful preparation is certainly caused a decline in the quality of cognitive processes. The higher level of conscientiousness can be considered as a form of self-defense against failures in behavior. Exercising Sokol senior men and women are more active in this particular effort. This can be, to a lower extent, observed in groups of non-exercising men and women.

5 Conclusions

In our study, we observed groups of senior men and women, actively participating or not participating in regular group physical training. Despite their active lifestyle, active Sokol trainees deal not only with health but also with social problems of old age.

The study implies that senior citizens exercising at Sokol have a higher tendency to actively participate in their current life, compared to other groups of seniors. The investigated
sets with a low number of probands allow us to merely guess at the personalities of individuals who regularly train or not. The trends observed in the studied groups of seniors convinced us of the necessity for more extensive studies in this area.

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BALANCE ABILITY TESTING AND FALL RISKS IN ELDERLY

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Marie VOŠTOVÁ, Zdena TŘÍSKOVÁ

Abstract: The authors present a brief interim report concerning the field examination of the capability of keeping the equilibrium and occurrence of the risk of falls in a sample of the senior population (28 persons) in conditions of the senior home Borovany near České Budějovice with caregiving service. A reference group included staff members of the City Council České Budějovice and of the caregiving service of the company Ledax - centre Trhové Sviny and working in Borovany. The interim results demonstrate a dramatic situation of the risk of falls in the examined population, where the risk of falls is increased by a factor higher than five, compared to the normal situation. Whereas in the general population, it is to expect normal results of the test of the equilibrium and gait according to Tinetti, i.e. 27–28 points of 28, which is also the result shown in our reference group (27.7 points on average), the population examined - housed in the old people’s home – has a score of 15 points. After exclusion of 8 probands with results within the normal etalon, i.e. 27–28 points, there were 20 probands, whose results were beyond the normal standard having average score in the equilibrium and gait test according to Tinetti 9.6 points of 28. The authors systematically continue performing the field examination. They attempt to establish an international cooperation in this examination. In the work, they present a complete diagnostic tool according to Tinetti in the original English as well as topically used Czech version. Possible misunderstanding or unclearness caused by wide distribution of the diagnostic tool by Tinetti and its many variants in different national languages is also briefly noted. The presented interim results already point out a higher risk of fall in seniors and offer a starting point for reasonable consideration of actual needs of nursing and caregiving in these persons. The authors expect that the results will be taken into account in appropriate considerations and in the decision process concerning the personnel in relevant facilities including the compilation of personal normative.

Key words: Aging; Risk of falls; Balance ability; Mary Elizabeth Tinetti
1 Introduction

The ability to maintain balance is a critical factor in avoiding of falls and subsequent injuries. This phenomenon is particularly evident in the elderly (Lord et al., 2001). The risk of falling is one of the main risks in seniors, in both, which stay at home or in institutional care homes (Klán, Topinková, 2003; Tinetti, 2003). One of the main ways, how to assess the risk of falls, presents a careful analysis of individual cases in their occurrence and quantification of past/present falls (Třísková - personal consultation).

To strengthen of the preventive approach to falls risk is certified, as a diagnostic tool by Tinetti (Tinetti, 2003; Topinková, 2005; Hajkova, 2010). By evaluating of individual score in this tool is possible to determine the individual risk of falling for individual respondent. After processing of the results from the entire group of respondents it is possible also to identify a group risk of falls in the investigation sample. In this way we can predict in advance the risk of falls on the one hand and the necessity of a nursing care and activities on the other hand, including staffing demands.

Diagnostic Tool by Tinetti

In Annex we present the original version of the already world-famous diagnostic instrument. In our research study we used the Czech version of the tool processing of Topinková (2005).

We would like to indicate possible hazards related to international and inter-institutional comparability of survey results, that come from a large variety of used national versions of the Tinneti instrument (Köpke, Meyer, 2006). These authors recommend to use in the conditions of the Czech Republic the named version published by Topinková (2005).

2 Objective

The main objective of the presented study was to find out effective preventive strategies in the context of fall risks in elderly persons in senior homes. In the research question we predict that the risk of falling down is double higher in elderly persons (experimental sample) then in middle age persons (the control sample).

In our research question we proposed that age of probands is in significant correlation with test results of Tinetti diagnostic tool.
3 Methodology (project characteristics, research organization)

The experimental sample (clinic group) consisted of 28 people staying in a senior home Borovany. There were 2 men and 26 women there. The average age of these persons was 83.6 years. The average age of men was 80.5 years, of women 83.8 years.

The control sample consisted totally of 27 people, of 1 man and of 26 women. Of these 18 persons were employees of the Health Care Department of Statutory City of České Budějovice with a mean of age 49.78 years, including 1 man aged 49 years and 17 women with an average age of 49.82 and after that 9 women, which were working in the firm Ledax Nursing Services like workers of the senior home Borovany, with an average age of 42.61 years.

What's the ratio of men and women are both samples well comparable, the predominance of women is numerically almost identical. From the view of the average age, the experimental sample consisted of older persons, the control sample of middle aged persons. All persons were examined by Tinetti diagnostic tool. All results were checked by the same one worker. After that individual results of probands were analysed. The score of 27 to 28 is classified as normal. Furthermore arithmetic averages were calculated and tabulated. Data are expressed in the part of results.

4 Results and discussions (procedure)

Average score results by Tinetti analysed in the control sample was in the sum of 27.7 points out of 28 possible. We can conclude that the result of the control group is in the “normal area”, which is given by the standard 27 - 28 points inclusive.

Average score results by Tinetti analysed in the experimental sample was in the sum of 15 points out of 28 possible. The critical value is presented of 19 points. Scores below this critical value represent a five-fold increase in the risk of falling. When we excluded results of 8 probands with the standard normal score (i.e. 7 people with a score 28 points and 1 person with a score of 27 points, we obtain a subset of 20 subjects with not normal risk of falls. Average score results by Tinetti of this subset represented 9.6 points (see Table 1).
Table 1 Summary score of the Tinetti test achieved in the present research study in experimental and in the control samples (Petr, Janečková et al., Falls. Tinetti diagnostic tool)

<table>
<thead>
<tr>
<th>Series</th>
<th>n</th>
<th>x score</th>
<th>RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>General population</td>
<td>NA</td>
<td>27 – 28 (incl.)</td>
<td>1</td>
</tr>
<tr>
<td>Control group</td>
<td>27</td>
<td>27.7</td>
<td>1</td>
</tr>
<tr>
<td>Probands, total</td>
<td>28</td>
<td>15</td>
<td>higher than 5</td>
</tr>
<tr>
<td>Probands, subgroup</td>
<td>20</td>
<td>9.7</td>
<td>10 (estimation)</td>
</tr>
</tbody>
</table>

Meaning of abbreviation:
n = number of members of the group
NA = Non-applicable
X score = arithmetic mean value of the individual scores of the risk of fall assessed after Tinetti
RR = relative risk of fall, compared with standard population

On the base of attempt results we can discuss that the risk of falling for the experimental sample, i.e. the total risk for the nursing care for the treatment group in our assessment of the situation is certainly higher than fivefold. If there is a critical threshold for such risk is set as "less than 19 points," and the group is averaging 15 points, the risk situation probably as primarily evident.

The similar results we could found out certainly in the retrospective analyse, in analysis of reports of casual incidents occurring falls. The using of diagnostic tools by Tinetti has a major advantage in the possibility to achieve a preventive, pro-active approach in nursing process, in establishing of a plan of nursing care in terms of the actual implementation ("delivery") of this care. After selection of probands in experimental group and exclusion of persons with normal fall risk (i.e. standard 27 - 28 points inclusive) we can identify the subset of people with an average score of 9.6 points, where the risk of fall can be qualified guess on the order of at least one decimal order higher than in the general population.

5 Conclusions

In a sample of 28 people staying the type of senior home care, the authors demonstrate at least five-fold increased risk of falls compared to the normal population. These probands have a score of 15 points out of 28 possible, the critical value indicating already a fivefold increase of the risk of falling is below the 19 points. After exclusion of probands with fall risk scores in the standard level, i.e. 27 - 28 points, in the selected subset of 20 persons we can analyse the average score of 9.6 points.

These results lead to the conclusion, that the risk of falls in this population is substantial, dramatically worse than in the general population. All considerations and planed activities related to equipment and personnel caring service in senior homes should accept
these facts from the view of falls prevention. Diagnostic Tool by Tinetti can serve as a fall risk assessment and the evaluation of adopted and implemented measures and interventions having prevention characteristic.

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STRESS MANAGEMENT IN YOUNG FEMALE SPORTSMEN THROUGH BREATH AND MOVEMENT SYNCHRONIZING

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Abstract: There are basic conditions of high quality vitality and effective stress management. Specificity of easy yoga practicing is the active correction of movement stereotypes, positives influence on muscle and mental tensions and synchronizing of breath and movement, which results in harmony state of mind. Basic yoga breathing techniques lead to breathing control and breathing capacity development. These techniques relatively easy can be trained. The objective of study was to test psycho-training methods on base of yoga techniques which can demonstrate benefits of breathing exercises in sportsmen, concretely to determine the individual indicators in different positions and exercises in junior female players of water polo. The research sample consisted of 10 female water polo players of the Czech junior national team in the age of 14 - 16 years. In the study was used a survey research instrument Biofeedback Shuhfried x-per 2000, and provided testing through the POMS (Profile of Mood States) test. Intervention program was realised in 12 weeks. After the intervention program significant positive changes in emotional states of participants have been found. After completion of the intervention program was again carried out an expert examination. All participants have acquired full yogic breathing and mastered breath regulation according stress situation. The hypothesis was verified.

Key words: Stress management; breathing regulation; yoga techniques; female players; water polo.

1 Introduction

It is said that Life is Breath, which implies that as long as a person breathes he/she is living. The indication of life is breathing and from this logic, “The healthy breathing implies healthy life.” The base of that is mastering in the full yoga breath and after in other pranayama techniques, which develop breathing process, its deepness and control.
Every change in social milieu has a psycho–somatic response in the organism with a health impact. The change of situation is in first evaluated through the “psychic filter” with follow health impact (e.g. impact in body or it manifests as a mental-social effect) It depends of that, if situation is perceived as a stressful, endangering (e.g. evoking unsafely, destruction of psychosomatic integrity or too much stimuli together) or if can be accepted, positively evaluated or solved thanks the will. Through the “psychic filter” gone and are evaluated also signals coming from inside, from organism (e.g. burst of pain, palpitation). Just on completely subjective evaluation depends, if the response will be at last positive or negative from the view of health impact. If the situation is understood as endangering, symphateticus is mobilized together with noradrenalin and adrenalin mobilization. If the subjective stress repeats often or permanently, another hormone response in organism is mobilized, especially from the adrenal cortex (glucocorticoids, mineralocorticoids) and from other glands. This fact has very negative impact in immune system and allergic reactions.

Role of breath is very significant in human and animal physiology. Normal human beings take about 12-20 breaths per minute. However under various physiological conditions, age and health factors, these parameters change. During resting phase it may go down and it can escalate when human being are in exercise mode.

**Diaphragmatic breathing**

During the diaphragmatic breathing (so called “abdominal” breath) is used effectively the main breath muscle – diaphragm - which results in gas exchange in the lower part of lungs. During the inhalation phase the diaphragm is activated, expands and the abdominal wall rising. During the exhalation the diaphragm is relaxed and the abdominal wall slops down. Main benefits are calming and harmonizing of mind and compensation and regeneration of physical and psychic stress. Very effective yoga position for diaphragmatic breathing development is for example shashanka asana (see Figure 1), which improves blood supply to the head and therefore nourishes the eyes and all brain functions. Helps to relieve fatigue and promotes concentration. Anxiety and depression are relieved due to its calming effect. The whole spine and muscles of the back relax in this position and the breath deepens into the back and lungs. Diaphragmatic breathing gently massages the digestive organs.
Thoracic breathing

In this type of breath the main function play intercostal muscles. During the inhalation phase these muscles are activated and thorax rising. Exhalation phase is passive, exhalation is provided thanks the elasticity of thorax, which slopes down. Active exhalation can be provided too, when intercostal muscles are activated again and support gas exchange in the middle of the lungs. External intercostal muscles participate in inhalation phase; internal intercostal muscles participate in exhalation phase. Both phases help to blood circulation and to heart work. Deep breathing process is significantly positive in blood circulation and helps to condition in aerobic activities. Very effective yoga positions for thoracic breathing development are for example matsja asana, dhanur asana.

Clavicular breathing

In clavicular breathing gas changing in upper part of lungs and apexes of lungs is provided. From the view of mechanism this realization is same as in thoracic breathing. Only to the intercostal help also musculi skaleni. Normal people, who are not trained in breathing use these muscles only in a case of breath stress (asthmatic attack, asphyxia). Important benefit of the clavicular breathing is apexes of lungs purification, which is important for stamina of cellules in alveoli. Therefore this breathing presents an asthma prevention and prevention of inflammation in this area.

Connection of all three breathing types, full yoga breath

For the deep breathing and vital capacity promotion all three types of breathing are connected in so called full yoga breath. Benefits are in vital capacity restoring or development, calming effect and stress elimination. For the training and harmonizing of the
full yoga breath several exercises can be used. Very effective is for example movement sequence “mardjari”, called also “cat”. Very useful are also different exercises with movements of arms – in lying, sitting standing positions. Throwing up is inhalation, closing arms to the body is exhalation.

Optimal breathing is based on scientific principles of breathing in which there is optimal utilization of lung capacity. Optimal breathing exercises focus breathing training for complete breathing of lungs. These exercises give full stretch to lungs and thus they can inhale, hold and exhale in far better way than normal breathing pattern. Lung volume depends upon various factors like: age, sex, smoker versus non-smoker etc. Athletes are supposed to possess bigger lung capacity in comparison to non-athletes. Several factors affect lung volumes; some can be controlled and some cannot. Factors which are more associated with a person about his or her lung capacity are; being a male, a taller person, non-smoke, an athlete, and living at high altitude.

Breathing plays very significant role in creating of body awareness. In facts in therapy sessions, it is a common practice that client observes his/her breathing pattern to become more Self-aware. It is not merely the oxygen which people breathe. The science of breathing is much deeper. It is not merely taking air inside the body, but it is something related to vital force. This concept points to the role of vital energy which exists in Universe and in the process of appropriate breathing technique; it can be acquired inside the body.

There is a clear cut message that breathing delivers following health benefits

- Saves from infections
- Builds better body resistance
- Enhances stamina and vigour

In our previous interventions and researches with yoga techniques applications oriented on mental training of sportsmen, on concentration effects, etc. (Krejčí 2009; Tuli 2004) the breath exercises brought wide progress. In all cases they had harmonies effects on nervous and motor system. If muscles are in permanent contractions, the blood circulation is blocked, and this fact corresponds with psychic lability (Berger, Pargman & Weinberg, 2002, Maheshwarananda 2006, Pišot et al. 2008).

Thinking process and breathing process are in the close relationship. If sportsman is irritate, his breath becomes irregular, slight, loud and limited in up chest. If the sportsman is calm and relaxed, the breathing process is deep, slow, and regular with usage of whole breathing capacity (diaphragm breath). This principle is possible to use in such way, that
during the change of breathing it is possible to change emotions of sportsmen and harmonize their psyche. Especially the full yoga breath and “Nadi shodhan” (breathing through left and right nostril) present special techniques to calm and balance their nervous system. The breathing technique “Bhastrika” (quick changes of inhalations and exhalations, separately through left and right nostril and after through both nostrils) has a processes and it is very beneficial for vitality improving. Bhavanani, Madanmohan, Udupa (2003) reported that bhastrika has an important effect on central neural processing by studying its effect on reaction time. This is of applied value in situations requiring faster reactivity such as sports, machine operation, race driving etc. It may also be of value to train mentally sportsmen who have prolonged the reaction time.

Effects of breathing exercises improve muscle relaxation, remove muscle tiredness and venosus recovery, and develop hypoxia adaptability of tissues. Establishment of correct breath rhythm initiates gentle massage of abdomen organs. Effects are in decreasing of tension and stress, improvement of Self-confidence, development of concentration (see Figure 2).

<table>
<thead>
<tr>
<th>Physiology Changes during Stress and Relaxation</th>
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</thead>
<tbody>
<tr>
<td><strong>Stress</strong></td>
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<tr>
<td>Muscle tension</td>
</tr>
<tr>
<td>Pulse acceleration</td>
</tr>
<tr>
<td>Material Exchange</td>
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<td>Electrostatic induction</td>
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</tbody>
</table>

Figure 2 Physiology Changes during Stress and Relaxation

They are generally based on sound physiological principles, and though designed for more esoteric goals, can serve well for promoting relaxation, optimal lung function, emotional balance and self-regulation of various kinds. Fundamental principles of yogic breathing are discussed in the paper (e.g. diaphragmatic breathing, nasal versus mouth breathing, slow exhalation with pauses, smoothness and steadiness, self-observation of breathing).
Observing of own breathing is the base of relaxation and concentration techniques to reduce stress and mental tensions. Breathing observing also can help to self-esteem development and satisfaction establishment.

2 Objective (hypothesis, research questions)

The main objective of the presented study was to test psycho-training methods on base of yoga techniques which can demonstrate benefits of breathing exercises in sportsmen. A partial objective of measurements was to determine the individual indicators in different positions and exercises in junior female players of water polo.

Research question: Due to the intervention program participants are able to master proper breathing regulation, so that they can control the states of tension.

3 Methodology

3.1 Characteristics of sample

The research sample consisted of female players in water polo junior national team of the Czech Republic. The total number of participants was 10. They were in the adolescent age of 14 - 16 years. The average age was 14.9 years, 7 participants were 15 years old, 2 participants 14 years old and 1 participant 16 years old.

All participants were informed about the research method Biofeedback Shuhfried x-pert 2000, and also it was explained them process of testing in the POMS test. They were informed about the anonymity of the data obtained in the research study. In the beginning of the intervention program and diagnostic methods, according to age of participants, all parents were informed and they gave written consent for the investigation and intervention of child.

3.2 Research organization

In the study was used a survey research instrument Biofeedback Shuhfried x-pert 2000, and provided testing through the POMS test. Intervention program was realised in 12 weeks. In the first half (6 weeks) the intervention program was implemented once per week before training of water polo. In the second half (6 weeks) the intervention program was implemented twice per week before training of water polo. The entire program including measurements was conducted in the swimming pool area. For the evaluation of the results were used casuistic analyses and t-test.
3.3 Methods

Diagnostics

- **Measuring devices using Biofeedback Shuhfried x-pert 2000**

Several physiological changes were observed. On the body of the participants were attached modules of sensing breathing in the chest and abdomen, modules of sensing skin conductance, pulse, blood flow and body temperature. The data were transmitted to a computer wirelessly via blue-tooth. After testing the functionality of the device, first began measuring of participant in lying position with eyes open. After some time, he was instructed to close his eyes. Followed by 3 times movement sequence of breathing exercise in a kneeling position (Mardjari breath, the cat) and the end of the breathing exercises in a sitting position with voice resonance (chanting "Om").

- **Profile of Mood States -POMS**

The test was used in the Czech version (Stuchlíková, Man, Hagtvet 2005)

Statistics

Data were charted, analysed and evaluated using statistical methods t-test.

Intervention

Training units lasted 60 minutes. Each session started with a short lecture on yoga and its effects on the human body. This was followed by a short relaxation. After various yoga exercises (sarvahitaasanas) were included in the program. After that a short relaxation in lye position followed before breathing exercises and sitting position with voice resonance (chanting "Om").

In the end of sessions individual summary and recommendations were given (what should participants master at home and what awaits them in the next lesson). Each exercise was first explained and presented. When exercise was done a thorough inspection of performance of exercises to each participant separately, effects of each exercise were explained. Intervention program was implemented by the Yoga in Daily Life System (Maheshwarananda 2006), to ensure continuity of exercises.

Examples of psycho-training methods on base of yoga techniques:

*Inner silence, Senses and emotions control*

For every day it was recommended to provide a relaxation for several minutes and to observe the breathing process. Negative thoughts not only disturb one’s mind they also create
stress or alarm response in the body. In such case it was recommended to provide the full yoga breath technique with concentration on breathing process.

Self – confidence, faith

It is possible to provide visualization and analyse of a situation, to change it, to learn from it, to change behaviour and habits. This part leads to endure through and overcome all difficulties. Observe all problems like a spectator and solve them with detached mind. Before the analyse it is possible to practice technique “Nadi Shodhan” (literally "Cleaning of nerves") 10 - 20 times inhalation and exhalation through left and after right nostril. The exercise helps to be calm and sure with self.

Independence, freedom, purpose

This part leads to stand above things, to be independent. To cut the dependency on some kind of things, conflicts etc. It is very important in sportsmen to develop determination and purpose. Whatever may come, their aspiration should be directed solely to the goal. Very important is to be concentrated on goal and be patience and calm.

4 Results and discussions

The results show that after the intervention program have been found positive changes in emotional states of participants. Significant changes were analysed in the category "F – fatigue". Before starting of the program, the team had a very difficult training period in the national team and quite a lot of difficult matches. These facts certainly are reflected in the rating of the category "fatigue". Participants reported that yoga asanas, breathing exercises and relaxation helped them to re-gain strength and energy. Linked to this shift in category "V - vitality" where there has been a significant change in categories “zippy” and “full of life”. A positive significant shift was recorded also in the category "T - tension". Another positive significant shift was in the "A - anger". It can be concluded that after the yoga intervention program were analysed significant (p=0.05) positive changes in emotional indicators of participants. Relaxation and breathing techniques reduce mental tension and reduce stress and ultimately bring feelings of happiness and satisfaction. In the category "D - depression", the input and output values were no significant. This shows the balance of participants, but also a good social background and relationships in their sport environment.

In Biofeedback Shuhfried x-pert 2000 method diaphragmatic breathing, deep breathing and heart rate were analysed, but also respiratory rate, skin resistance, skin temperature, blood volume, heart rate range and sensing of body movement. All data were processed in Excel and statistically evaluated. The most interesting results were the first three
mentioned, which will be discussed. During relaxed breathing in supine with eyes open and then with eyes closed, it was found out that respiratory amplitude are balanced and gradually increasing. The largest value was achieved during the breathing exercise in a kneeling position (Mardjari breath, the cat). Unexpected the most consistent values were obtained during the breathing exercise in a sitting position with voice resonance (chanting "Om"), where respiratory wave is smooth and deepened. Breathing gradually deepened with the gradual release of the body. At the beginning when participant is lying on his back with his eyes open was below the depth of breathing too large values. After the instruction to close your eyes slowly breathing deepened. During the practicing of breathing movement sequence in a kneeling position “Mardjari–Cat” all participants reached high values. The exercise “Mardjari–Cat” was confirmed in all tested participants like deepest breathing, as well as the final breathing in sitting position with voice resonance (chanting "Om"). Just during breathing with chanting Om all participants reached during inhale maximal amplitudes.

In the beginning of the measurements in lying position the heart rate of participants was 60-100 beats/1min. Probably they were nervous. Gradually the heart rate has stabilized at an average of 72 beats/1min. When they changed position and started to provide the exercise “Mardjari – Cat” heart rate decreased. After that when they provided breathing in sitting position with voice resonance (chanting "Om") the heart rate decreased again. The lowest average measured value during exercise was 40 beats/1min. In Figure 3 and 4 are the values recorded during the entire exercise module that panned diaphragmatic breathing. The smallest value was in its infancy during supine with eyes open and then closed. During the exercise, cats diaphragmatic breathing even further while chanting Om is evident deep breath. The average value of diaphragmatic breathing during exercise in all participants was in maximum 15.6 and in minimum 7.11.

![Figure 3 Example of diaphragmatic breathing record in one of participants](image-url)
In the Figure 3 we can observe that regular diaphragmatic breathing during exercise Cat and chanting Om changed in deepens. The Figures 3 and 4 show that the highest values participants achieved just during the breathing exercise in a kneeling position (Mardjari - Cat) and in the sitting position with voice resonance (chanting "Om"). The mean of peak value was 5.41 cm.

**Figure 4** Example of breathing depth record in one of participants

**Figure 5** Example of Heart rate record in one of participants

**Figure 6** Example of Heart rate record in other of participants
In the Figures 5 and 6 we can observe similarity in recorded heart rate value participants. In both the Figures 5 and 6 is possible to analyse a reduction in heart rate during exercise Cats providing. This marker was repeated in all recorded heart rate in participants.

In normal resting subjects the heart rate is determined mainly by background vagal activity. The basal heart rate is therefore the function of parasympathetic system. In study, there was a significant decrease in basal heart rate in slow breathing group after three months of practice of slow breathing exercise. This indicates that the practice of slow breathing exercise improves vagal activity! It has been suggested that well-performed slow yogic breathing decreases sympathetic activity during altitude induced hypoxia, by increasing oxygenation without altering minute ventilation. In slow and deep breathing, oxygenation of blood increases without changing minute ventilation, as alveolar ventilation increases. It has been suggested earlier that slow breathing increases oxygen consumption that improves autonomic functions. Also slow type of breathing decreases sympathetic activity.

5 Conclusions

After completion of the intervention program was again carried out an expert examination. All participants have acquired full yogic breathing and mastered breath regulation according stress situation. The hypothesis was verified.

The defence and also the prevention adequate physical activity presents. Its intensive impact on peripheral part, it means on somatic system thanks the adequate movement regime is affected psychic condition and physical condition so much that can be absolved stress without any health risk. The base of health support is self-esteem. Predisposition of that is a self-understanding. Predisposition for the self-understanding is ability to relax. The conciseness becomes more objective and wide in the process of self-understanding. Self-understanding has a positive influence on the level of sport performance and skills.

The observed data and the results could serve to further work with youth. Yoga techniques of intervention program can help in various stages of sports training. They can be used not only for relaxation and relaxation, but also for practicing concentration during important matches. Sporting activities rather than focusing only on performance, but responsibly take care of all the components of health, it is imperative that the future will certainly return.
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RELATIONSHIP OF TEACHER AND STUDENT IN SCHOOL PHYSICAL EDUCATION

Jiří MICHAL

Abstract: The aim of our research is to determine the attitudes of students towards physical education and sports activities during the study on secondary school for secondary school students, as well as the identification of the main factors for the learning process of students attitudes to physical education and sport. As the main method of our research, we used the questionnaire method, as it is one of the most important methods of social research. We chose it with respect to the number of respondents. Although the strictness of teacher and exactly defined the conditions for students to influence their attitudes. The strictness of the teacher is a positive factor. Students with strict teachers show positive attitudes to sport and physical education as students in which the teacher is not strict.

Keywords: Physical Education, attitudes of students towards PE, teachers strictness, physical activity.

1 Introduction

In terms of creating the foundations for the implementation of physical activity of the individual throughout the life is crucial age children and youth. During this period the foundations for lifetime physical activity, creates a positive relationship to the activities of a recreational character, their strong integration into the lifestyle, attitudes and motives of adequate procedures.

According Bebčáková et al. (2002) Physical education is its focus specific compulsory subject because it focuses on the physical, functional, physical, psychological and intellectual improvement of students. Students do not receive only theoretical and practical education from selected branches of physical education and sport, but one of its goals is to stimulate lifetime bio-psychosocial effective exercise regimen and prevention of civilization diseases and the development and formation of positive attitudes of students towards sports activities and physical education. In this complex system of creating attitudes, in which many factors act on students should just be a teacher as a major positive agent who shows students the right
way of physical activities and not just during PE classes, but also in the everyday life of
students and herewith that he will offer quality, interesting and varied physical education
lessons. Creating a positive attitude towards physical education, to physical activities is also
important due to the students actively involved in the process of physical education not just
during PE classes but also beyond.

Improvement of the teaching process in physical education is not possible without
knowledge of objective empirical knowledge acquired from subject directly affected - from
teacher and pupil (Strešková, 2001). The issue of students attitudes of primary school to
physical education and sport are dedicated to Michal (2001, 2003, 2005, 2007), Adamčák -
Nemec (2011), Bartik (2005, 2009). Between the research in state of detection in secondary
school for students to physical education and physical activities are mainly the work of
Sigmund-Frömela-Sigmund (2003), Slezak (2009), Michal (2009) and other authors.

2 Objective

The aim of our research is to determine the attitudes of students towards physical
education and sports activities during the study on secondary school for secondary school
students, as well as the identification of the main factors for the learning process of students
attitudes to physical education and sport.

3 Methodology

In Slovakia, we realize our research in 15 secondary schools. Questionnaire was
completed by 852 students, of which 12 students did not complete the questionnaires
correctly. Correctly completed the questionnaire 840 pupils of whom 231 were boys and 509
girls. As the main method of our research, we used the questionnaire method, as it is one of
the most important methods of social research. We chose it with respect to the number of
respondents. The evaluation of the data we use basic logical method, that is, sorting, analysis,
synthesis, comparison (comparison), induction, deduction and mathematical - statistical
methods (calculation of the arithmetic mean, chi-square, Wilcoxon double test).

4 Interpretation of the results of research

The first of the major actors of the teaching process we are interested in the impact on
teacher attitudes of students. We know that the teacher can motivate the students. He may be a
model for them, or vice versa. We wanted to find out, if there is any relationship between
how teacher act, when he praises students when he is chummy, or strict and attitudes of
students towards physical education and sports. Up to 41.20% students confirmed that a teacher of physical education and sport is popular. With 58.62% students, the teacher is chummy. In this case, we were interested in the relationship between if the teacher is sociable and popular. In this case, we confirmed that friendly teacher is popular in 88.23%.

We examined attitudes of students in case if the teacher praises students in lessons. In 590 cases (49.04%), or nearly half of the surveyed students teacher praises students in classes. These students had 43.21% very positive attitude, positive attitude 27.95% and 20.31% indifferent attitude. Only 11% of teachers praised students and negative or very negative attitudes (Figure 1).

If the teacher does not praise students, positive attitudes are less negative, and above all highly negative attitudes are higher (9.89% and 115.62%). It was confirmed to us then, logically resulting from practice in teacher praised the students are more positive attitudes toward physical education and sports than students whose teachers does not praise. In contrast with does not praised students are more negative attitudes toward physical education and sports.

As in the previous case, and now we have investigated whether the approach is related to physical education and sport with chummy teacher to students. In the chummy approach the teacher of physical education and sports to students there are more positive attitudes than otherwise (Figure 2). When attitudes are more negative as in case where the teacher is chummy to students.
Furthermore, we wanted to know the influence to attitudes of students towards sports and physical education if teacher is strict. In this case there was no significant difference between attitudes of physical education and sport for students whose teacher is strict and for those where teacher is not strict (Figure 3). The only significant difference is in a very positive attitude. This is when the teacher is not strict 41.12% and the 31.52% is strict. In this case, strictness of the teacher is not demonstrating factor that greatly affects attitudes in a positive or negative direction of students to physical education and sport.
Study Americans Luke - Sinclair (1991) examined the major factors affecting attitudes to 488 adolescent to school physical education. The results identified five major factors (content, teacher, class atmosphere, and the inclusion of a student). The teacher is an important determinant. For girls, the teacher was regarded as an important factor in the choice of school physical education. The boys and girls reported that they appreciate teachers whom are with chummy approach who praising students for their achievements in lessons and not only play games, but they can motivate them to action. Students need challenge. In this study came to much the same result as we do in our research. The attitudes of pupils per teacher depend on how the teacher acts. The teacher has in many cases difficult task. In case that the conditions for the teaching of physical education and sport are not ideal, or in some cases inadequate, teacher must uses his own creativity. Not only from our research, but the research of other authors, the teacher is very important factor in relation to physical education and sport. Stated by Bartík (2009) teacher must have thought through each lesson, so that students did not have time to stand without noticing an environment, which involves lesson of physical education is not standard. Its mission is to develop in students a positive attitude towards physical culture, so that the relationship spilled over into everyday life outside of school and does sport in their free time. If he's successful, it means that his lessons are interesting and positive effect persists long after finishing school.

5 Conclusions

Furthermore, we found that student attitudes depend on access teacher to students. If the teacher is chummy to students there is a prevailing positive attitude to physical education and sport. If a teacher during PE and sport education praises students for achievement it affects their attitudes toward physical education and sports. Although the strictness of teacher and exactly defined the conditions for students to influence their attitudes. The strictness of the teacher is a positive factor. Students with strict teachers show positive attitudes to sport and physical education as students in which the teacher is not strict.

Classmates are another factor that influences the lesson of physical education and sports for the student. Classmates can motivate you to perform better, the lesson of physical education and sport to develop cooperation and camaraderie. As we examined our students we find out that in physical education and sports there is very positive attitude, the reason is that it will not affect students and demotivate inactivity and untrained of schoolmates.
Recommendations for practice

Emphasized from an early age the significance of physical sporting activities so that students perceived the important role of sport in the life of a man and take the movement as an integral part of their life.

For both sexes is in physical sports activities important to emphasize the fun and theme "I do sports because I enjoy it" it clearly plays the most important role in the participation of youth in sports activities.

Motivate youth ranking of their favorite sports activities.

More involved young people in the movement of sporting activities with a wide range of sports clubs that will meet the interests of students.

Due to the structure of the popularity of youth sports interests would be appropriate to consider more subsidies movement-hour sports activities which, according to our findings, popular as hockey, snowboard, aerobics, inline skating, cycling, dancing to teach future teachers of physical education and sport.

6 References


7 Contacts
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CONTEXT OF THE FUNDAMENTAL KNOWLEDGE ABOUT 
DIURNAL RHYTHMS WITH MENTAL HEALTH OF ADOLESCENTS

Aska KONDO, Hitomi TAKEUCHI, Tetsuo HARADA

Abstract: The objective of the study was to assess which of three types of lectures are most effective for shifting adolescents to morning-type. Control group to which no lectures were given were observed in parallel conditions. Together in the study 120 adolescents (60 girls, 60 boys) participated, which attended affiliated junior high school. The effects of the class were estimated by an integrated questionnaire on whether the adolescents could participate in the 7 items after the class and a questionnaire on diurnal rhythms (MEQ Torsvall and Åkerstedt, 1980). The questionnaires were administered twice: just before and 1 month after the class. One-by-one comparison of before-class data to after-class one showed that significantly higher increase in Morning-Evening scores and also higher decrease in the frequency to be depressed in the Type 3 class students, than that in the other three classes (P<0.05 in both). Combination of classes of fundamental knowledge about the diurnal rhythms and sleep habits might be effective for preventing of the actual Japanese adolescents shifting to evening-type and for the mental health promotion of the adolescents.

Key words: adolescents, sleep habits; circadian preferences; mental health; intervention class; circadian typology, fundamental knowledge of wellness life style.

1 Introduction

Epidemiological studies performed in 1996-2007 on diurnal rhythm and sleep habits of Japanese junior high school students and University students located in Kochi city (33N) reported that “extreme evening-typed“ students newly appeared in part in the last several years in accompanying with 24h commercialization society going on (Harada & Takeuchi, 2001; Harada, 2008). Extremely evening-typed life promotes not only the shortage of sleep hours and lower sleep quality but also the worse mental health, e.g. states of angry, irritation, depression etc. (Takeuchi et al., 2002; Harada, 2004). Especially for female adolescents, extremely evening-typed life leads to irregular menstruation cycle, severe pain in accompanying with menstruation and severe PMS (Premenstrual Syndrome) (Takeuchi et al.,
2005). Therefore, extremely evening-typed life by adolescents seems to be dangerous for normal development of reproductive system and future reproductive function for female adolescents. In the current severe situation for keeping sleep, mental and reproductive functions, some intervention should be crucial for Japanese female junior high school students.

The intervention which is thought to be most effective to keep their health is the education in the school class and could promote them to control their own environmental factors leading to morning-typed life style by themselves. This study tries to evaluate the effectiveness of newly developed teaching materials and the new lecture in the class to promote sleep and mental health in the actual testing them and epidemiological evaluation.

Battery of Harada et al. (2008) for morning-type shifting includes 10 detailed items. This battery became a base, used in transformation form, for the intervention applications during the presented study.

The named battery includes totally 10 items:

1. Exposure to sunlight in the early morning;
2. Avoidance of light from fluorescent lamp in the evening;
3. Taking breakfast at regular time;
4. Nutritionally rich breakfast including Tryptophan and Vitamin B6;
5. Exposure to sunlight after taking breakfast;
6. Don’t go to the shops (convenience store, rental video shop, internet café and so on) or restaurant opened after the sunset;
7. Home study early in the morning;
8. Avoidance of using mobile phone in the evening and night;
9. Avoidance of the usage of TV-game in the evening and night;
10. Avoidance of the watching TV in the evening and night.

In each detailed item, every 5 days of participation counts 1 index for the participation value. Therefore, the index of the participation value distributes from 0 to 50 (5 indices x 10 detailed items).

2 Objective, research questions

The objective of the study was to assess which of three types of lecture will be verified as the most effective for shifting of adolescents to morning-type.
As the main research question we proposed that: “Combination of classes on fundamental knowledge of diurnal rhythms and sleep will be shown as most effective for the shift to morning-type”.

3 Methods

3.1 Characteristics of samples
Together in the study 120 adolescents (60 girls, 60 boys) participated, which attended affiliated junior high school in the age 14-15.

3.2 Project characteristics, intervention method description
The intervention was realised in affiliated junior high school, in the time of last two month of the school year, before summer holidays. Follow three types of intervention lectures were applied during the presented research study:

Type 1: Continuous 2 classes (50min x 2) of lecture to explain the three reasons why morning-type life promotes high marks in the subjects: (1) Sufficient REM sleep which morning-type can get, leads to the fixation of new memories, (2) Well-coupling of the two oscillators in morning-type can promote better mental health, (3) Tryptophan taken from rich breakfast is transferred to serotonin (influence on the ability to keep concentration).

Type 2: Continuous 2 classes (50min x 2) of lectures about 7 transformed items from the original Battery of Harada et al. (2008):
- Exposure to sunlight before and after taking the breakfast;
- Avoidance of light from fluorescent lamp in the evening;
- Taking breakfast at regular time;
- Nutritionally rich breakfast including Tryptophan and Vitamin B6;
- Don’t go to the shops (convenience store, rental video shop, internet café and so on) or restaurant opened after the sunset;
- Home study early in the morning;
- Avoidance of using Visual Digital Terminal (TV-game) and watching TV at night.

Type 3: Continuous of 1 class of lecture to explain the three reasons and continuous another 1 class of lecture to recommend the 7 items (combination of lectures).
Control group to which no lectures were given were observed in parallel conditions.
Effects of the class were estimated by an integrated questionnaire on whether the adolescents could participate in the 7 items after the class and a questionnaire on diurnal rhythms (MEQ Torsvall and Åkerstedt (1980) version, sleep habits, ID No. etc.). Most of the questionnaire was administered twice: just before and 1 month after the class. One-by-one comparison of before-class data to after-class one showed that significantly higher increase in M-E scores and also higher decrease in the frequency to be depressed in Type 3 class students than that in the other three classes (P<0.05 in both). The class was given to 120 adolescents (60 girls, 60 boys) who attended affiliated junior high school, Faculty of Education, Kochi University, located at Kochi (33 degree N), Japan in June and July, 2009.

3.3 Statistical analysis

The questionnaire data were statistically analysed with SPSS 12.0 statistical software. The analysis on E-E scores, sleep times, wake-up times and sleep duration was standardized to non-parametric tests of Mann-Whitney U-test and Kruskal-Wallis-test, as such variables did not always show normal distribution. The other items of analysis which were measured along an ordinal scale were subject to chi-square tests and Fisher’s test meta-analysis.

4 Results and discussions

One by-one individual comparison of before-class data to after-class one showed that significantly higher increase in M-E scores and also higher decrease in the frequency to be depressed were shown in Type 3 class students than that in the other three classes (P<0.05 in both, see Table 1). The knowledge on “Morningness-Eveningness” was newly fixed in more students in Types 2 and 3 groups than those in Types 1 and 4 (see Table 1).

<table>
<thead>
<tr>
<th>Type</th>
<th>Change in M-E scores</th>
<th>Change in the knowledge on M-E</th>
<th>Change in depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.45 (2.45)</td>
<td>0.21 (0.64)</td>
<td>-0.03 (0.91)</td>
</tr>
<tr>
<td>2</td>
<td>0.47 (2.35)</td>
<td>0.39 (0.50)</td>
<td>0.15 (0.71)</td>
</tr>
<tr>
<td>3</td>
<td>1.88 (3.38)</td>
<td>0.31 (0.67)</td>
<td>-0.32 (0.96)</td>
</tr>
<tr>
<td>4</td>
<td>-0.11 (2.56)</td>
<td>0.26 (0.44)</td>
<td>-0.26 (0.67)</td>
</tr>
</tbody>
</table>

Kruskal-Wallis test:

<table>
<thead>
<tr>
<th></th>
<th>X2-value</th>
<th>df</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in M-E</td>
<td>8.934</td>
<td>3</td>
<td>0.03</td>
</tr>
<tr>
<td>Change in the</td>
<td>15.352</td>
<td>6</td>
<td>0.018</td>
</tr>
<tr>
<td>knowledge on M-E</td>
<td>24.663</td>
<td>15</td>
<td>0.055</td>
</tr>
</tbody>
</table>

Table 1 Change in several parameters shown by students in three types intervention class

Kruskal-Wallis test:
Table 2 Distribution of the participation value in the intervention program (Types 1-4)

<table>
<thead>
<tr>
<th>Participation value</th>
<th>N in total (%)</th>
<th>Type 1(%)</th>
<th>Type 2(%)</th>
<th>Type 3(%)</th>
<th>Type 4(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>11(8.6)</td>
<td>1(3.0)</td>
<td>3(11.1)</td>
<td>6(20.7)</td>
<td>1(3.7)</td>
</tr>
<tr>
<td>1-10</td>
<td>19(16.2)</td>
<td>3(8.8)</td>
<td>1(3.7)</td>
<td>2(6.9)</td>
<td>2(7.4)</td>
</tr>
<tr>
<td>11-20</td>
<td>34(29.0)</td>
<td>10(29.4)</td>
<td>9(33.3)</td>
<td>6(20.7)</td>
<td>9(33.3)</td>
</tr>
<tr>
<td>21-30</td>
<td>34(29.0)</td>
<td>10(29.4)</td>
<td>9(33.3)</td>
<td>8(27.6)</td>
<td>7(25.9)</td>
</tr>
<tr>
<td>31-40</td>
<td>20(17.1)</td>
<td>7(20.6)</td>
<td>3(11.1)</td>
<td>4(13.8)</td>
<td>6(22.2)</td>
</tr>
<tr>
<td>41-50</td>
<td>10(8.5)</td>
<td>3(8.8)</td>
<td>2(7.5)</td>
<td>3(10.3)</td>
<td>2(7.4)</td>
</tr>
</tbody>
</table>

Kruskal-Wallis test: $\chi^2$-value = 2.497; df=3; $P=0.476$

There were no significant differences in the participation degree index among students of Types 1-4 (see Table 2). Negative correlation between the participation degree index and wake-up time ($r=0.161$, $P=0.086$) and sleep hours duration ($r=0.238$, $P=0.011$, see Figure 1) was shown.

One-by-one comparison of before-class data to after-class one showed that significantly higher increase in M-E scores and also higher decrease in the frequency to be depressed in Type 3 class students than that in the other three classes ($P<0.05$ in both). Combination of classes on fundamental knowledge and detailed techniques to promote health of diurnal rhythms and sleep might be effective for preventing the shift of Japanese adolescents to evening-type and promoting sleep and mental health. However, there are no difference in the participation index between Type 3 students and the other 3 Types ones. Probably, not the “quantity” of participation but some psychological “quality” of that might be higher in the Type 3 students than the other ones.

5 Conclusions

The goal of the research study was realised successfully. It was verified the main research question: “Combination of classes on fundamental knowledge of diurnal rhythms and sleep will be shown as most effective for the shift to morning-type”. From the presented and discussed results we can conclude that for mental health promotion and for sleep habits optimizing in adolescence age just the combination of classes of fundamental knowledge might be effective for preventing of the shift of Japanese adolescents to the evening-type.

Acknowledgment

We would like to thank all the participants of this intervention project who are attending Affiliated Junior High School to Faculty of Education, Kochi University and all teaching staff of this school for the participation and all kinds of consideration for smooth promoting of this intervention study. The presented research study was supported by
Financial Support for Promotion of Academic Research from the President (Prof. Yusuke Sagara) to Tetsuo Harada.

6 References


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Research on the Demand for Services of Wellness in the Czech Republic

Richard NEUWIRTH

Abstract: In 2011 the research was implemented in the area of the demand for services of wellness for the purpose of the primary description of this market. The goal was to achieve a basic description of the market, the potential client and business opportunities related to the development of a set of products, today known as wellness services. Research is focused in particular on the following areas: the mix of the most popular sports, a favorite way of spending free time, popular leisure partners interested in non sporting (spiritual) activities, evaluation of the equipment of wellness facilities, establishments and last but not least also on the information concerning the understanding of concept of wellness by the public.

Key words: area of interest of sports, the idea of customers about prices, structure of sold programs, quality and equipments of facilities operations, the concept of wellness and its understanding by the public.

1 Introduction

Approximately since 2005, it occurs in one of the fields of services, specifically in the field of spending leisure time for development of the market with an offer of how to spend leisure time, which is called wellness. On the one side, the offer is focused on providing a variety of more or less quality products related to healthy eating, weight loss or for example, strengthening the immune system. Furthermore, the offered menu is focused on the files of products and ideas, which are trying to change eating habits and attitudes towards so called healthy lifestyle. On the menu, which is in some cases consciously thought out and, therefore, in a way conceptual, in other cases it is only about the efforts of the (often at any cost) to sell to the customer any value regardless of its benefit. The last areas of the menu is then to offer quite a comprehensive concept of lifestyle (see definition of wellness of the WHO), whose acceptance of a particular customer is to change habits and to a complete re-evaluation of the views of your own responsibility for personal health and total physical and mental condition (comp. Hejma, 2011, Nigrinová, 2011).
For this reason in the spring of 2011 research of demand is exercised, whose aim was to gather information about customers, analyze and describe the demand so as one to be able to understand this side of the market in a qualified way, research has been then fundamental and acquired data should represent the initial character. It was an effort to reflect the widest possible range of society and to obtain supporting documents for more detailed marketing analysis already (comp. Neuwirth, 2011, 2012).

2 Research and its contents

The intention to carry out research in the field of wellness services demand originated in the years 2005-2007, when the menu of the wellness industry appeared and when the professional public begins seriously to discuss its contents.

In the above times in it was, of course, known to the client will come from better financially situated social groups in society, that will have a rather higher education and that will be considered in the context of his age and the physical conditions necessary for effective work deployment. It is about changing the way of life and on the prevention against civilization diseases and so on. For the healthy functioning of the scope it is necessary to know the specific indicators used for marketing activities, such as the potential number of all customers, their division into interest groups, the level of segmentation, the willingness to pay for the purchased services as well as knowledge of the prices for those products. With regard to the divergence of opinions on the meaning of these services, you must also know social attitudes to sports activities, health prevention as well as to willingness to change the overall way of life, so that all was ultimately beneficial for the personality and for society as a whole.

Preparation of the research to determine the areas of interests

In the first stage it was necessary to establish the area of interests, in which the research will be of concern.

At first demographic and social information was considered. For the supply side it is important, in particular, the knowledge of age of clients, gender in different types (sports, medical or recreational) packages of services. From the operational and technical reasons, it is then necessary to know family situation of clients within the meaning of the number of members of the household, where it is necessary to ensure, for example, a qualified care for underage children of families, purchasing long term (weekly) programs. Based on the discussion among theorists, speaking about the suitability of wellness for children. Even though sports activities are suitable for the children's age, it is about the creation of the appropriate conditions for relaxing for the parents, who may spend part of a day without
children. Part of the professional public may have the opinion that children in the wellness service and their presence disturb the progress of some activities.

The second group of research interests is the range of the structure of sports. Opinions on individual activities, their proportional representation in the short program, eg. one afternoon, and long, for example the whole week. It depends, therefore, on the customer what he prefers, what sort of services he actually expected from professionally-oriented establishments. It can be assumed that they will be found some types of customer groups with the same or similar requirements.

A third, an equally important group information relates to ideas about the prices that customers are willing to pay for one of commonly known unit of services provided. Under the terms of the unit we have in mind, for example, the hour of the exercise in the gym or swim hour, etc. The fundamental problem lies in the fact that a significant part of the operations is not generating any profit. This is one of the reasons why the existing establishments are oriented, in particular, on financially better situated clientele. If, however, available wellness is not becoming a mass activity this scope of activities probably won't have a chance for full development.

The fourth research area of interest related to the issue of structure of the whole programs that is subject to selling. The discussion is always led by what the ratio should be represented by sporting, medical, mental activity, and what role plays the customer's personal beliefs and what he himself puts as a target. The ideal goal is, of course, a change of lifestyle in favor of self awareness of the value of their own personality and conscious care for its all-round development.

Finally, the fifth area concerns the customer views and experiences with the quality of operations as such. With regard to the evaluation of the internal fittings, quality and expertise of the staff and the overall impression of the establishment as a whole raises. It is currently available on the market in large quantities of different surface materials, promoting the possibility of improving interior design within the meaning of the so-called. the physical evidence. It is, therefore, appropriate to determine the extent to which the customer's perception of the interior and that does not affect the position of the customers in terms of whether inadequate interior has an influence on revisiting the premises.

Next, the sixth area, is an important source of information about any relationship between the average or most only occurring survey results data between the above mentioned areas of information.
An implementation of the research

Preparation of the research took place in the course of the year 2010 and its implementation phase then occurred in the months of January to March 2011. Here it should be stressed that all the price data were collected at the beginning of 2011, and in their present interpretation it is necessary to take into account the relevant inflation.

Selection and ordering questions

Selection and ordering of questions was the following:

Ad 1: as regards the demographic questions, these questions are not significantly different from normal habits that are being described in the literature. Under the existing conditions, the typical customer had already been in a family with older grown out children and his age should reach more than 40 years.

Ad 2. The questions here are the following: How the activities of the respondent look like here? You choose the answer by yourself. Four options are available, and each of the them also giving the frequency of operation for a month. The response should indicate a sporting or un sporting respondents and focus area of their interests in their spare time. Then there is also a checking question on personal experience with . It's not about the survey area in which a customer is actively indulging, but only about the possible knowledge or awareness of their own during a particular service. In the questionnaire it is included as well as the checking questions, in which the respondent assessed marks from 1 till 5 concerning the popularity of selected activities, which may bring a picture of the validity of information from individual respondents.

Ad 3. The section is then added to the query what price the customer is willing to pay. This information can serve as a guide for the supply side, when compared to the existing reality of ideas and can give information about the marketability of individual products. The group is closed with the question what are the most common combinations of pairs of activities, which are the most popular. The response should be used to find the optimum for the consumer (see Chapter 4). In this group you can also query on experience with prices of wellness weekends and willingness to pay for such actions.

Ad 4. There are asked the following questions: how would you spend a wellness weekend, whether alone, with a partner, friends, or family. With regard to the possibility of adapting the nature of operation of the wishes of the clients, so that it could be granted to different groups of customers. Here we can search relations such as an age of the group or the number of members of the household of a respondent. Otherwise, it is here to be examined membership
preferences that tend to random purchases of sporting activities for example, the use of long-term options without discounts, etc.

Ad 5. In this section it is recognized the quality and equipment of establishments based on customer feedback. The customer evaluates each of the selected fact with marks from 1 till 5 and gives the information to operators about how to improve their offerings in the area of equipment as well as in the area of competence of the employees. The answer may also serve as a basis for the establishment of recommendations for the practice at the end of this text.

Ad 6. In this area (relationships between groups of questions) it was not possible to advance closer to describe because it should be based on the results of the entire poll, and, therefore, it is not possible to determine in advance what the relationship between the different areas of importance and what the connection should be negligible.

Ad 7. The query group includes a communication on the concept of the respondents, which is about as such. Here it is presented the five answer options on the basis of which we can conclude on a specific point of view of the demand on wellness as a concept. It can be expected that the respondents who have some degree of knowledge about the issues, they will also be asked to make better use of each species supplement (nutritional supplements), and whether this group of customers is also interested in the intellectual area of wellness, about how you can change your own way of life and it also has its explanatory value. With regard to the query on the scopes of interest in the area of social sciences and the query on the eventual inclusion of the requirement of medical consultations relating to, for example, overweight, physical condition etc.

Overall, therefore, the initial survey data, which were not at the time available in the Czech Republic and for which the professional public, while discussing opinions, cannot rely on and cannot rely on a specific minimum of quantitative data either.

3 Characteristics of a file

Quantitative evaluation of the data was carried out in the breakdown by areas of questions, therefore, that due to the large number of questions we cannot pay them attention separately. Therefore, these questions will be discussed in the framework of individual groups. The area was selected at first as demographic.

Gender: for the research there was, therefore, used data from a total of 302 respondents, of which we can see 194 women (64.2 %) and 108 men (35.8 %). Greater representation of women was due to selection where the interviewers themselves in women were more interested in asking to attend.
The number of members of the household: the respondents most frequently come from households of four members - 108 answer (35.8%). The average number of members is 3.22 members. According to the indicators of the relative cumulative frequency is the representation of a maximum of four households and smaller is 93 percent, which is the confirmation of the success of the chosen methods of selection of respondents.

The average age of respondents is 35.88 years and median and standard deviation = 35.9.6, which corresponds to a higher average number of household members, than the Czech Statistical Office anticipates. Standard deviation rather confirms the fact that the centre of gravity of the file varies in the range of 25-45 years. In this age of children living with their parents and, therefore, it is a measure of the average number of household members. As regards the layout of the structure of the age intervals the most numerous are the three age groups which may be crucial for research because it consists of a total of 88.4 % of the total sample. Due to the fact that the greatest interest from operators is a group at the age of 41-50 years old and this group is represented by only 19.6 %, this indicator will be used in connection with other selected values only as a guide. As the main group will be selected category age 31-40 years or will be used in the whole sample of respondents.

As regards the information about the profession to the extent that it is diversified, it could not be included in the research. It is worth mentioning just a group of office workers, whose share amounts to 26 % of those polled. Only this group will be used to track the relationships between the different areas of interest. In the case of the field, in which respondents are working, the attention will be paid to the areas of banking, which is represented by 12.2 % and the area of services involving 29.6 %. The rest of the sample will be conceived as the other scopes.

The size of the municipality in which the respondents live, there is then an additional indication that determines the layout of the clients in relation to the structure of the sample, which should include the widest possible spectrum of the public.

The structure of the respondents according to the size of the municipality

- The village into one of the thousands of residents - 10.7 %
- 1 000 – 10 000 inhabitants - 19.6 %
- 10 000-50 000 inhabitants -18.9 %
- 50 000 – 100 000 inhabitants - 31.3 %
- Over 100 000 of the population- 1.4 %
Prague -19.2%

Representation of respondents according to their structure does not match the current structure of the population directly in the Czech Republic declared by the Czech statistical Office, but includes the layout of the surveyed in an acceptable manner so that they can be fulfilled the research tasks.

3.1 Organization of the research

The preparatory phase has been completed in the month of January 2011. Subsequently, an own data collection occurred, which was carried out in the following manner. It was printed over 500 custom questionnaire forms and those forms were handed out to the students at the Higher Technical School of the Academy of Physical Education Palestra sport s.r.o. and at the College of Physical Education and Sport Palestra, Ltd. Data collection took place in an atmosphere of peace and cooperation, and so data obtained from this perspective could be regarded as a fully fledged.

After the end of the data collection, which took place at the beginning of the month of March, the following facts have been identified: as a total of 318 questionnaires had been returned, 16 of them were scrapped as incomplete or filled with extraordinary unscrupulous access to the respondent's evidence defects. A total of 302 pieces included in the research was the 39 specimens in electronic form, and the remaining 265 in the form printed.

In the following weeks, the results of the investigation were then transcribed into a spreadsheet program for MS-Office Excel 2007 to allow this data to enter the machine in a way to handle them and then to use them as information for research. Were thus obtained responses from 302 respondents to a spreadsheet program. Nineteen thousand data as verbal, numeric character had been obtained.

3.2 Evaluation of the acquired data.

The main part of the research was oriented to obtain data of the quantitative character in nature and in terms of the entire research was intended to serve as the core. In the context of the above discussion it leads to the professional operators estimates about what activities are most commonly purchased, but demand on a specific numeric indication of quantity and composition are rather estimated. The quantification of these estimates may be of importance for the planning of future calculations and estimates of economic performance.
In the next stage it was the intention to obtain data of a qualitative nature, especially in the area of relations between different groups of responses, which in the context of basic research can be used only as an additional characteristic feature.

4 The resulting data

The structure of sports

Whereas on the question "what activities you are dealing with " customers choose the answers themselves, and within the framework of the open questions, it happened that the answers were very different. Worth mentioning are the only sports, such as:

In the first scenario where a total of 267 respondents replied it was swimming in the amount of 10.3 %, cycling and aerobics of 5.0 % and 3.3 % respectively. In the second variant (208 relevant respondents) then 6.3 % swimming (which preceded the other answer in the first variant, cycling and reading 6 % and respectively 4.6 %). In the third variant it had already just to 121 replied and in the fourth to up 48 records. After manual removing answers of disabled people concerning disposal activities, it will be interesting how many times on average, respondents in the month devoted to their activities, in the first, second, third and fourth variant, and together.

<table>
<thead>
<tr>
<th>Table 1 How respondents like the respective activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 1</td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>Activity</td>
</tr>
<tr>
<td>Swimming</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Cycling</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Aerobic</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

From the table it can be seen that in the first (probably more popular) variant of physical activities, they devote to questioning on average almost 9 times per month and the second variant, an average of almost 7 times. In the third variant, it is on average 8 times and 9 times in the fourth. As regards the operation of a greater number of one activity per month for the fourth variant, educators from the sports field believe that the man who runs the sports as the subject of his continuous interest can have a favorite activity, and lists them in the first place.
But they are not so often operated in less popular activities and are more affordable. Those show up in the end, however, it is operated by multiple times.

On the basis of the above, you can also say that we can distinguish the interviewed persons according to how much the kinds of activities appear. This question, however, has not been in the focus of research.

In the case of the sum of the variations, however, is the fact that some sports may occur in the lower proportional representation but in all variations, and other activities are not particularly in the last two variants at all represented the totals of variants then exhibit already more pronounced results.

Will be taken into account the sporting activities, the frequency of any number of data answered is greater than 5 %, therefore, to be able to evaluate the information with at least the minimum importance. In other words, a total of 271 to the respective respondents were taken into account, "267" sports data and their corresponding 108 communication on ' non sporting-activities", i.e. non-sporting activities of the respondents, who were included in the selection of sports activities. The rest of the data on both the types of activities are too numerous and in terms of the entire sample, as well as the minimum that could be anything from them statistically significant.

![Figure 1 Structure of selected sports activities](image)

From the Figure 1, we see that the three activities are represented here with a share of at least 15 % on all selected activities. They could, therefore, be a thematic focus, especially for the establishment of a hotel type and as an activity for the device in the field of balneology. Other tracked activities here are suitable for "extra-urban" companies, and exercises in the
gym and fitness centers can serve as the supporting activities for the establishment of urban character.

In summary, if we take all the sports and unsportsmanlike activities, respondents expressed a ratio of 60 : 40 percent of the total. From a statistical point of view then, no significant differences were found between men and women for the data, which were the results of the research included (comp. Cathala, 2007).

How to spent wellness weekends and relaxing part of the day

In this part of the research focused on the ways that customers prefer in the case that are dedicated to purchased activities selected from the perspective of the needs of the service area. As a guide for the operator with which groups of customers will work, what kind of catering and accommodation capacity could, within its thematic focus for customers to be built and what kind of personnel with regard to its use seems to be optimal.

The number of services in a single purchase

In the case of the query to the number of purchased services suddenly customers respond that they prefer to require rather a separate one service in one purchase. About the specific package (which can be assumed) they are interested in the case of entire weekends. However, this interest is generally lower.

- One service was purchased by 64.4 % of the surveyed
- Multiple services then were purchased by 34.1 % of the surveyed
- Both variants admit only 1.5 % of the surveyed.

Data between men and women are not significantly different, and even in the age structure of the respondents we could not find a greater diversity of opinion on the amount of services purchased. Then it opens space to quote in the sense that it is possible and desirable to operate on your clients so that even within parts of the days devoted to relaxation it is possible to to buy more services at the same time within the experts recommended groups, mutually interdependent activities with positive physiological impact.

Furthermore, it has been revealed that there has been no serious interest in membership in the interested clubs existing in the individual premises of wellness centre.

- 22 % of the respondents preferred membership
- Membership is not preferred by 88 % of respondents.
This view is held in the same extent by women as well as by men. You can detect a preference for ages 21-30 years, in the case of women, 32 % and 27 % in the case of men. With age there is a tendency to especially for women membership linearly decreasing, so all such as speaking rather in favour of the rotation of the establishments and activities (comp. Nigrinová, 2011).

**Partners in the consumption of purchased services**

The idea of the company's partners which represents the customer's optimal wellness weekend can give guidance to operators how to conceive the establishment to comply with, if possible, the most commonly occurring groups of customers. The results of the poll on the most favourable partner – the partnership is illustrated by the Figure 2.

![Figure 2](image)

**Figure 2 Structure of the most favourable partners for wellness weekend**

There were two variants of answers, in total 604. They are expressed in 311 cases, which is 54.1 % of the use of the opportunity to respond. The largest group of respondents is seeing the partner as the optimal partner. This fact offers operators the ability to both building double accommodation facilities and space for families that can be both useful, and also benefit from the marketing point of view and to provide care for children that you can employ other (often paid) activities where there is some procedures or sporting activities and desirable participation only of parents. Accommodation for families with children can also be used for groups of friends.
Whereas that group with a greater number of members than the two groups compared with them one and two are roughly steady representation that shows the need to either focus on customers from multi-member groups or on the balanced distribution of the different types of accommodation.

Further the attitude of repondents it was examined for group or individual sports activities, which can add the most commonly requested information about the partnership. The inquiry has been focused on the popularity of the collective or individual sports.

The popularity of collective sports

- On a total of 286 respondents replied to the query
- Team sports are popular with 57.5 % of the surveyed
- Individual sports are popular with 39.2 % of those polled
- The popularity of both activities is 3.1 % of surveyed.

There is no difference among the respondents in the evaluation for men and women, and age categories do not play an important role either.

The relationship between the questions on the most popular type of partnership and collective-individual sports is as it follows:

- The popularity of the collective to the individual sports is in the ratio 5: 3.5
- A similar ratio is preserved almost in all types of partnership
- An exception from these data form the respondents requesting a weekend experience alone in a ratio of 1: 5.3.

In the case of respondents preferring solitude, women's and men's opinions do not exhibit significant deviations. However, both sexes agree on that they very intensively prefer individual sports activities. This preference can be assumed, although there may be cases where the personality of its desired solitude compensates for the participation to activities in collective sports. In this case, however, the participation in sport of the team is fundamentally rejected.

Representation of mental activities

Part of the expert discussions devotes to the representation of mental activities and their role in the field of wellness. Among the questions there was a query appeared on the so-called intellectual activity, which should investigate the possibilities of developing the field and outside the sport and sometimes even passive regeneration relaxing activities. There are also
examples of non-traditional activities included in the area of leisure, so that the respondent had the ability to communicate their affection to the areas, which are usually the public understood rather as marginal. In the questionnaires there were available for a total of 1,812 of different answer options. Of this amount they have expressed willingness to be interviewed in the three hundred and forty-seven different cases, which make scope offered by 19.1% of responses. In the case of the Figure 3 below it is actually a structure within the framework of those, who are on the issue.

![Figure 3 Structure of interest intellectual activity](image)

Match the 73% of women and 23% of men. In addition to history, where both sexes showed the same interest in the study, women predominate in other items. The biggest difference, as it can be expected, disclosing the future through cards. Here women have expressed interest in 9:1 in relation to men. This ratio also applies in the case of numerology. Summary of the data appears in the Table 2.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>History</td>
<td>53.1</td>
<td>46.9</td>
</tr>
<tr>
<td>Philosophy</td>
<td>60.6</td>
<td>39.4</td>
</tr>
<tr>
<td>Astrologers</td>
<td>78.1</td>
<td>21.9</td>
</tr>
<tr>
<td>Psychologists</td>
<td>78.9</td>
<td>21.1</td>
</tr>
<tr>
<td>Explaining the future through cards</td>
<td>90.5</td>
<td>9.5</td>
</tr>
</tbody>
</table>
The proportion of women in each of the selected activities suggests additional options for operators in the field of interests that prefer a rather sensual (not rational) perception and the idealistic perspective of the world. This gives the possibility to provide female customers the area of relaxing, which is the area, as evidenced by the number of respondents above, by being marginalised by the public. For example, we talk about the visual arts, automatic drawing, sofrologii, and total and mental relaxation (comp. Cathala, 2007, Šauerová, 2011).

The question of activities can be supplemented with an indication of at least one to participate in meditation sessions or seminars. Women confirmed their participation in the amount of 20 percent, and the men confirmed 14 % of participation. Both sexes represent in total 17.9 %. The age structure of the respondents here does not play almost no role with the exception of the age group of women 51 - 60 years, where it is the participation of 37 percent. The truth value of the poll confirms the fact that 68.5 % of participants designated by the type of seminars confirm its interest in psychology or philosophy of science at the same time or both disciplines simultaneously.

Evaluation of the popularity of activities by mark

This part of the research shows the menu options for clients, with visits wellness facilities of more than one day. Here they are represented the activities relating to active leisure, as well as ways to relax in the passive way. Even the leisure time spent passively requires environment and location in the appropriate part of the establishment. For example, about sitting with friends, which may in some instances interfere with the relax of the other customers. It is, therefore, required, particularly in larger installations to individual spaces to build up them with regard to their purpose of use. The guide can be declared with respect to the popularity of leisure as the table below indicates.

Among the most popular activities are the following ones and they include massage, sitting with friends, swimming, and cultural events. The differences in popularity between men and women are arising from widely known cultural and social traditions. A relatively high ranking cultural events is a reflection of the selection of respondents with a greater frequency of their participation in the poll.

The relatively low popularity ratings, it was found for a workout in the fitness centre, under the guidance of coach, watching TV and recreational riding. However, it is particularly striking that health care is rated as the least attractive by men. One of the tasks of the wellness
movement may then be awareness raising in this area. As regards the age of respondents, there were no significant differences.

If we deal with the evaluation of the active and passive activities, generally, it is obvious that the women evaluated more favourably passive ways of spending their free time. The exception is just watching TV, which is rated by critics. Active group activities, the results are different, and, therefore, cannot determine the differences between the priority given to activities for both genders.

![Table 3](image)

<table>
<thead>
<tr>
<th>Activities</th>
<th>Female</th>
<th></th>
<th>Male</th>
<th></th>
<th>Total</th>
<th></th>
<th>Activity</th>
<th>Female</th>
<th></th>
<th>Male</th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Massage</td>
<td>1.87</td>
<td>2.15</td>
<td>1.97</td>
<td>2.36</td>
<td>2.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Party with friends</td>
<td>2.0</td>
<td>2.24</td>
<td>2.08</td>
<td>2.41</td>
<td>2.69</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swimming</td>
<td>2.18</td>
<td>2.05</td>
<td>2.13</td>
<td>3.13</td>
<td>2.99</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural events</td>
<td>2.02</td>
<td>2.23</td>
<td>2.20</td>
<td>2.90</td>
<td>3.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aerobic</td>
<td>2.14</td>
<td>2.91</td>
<td>2.41</td>
<td>3.40</td>
<td>3.23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading books</td>
<td>2.34</td>
<td>2.80</td>
<td>2.50</td>
<td>3.15</td>
<td>3.28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cosmetics and body care</td>
<td>1.92</td>
<td>3.85</td>
<td>2.56</td>
<td>2.81</td>
<td>3.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results were also tested with regard to the popularity of various types of partners with whom the clients would like to spend a wellness weekend, and even here it was not possible to determine the more statistically significant differences and no correlation.

**Attitude to a healthy way of life in the area of nutrition**

The purpose of the educational efforts of the wellness movement is the creation and acquisition of habits in the area of healthy nutrition. It follows from the above definition of wellness the composition of food and nutritional supplements can positively contribute to the overall sense of a higher quality of life. The purpose of these questions is to identify the views of demand on the selected elements of a healthy diet, and having an impact on the overall health condition of man.

The initial questions pointing to healthy nutrition directly related to the interest of customers about this area.
• The fact that they are interested in healthy nutrition is confirmed by 147 respondents, which is 48%.

• Healthy eating, then added to the diet 167 respondents confirmed, i.e. 55.3%.

Description of the elements of a healthy diet (in the case of interest) was in the context of open questions left to the respondent. Everyone interviewed expressed more or less the same vegetables, fruit, fish, meat, and only to a limited extent.

As regards the actual implementation of these common elements between the eating habits, evaluation for a customer is a "healthy diet" and with the previous question is identical.

The use of products, thus regulating the publication of various elements of the biological equilibrium of man was classified as a guide for further expansion options towards additional sales of establishments of providing services. The notion in the questionnaire is explained because the understanding of this concept may be different. Basically, the situation can occur when the customer already buys the supplements from a variety of personal reasons, but does not know that these medications under the above-mentioned concept is included. The results are the following:

• The issue expressed 301 surveyed. Some of the respondents indicate use of single supplements, others even more products at a time. 99.7%.
• Never put 110 supplements surveyed, i.e. 36.4%.
• Exceptionally used supplements from the total number of respondents polled 127 surveyed, it is 42.1%.
• Often supplements used 52 respondents, which is 17.2%
• Continuously used supplements 11 persons, which is 3.6%

Evaluation of the structure of the publication about those users who responded to the question in the affirmative way, describes the Figure 4 below.
Still, the use of the supplements was positively expressed only by 190 respondents (62.9%), the total number of supplements is relatively high in this group. This means that if the respondent has already used most supplements, he usually together combines more than one. After counting all types of nutritional supplements, it was achieved 347 positive data. As the most significant for an additional sale, it appears vitamin preparations and products to support immunity seem to be very significant.

As regards the means of stimulating growth of muscle mass, usually the younger generation used when regular strengthening and exercise in the fitness centers, these resources are in many cases condemned by the public, and it is most likely that for this reason, their actual use is higher than the percentage of respondents indicate. For this reason, it is a result of the findings that it should be taken with some degree of reluctance.

Finally, the question of vegetarianism as an alternative to healthy eating efforts shows the following results: a total of 298 of the respondents replied, which is 98.7% of the total number of respondents.

To vegetarianism 10 of the respondents report an positive attitude, which is the total number of respondents just 3.3%.

About vegetarianism 31 surveyed, i.e 10.3% manifested a positive interest and no concern for vegetarianism it is reported by 257 persons, i.e. 85.1%.

These results clearly indicate that the products associated with this way of eating are not likely to play a role in the case of possible additional sales, but rather a new space is opening up space here for the lighting of the issue in the context of professional seminars.
Relations between questions concerning diet are the following. All respondents who reported to vegetarianism, use supplements in 60 %. Furthermore, every respondent who actively classified elements of healthy nutrition to into his/her diet, indicates use of at least one type of supplement (154). More than one nutritional supplement are used by 37 % of the respondents.

Interested in leading professional medical diagnosis when it is necessary to use the wellness service are 79.6 % respondents. Visits to premises are not required in 20.4 percent of cases. This fact can lead to reflection on the expansion of assortment of the offered services of expert consultations and related examination of the sports physician.

Guest service evaluation, opportunities and price

For the operator we have surely found useful information about how customers evaluate establishments from the perspective of their personal impressions. Terms of the environment, equipment and employees on the basis of an intuitive estimate of the client. Views on the price of the selected favorite activities then complement the overall view of the customer, as well as general awareness of the existence of the establishments involved in the offer of wellness services.

Evaluation of the environment of the establishment

In the context of the evaluation establishments respondents answered several groups of questions. The first group is concerned regarding the assessment of the environment evaluation.

<table>
<thead>
<tr>
<th>Table 4 Evaluation of quality operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation of wellness centre equipment and total perception of clients</td>
</tr>
<tr>
<td>Item</td>
</tr>
<tr>
<td>----------------------------</td>
</tr>
<tr>
<td>The Appearance, age, wear and tear</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Colorness interior</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Perception of the whole design</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Function level of equipment</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Level of cleanliness in operation</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Respondents were asked to evaluate the selected indicators environment establishments with mark 1-5, where mark 1 is the best evaluation mark and mark 5 the worst. The selection of indicators was taken into the account on the basis of the requirements of members of the Czech Association of Wellness. As it can be seen from the table above, in the worst way of evaluation was the appearance, age and wear and tear of equipment establishments, which can be on one side of the theme for the operator, on the other side of pointing to the cost performance of similar plans of operations and their generally lower profitability.

As regards cleanliness and functionality of the equipment, the assessment is much more positive. For most indicators women show more positive assessment opinion than men. The exception is the color of the interior and the impression of the overall design, where men are slightly more satisfied.

Then attention was turned to the views of customers on the employees, their access to the customer and their competence. This group of questions was created on the basis of requirements of the experts from the Czech Association of Wellness.

<table>
<thead>
<tr>
<th>Table 5: Evaluation of employee’s opinion according to clients</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evaluation of wellness centre equipment and total perception of clients</strong></td>
</tr>
<tr>
<td><strong>Item</strong></td>
</tr>
<tr>
<td>Experience in work with clients</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Working experience of employees</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Interest or apathy of employees</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Skills in work</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Professional approach and expertise of employees</td>
</tr>
<tr>
<td>Male</td>
</tr>
</tbody>
</table>

The evaluation was performed using the mark and again as at least positive it appears (see table above) experience when working with customers. As a top rated is then professionalism and expertise. In this section, women are significantly more concerned with assessment, which is attributed to the operator with greater customer experience and competence.
The views of clients on the price of the selected services

These data then can serve as a guide in determining prices for establishments that serve for the rather better financially situated group of clients and are in a given area price makers. The questions were worded, again on the basis of requirements of the above Association.

The first question was laid on personal participation in wellness weekend. It can be assumed that the personal experience of the customer will lead to a realistic opinion on the price of each selected services and also to possible disparities in testing the popularity of these selected activities.

- The question was answered by almost total of 297 persons (98.3 % (of respondents).
- Participation at the weekend was confirmed by 65 persons (21.9 %).
- Personal experience was not confirmed by 198 people (78.1 %).

For respondents with regard to at least one of their experience with a wellness weekend, then it was reported the following information (see table below):

<table>
<thead>
<tr>
<th>Experience with previous pricing or the perspective of price in CZK</th>
<th>Female</th>
<th></th>
<th>Male</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>Standard deviation</td>
<td>aggregate</td>
<td>Average</td>
<td>Standard deviation</td>
<td>aggregate</td>
<td>Average</td>
</tr>
<tr>
<td>Yes</td>
<td>3 452</td>
<td>1 891</td>
<td>1 498</td>
<td>1 796</td>
<td>3 of 567</td>
<td>1 365</td>
</tr>
<tr>
<td>Well</td>
<td>2 770</td>
<td>1 198</td>
<td>2 169</td>
<td>1 198</td>
<td>2 169</td>
<td>1 198</td>
</tr>
</tbody>
</table>

From the table it can be seen that the customers, who have an experience with the purchase, indicate the overall higher price than paid by customers, who are just cost conscious and prices are just estimated from them In the case of clients without the experience the query was formulated in such a way, so the information we can get we have to treat as more as a common effort by the demand on the negotiation of more favourable market conditions under almost perfect competition. The standard deviation also indicates a very high margin of data in all of the items in the table, which points to a high diversity as already paid amounts and an estimated price of the service. The median in this case is not shown because it has in the case of the experience with the price value of 3 000 crowns, in the case of no experience and a
value of 1,500 crowns in all table entries, therefore, does not have any statistically significant value.

Opinion on the price and the experience with the selected activities, suitable for inclusion in the assortment packages offering wellness services, was established asking for at least one meeting with the designated product, and it was also accompanied by a price indication of the respondent on the defined unit of this activity, for example, the query on the total price massage or one hour (lesson) of aquagymnastics.

As it is apparent from the table below, a communication on at least one meeting with one activity are very diverse. These data can serve only to operators and the public working directly in the field. In any case, it is necessary to focus on the area that is the center of interest of the reader, and also her own operating experience and can be compared with own operational expertise.

In the table data are sorted by the frequency of responses indicating the customer's meetings with these activities. Among the very famous products they include services related to the operation of the spa equipment, swimming pools and relaxation services, related to the water. You can also assign the exercise fitness, total body massage and facial cosmetics (see Table 7).

These data are confirmed by the clients in more than 50% of cases. At the opposite pole of the spectrum of the types of services are then aquagymnastics, the total underwater massage and spiritual therapy. Due to the fact that two of these activities relate to water, and operators, with whom this was consulted, are of the opinion that the activities are currently still little known, especially among the respondents from smaller communities.

As regards the price data, their variability is so strong that you cannot infer from the statistical point of view almost any individual information. You can only track here the fact that men appreciate the services in about one half of the above than women, but the differences are always very low.

In the case of women the price evaluation is, in some cases significantly higher than the price evaluation by men. In particular, the following activities: wraps in the spa, beauty salon and hairdressing services. The reason is probably greater experience and expertise in a given area exercised by women.

The effect of ages and the number of members of the household in this group did not have any significant meaning.
### Table 7 Does the client know the activity and its price in CZK?

<table>
<thead>
<tr>
<th>Activities</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Female</strong></td>
<td><strong>Male</strong></td>
<td><strong>Total</strong></td>
<td></td>
</tr>
<tr>
<td>A Minimum of one experience:</td>
<td>Average price</td>
<td>A Minimum of one experience:</td>
<td>Average price</td>
</tr>
<tr>
<td>Swimming</td>
<td>89.7</td>
<td>89.00</td>
<td>86.1</td>
</tr>
<tr>
<td>Relaxation in jacuzzi whirlpool</td>
<td>70.1</td>
<td>123.00</td>
<td>76.9</td>
</tr>
<tr>
<td>Sauna</td>
<td>62.9</td>
<td>120.00</td>
<td>80.6</td>
</tr>
<tr>
<td>Training in the wellness center</td>
<td>70.1</td>
<td>117.00</td>
<td>60.2</td>
</tr>
<tr>
<td>Complex massage classic</td>
<td>66.0</td>
<td>448.00</td>
<td>60.2</td>
</tr>
<tr>
<td>Face cosmetics</td>
<td>77.3</td>
<td>394.00</td>
<td>11.1</td>
</tr>
<tr>
<td>Aerobic</td>
<td>63.4</td>
<td>95.00</td>
<td>15.7</td>
</tr>
<tr>
<td>Supervisor with exercising and training</td>
<td>36.6</td>
<td>191.00</td>
<td>40.7</td>
</tr>
<tr>
<td>Stretching</td>
<td>34.0</td>
<td>105.00</td>
<td>47.0</td>
</tr>
<tr>
<td>Treatment in the spa bath in the Spa</td>
<td>35.1</td>
<td>345.00</td>
<td>25.0</td>
</tr>
<tr>
<td>Other cosmetic services</td>
<td>47.0</td>
<td>448.00</td>
<td>6.5</td>
</tr>
<tr>
<td>Horse riding</td>
<td>26.3</td>
<td>230.00</td>
<td>29.6</td>
</tr>
<tr>
<td>Sesia on health nutrition</td>
<td>30.4</td>
<td>134.00</td>
<td>20.4</td>
</tr>
<tr>
<td>Hair dresser with services</td>
<td>30.4</td>
<td>865.00</td>
<td>8.3</td>
</tr>
<tr>
<td>Reflexive, massage</td>
<td>22.7</td>
<td>293.00</td>
<td>22.2</td>
</tr>
<tr>
<td>Yoga</td>
<td>24.7</td>
<td>106.00</td>
<td>4.6</td>
</tr>
<tr>
<td>Aquagymnastics</td>
<td>24.7</td>
<td>118.00</td>
<td>4.6</td>
</tr>
<tr>
<td>Complex massage in the water: complex underwater massage</td>
<td>7.7</td>
<td>326.00</td>
<td>18.5</td>
</tr>
<tr>
<td>Mental therapy</td>
<td>11.9</td>
<td>203.00</td>
<td>6.5</td>
</tr>
</tbody>
</table>

**Evaluation of selected activities in connection with the price idea**

The questionnaire was also put a question on the popularity of the query and the frequency of operation of selected activities. These activities were selected to match the projected track offers with wellness facilities. Their composition is identical to the query on at least one experience with these activities and the asking price on the idea of customers (see Table 8).

In the case of the query about at least one experience with the selected activity and then putting this activity as a favorite, you can conclude that the respondent who stated a specific
activity as a favorite, in all cases, confirmed that it has already met his expectations at least once. This relationship is important, rather more than its checking character, and confirms, in particular, the validity of the poll. Average price guest favorites activities that are not significantly different from the price average, regardless of whether they are popular or not.

In the case of the two most frequently reported activities assessment (query: select two favorite activities), it was found the following: as the most popular activities are included the total massage and sauna in the latter case (see Table 8).

**Table 8 The most favorite activities**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of answers</td>
<td>% of total</td>
</tr>
<tr>
<td>Massage</td>
<td>106</td>
<td>36.4</td>
</tr>
<tr>
<td>Sauna</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>291</td>
<td>-</td>
</tr>
</tbody>
</table>

This is a significant majority of respondents that expressed the views. If we compare these two activities among themselves, this selected choice occurred in 20 cases, which is approximately 7% of the total number of responses.

_Evaluation of the knowledge of the concept of wellness_

Due to the effort to map the customer awareness of the knowledge of the concept of wellness research was laid as close-mid question to the customer about an idea of the concept of wellness. The query was laid without any influence of the respondent. It could not, therefore, indicate which of the descriptions offered it is from the perspective of the definition of the scope the most appropriate. Respondents are then expressed in submitted alternatives, but because the query was listed as one of the respondents queries were not affected by the initial questions from the questionnaire, and it was unable then to show the impression about the wishes and ideas of the interviewers.

The results are presented in the Table 9 and because of the seriousness and subsequently in the Figure 5. From the Table 9 it can be seen that the most common idea about the concept of wellness is linked to rest and relax on the weekends. The second most common notion is the idea of a healthy way of life. This is the second answer which corresponds at least in part with the definition of the term, but this response with regard to the needs of the field is not too
qualified due to its universality. Relaxation on the weekend is a good means to achieve a sense of overall higher quality of life, but the activity itself cannot be a carrier, if it is not accompanied by a corresponding life position and regular applications of living habits in the area of health and nutrition, more often and regularly operating sporting activities during the work week.

**Table 9 What does the respondent understand if he/she hears the notion: wellness**

<table>
<thead>
<tr>
<th>Notion</th>
<th>Number of answers</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sporting in leisure time</td>
<td>69</td>
<td>17.7</td>
</tr>
<tr>
<td>Permanent perception of life quality</td>
<td>28</td>
<td>7.2</td>
</tr>
<tr>
<td>Healthy way of living</td>
<td>88</td>
<td>22.6</td>
</tr>
<tr>
<td>Rest and relaxation during weekends</td>
<td>194</td>
<td>49.9</td>
</tr>
<tr>
<td>The respondent has no idea</td>
<td>10</td>
<td>0.6</td>
</tr>
</tbody>
</table>

**Figure 5 What does the respondent understand if he/she hears the notion: wellness**

In the Figure 5 then we find the fact that the most desirable response from the perspective of the interviewer, which corresponds with that definition of the concept of wellness, has been received from only by 7% of respondents. This fact is evidenced by the sinister influence of business entities on their own idea and will probably result from the use of the term rather than for the purpose of marketing and promotional activities. It seems,
therefore, that he thought the Foundation of the entire movement in the Czech society has not yet regained sufficient importance and for this reason did not become a common social standard.

5 Summary of the Results of the Research

In the context of a summary of the results, we will pay the attention to the values which are identified as either the most frequently occurring or as an average or as data, for the purposes of exploitation of the results for comparison with foreign countries, and have a certain, not ignorable significance. This means that there is not to the correct results, but to their interpretation in the interests of transparent description of the issue.

Demographic data

In terms of demographics, it can be said that the respondents were chosen so that they represent the structure of the population, mostly the middle category. Almost two thirds of respondents (61%) falls within the ages 31-40 and 41-50 years. From the perspective of the sample this group is the best, because they are here represented as future clients, the younger of the two age groups, and clients who already form a potential group of customers. The number of household members and the size of the municipalities then show more on an even distribution of the group.

Area of interest for sports

Sports activities can be divided into two basic categories: the collective nature and activities, where it is envisaged in their pursuit of certain synergies and interaction, and further the activities of the individual characters that are carried out so that there is no need to communicate with the outside world. This can then lead to considerations about the equipment and the focus of the establishments.

The results of the research show that more than half of customers, regardless of the intensity of their preferences gravitating to activities associated with water, such as swimming, sauna and, in exceptional cases, aqua aerobics and aquagymnastics. This finding is evident with regard to the questions relating to both the selection of sports, which according to its own terms, most respondents are engaged and routed to query evaluation of selected activities mark and the particulars of the two most commonly operated by sporting activities. Among the other most popular sports are clients for cycling, skiing, walking, in-line skating, running, aerobics and, finally, a workout in the gym and exercise. From this finding the fact arises that a greater interest in the activities of the individual character, appear although in the case of ice skating or hiking can, of course, for communication to occur. It seems, however,
that the sharing of experiences and communication about favorite activities will take place there, where is the sport of running, rather will take place in premises intended for social contacts (meeting rooms, restaurant, meeting space, after completed sporting events and the like).

Here it is, therefore, possible to see space for creating marketing opportunities in the framework of the provision of marginal and complementary kinds of services, of course, with regard to the potential increase in sales of establishments. In the results, then the frequency of operation of collective sports appeared as not so frequent, apparently with regard to time and organizational demands of the joint meeting as such, where they are individuals forced to adapt to your personal program (especially during the work week) capabilities of the team as a whole. They may refer to the popularity of collective sports activities, more than half (57%), but cannot determine whether this popularity is usable for the needs of spa establishments.

The ideas of the customer about the prices of individual services, regardless of their popularity, then you can mark in all cases as undervalued. Price evaluation is then more realistic in the case of swimming and saunas, which appears from the greater experience of respondents with these activities.

Ideas about the optimal way of eating and the song purchased wellness services

Here research was focused on the kind of idea they have most often interviewed on the way of recreation and rest with regard to relationships with service providers. In particular, long-term relationship with wellness (important for awareness of operators) and types of partners involved in together.

The number of purchased services: customers in almost two thirds of the cases (64 %) indicate that they prefer to buy only one service. This means that only one-third of customers seems like a potential buyer of the service packages, which is again a great space the development of marketing tools to change behavior and routed the shopping habits of consumers. Interested in membership, then only 23 % of the preference of respondents, which was already expected to be, since membership is common in sports clubs with the tradition of the Sokol and other PE type of unity, providing a rather monotematic way to enjoyment and relaxation, and within the paid offer (customer clubs and the like) is not yet considered a generally normal.

In the context queries on the popularity of the shareholders refer to the respondents most frequently that are able to spend a wellness weekend with your partner (almost half) and with friends (specifically 29%). Wellness weekend alone would then be spent only by 6% of respondents. However, research has not been carried out with regard to the needs of the health
spa where they wish to spend the weekend alone could have for the purposes of medical therapy may require a higher percentage of clients.

The area of these issues has been supplemented by an indication of the purchase and personal experience with a wellness weekend or residents, where customers confirm the experience of only one-fifth of all respondents.

*Other options for the development of establishments*

From the perspective of wellness they are important activities of disabled persons that offer more options for creating programs specifically for the Group of multiday stays in the client devices. In terms of usage, then it is worth noting that the clients indicated an interest in psychology, which rather slightly with age for women is growing.

As a further opportunity for operators in the field of composition and the additional sale of fish appears to be the fact that the respondents are interested in healthy nutrition, almost ½, but only less than 10 % of them is interested in vegetarianism, over three percent of the total. This fact suggests that the preparation for the vegetarianism will be supplementary, sales have little meaning. In the case of use of the supplement, the situation is reversed, only one third of respondents indicates that does not take any special nutritional supplements.

*Guest facilities*

As regards the assessment of the establishments, the women assessed in the case of the appearance, the age of wear and tear, the functionality of the equipment and the cleanliness of the equipment more favourably than men. In terms of color and the overall impression guests of both sexes are approximately of the same opinion. In the case of the experience with the attitudes of staff towards clients and their work experience then women always make a more positive assessment than men. Overall, it can be said that in this respect there is between the interviewees fairly positive experience. Guest mark 1-5, never does not exceed the average of 1.9. In conclusion, this section was laid on the question of premises. They indicate a knowledge of the location of the spa service or at one-third, suggesting a possibility of extending the activities in the field of communication policy.

*Knowledge of the concept of wellness*

As one of the most valuable information from the perspective of the entire research was considered to be the respondent's communication of its contents and the content of the concept of wellness. One half of the clients shows that wellness is a sport for them in their free time. From the perspective of the entire scope it can be concluded that this notion is wrong, but, unfortunately, the most widely used. At least partially satisfactory answer, from the perspective of the definition set out above, formulated as a healthy way of life has been
reported in 23% of the respondents. In the case of a more comprehensive perspective on the issue, the wellness has been conceived as a lifestyle ensuring a lasting feeling of a higher quality of life, and this fact was positively expressed only by 7% of respondents. This finding is then an incentive for professionals to increase their awareness-raising activities and to ensure greater awareness of the importance of the field.

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ECONOMY AND WELLNESS

Ludmila VACKOVA

Abstract: Wellness and its importance for health has been studied and discussed for many years. The impact of the lifestyle, nutrition and lack of exercise and chronic diseases on economy is well known. The urging problem is troubling governments, health insurance companies, employers and many others. An unprecedented focus on wellness was an important part of the WORLD ECONOMIC FORUM 2014 in Davos (Switzerland) this year.

Key words: Wellness; Economy contexts; World economy forum; Global economy growth.

1 Introduction

The WORLD ECONOMIC FORUM - WEF (incorporated in 1971 and based in Geneva) is an independent, not for profit and no tied to political, partisan or national interests. It is a committed to improving the state of the world by engaging leaders in partnership to shape global, regional and industry agendas.

When over 25000 Nobel price laureates, academics, CEOs and heads of state gathered in Davos, preventative health approaches to the stress reduction, to mental health support. Power of meditation and wellness – for the first time – became a significant part of agenda.

This offers a powerful affirmation, that wellness industry is no longer perceived as side-lines business but as an important if not critical to solving the world’s most difficult issues and key to global economic growth.

One of the WEF’s managing directors said in press release: “For the past few years, the critical state of the financial system absorbed much of Davos attention. His year, there is a sense that global economy out of intensive care…and as we ask metaphorically to improve the economy health the POPULATION’S HEALTH is a good place to start. For the first time in history of the WEF meetings, large and extensive Heath Summit took place and full 25 sessions were focused on health and wellness topics. Number of session doubled comparing to year 2008.

This historic focus on wellness and prevention at the recent WEF is a clear sign, that old “sick care“ models have failed and are not working in the sense of health improvement of
global population. The world leaders are urgently seeking new, wellness-focused strategies to implement in government policy and in workplace.

There are selected titles of individual sessions of WEF Health Summit:

- Rethinking Health
- Our Medical Future
- The New Healthcare Context
- Rethinking Living
- Do It Yourself Health
- Life Enhancing Technologies
- Rewiring the Brain
- Meditation: Why the Hype?
- Transforming Healthcare
- The Importance of Being Happy
- Creating Healthier Outcomes
- The Mental Health Imperative
- Redefining Aging
- Health is Wealth

Chronic illnesses have a heavy toll on businesses. Number of industries studies document, that chronic disease accounts for major part of health care costs in developed markets and unfortunately and increasingly also on new, emerging markets I China, India ) Less studied is the fact, that chronic disease has a significant impact on employee productivity through increased absenteeism and underperformance due to illness. (WEF 2010)

The aggregate costs are staggering. In the United States, the top seven chronic ailments are responsible for an estimated annual shortfall of US$1 trillion in productivity. Globally, four risk factors are estimated to cost US$2 trillion in lost productivity each year. To make matters worse, chronic illnesses are actually becoming more prevalent in almost all countries, both developed and developing. (WHO 2005, WHO 2009)

A significant part of the Word Economy Forum program was dedicated to mental health issues. With mental ill-health being the leading cause of absenteeism in many sectors and industries, the cumulative costs on the global economy is estimated at US$16 trillion over the next 20 years. With United Kingdom’s G8 presidency the WEF drive the debate on how to face the challenges and stigma surrounding dementia and mental ill health. (WEF 2014).
Over the past 10-15 years, many companies have responded to the growing cost of chronic diseases by incorporating wellness initiatives into their employee health programs. The absence of well-defined metrics makes it hard to calculate ROI (Return on Investment).

2 Objectives

The main goal of the short study is a critical analysis of wellness initiatives in a context with the field of economy and employee productivity. We can propose that more than 75% of initiatives are based more on experimentation than on systematic approach.

3 Methodology (project characteristics)

While people who study this issue have suggested that wellness programs can generate a significant return, few companies have been able to measure the impact of wellness program investments in standardized and systematic fashion. Addressing the chronic disease problem and fully realizing the value of wellness requires an integrated approach.

Three major methodological parts must take place in the integrated approach. In the same time the three major methodological parts present a professional tool for research in this area and branch.

Three major methodological parts in the integrated approach:

1. ANALYTICS
   - major costs and their level
   - cost and productivity implications
   - business case for intervention
   A wellness program may be able to predict the company-specific causes and extent of lost productivity and healthcare costs as well as risk factors.

2. CORPORATE ENGAGEMENT
   - vision and objectives
   - incorporation of “people strategy”
   As with any corporative initiative a wellness program needs a clear vision and set of objectives. It also needs the support of senior executives. Well design analytics will lay the ground for such support but wellness should also emphasize how the program fits into a broader agenda of workplace development.
3. PORTFOLIO OF ACTIVITIES
   - targeting individual behaviours
   - modifying environment to apply wellness

   It is not easy to change behaviours, best way remain to be discover. The issue is inherently complex. Experts in behaviour modifications and risk factors suggest that success require two types of initiatives. One approach target high – risk individuals with incentives, education and counselling.

   The other approach presents deals with the environment within and beyond the workplace. It encompasses everything that is supportive of employees’ well-being and is conducive to healthy life style. It may include work team, sports clubs, social support group, on-line social networks and above all – family.

   Providing to employees information can be useful and activities targeting individuals can include smoking – cessation programs, personalized diet coaching, fitness incentives, free gym membership, sponsoring company sports teams and more. Environmental activities often involve community networking as many individual activities are outsourced to vendors or business partners. WELLNESS BRANCH (2013)

4 Results and discussions

   For everybody professionally involved in wellness industry, the concept focusing on preventative wellness, stress reduction, healthy eating, fitness and all other spa and wellness techniques is a good new.

   By supporting lifestyle and behaviour changes the wellness industry historically offers, the fitness and wellness professionals seem to be on the frontline of this renewed global movement. Some of the wellness experts call this “second wave of wellness “which has full support of global decision makers.

   The world’s top economic thinker ‘s minds are changing fast about what constitutes intelligent health strategies and what measures of national success should matter most to world economic leaders. GDP or metrics that capture total human wellbeing?

5 Conclusions

   It is not trendiness, the world’s toughest, most money – minded leader are desperate for smarter solutions to global healthcare and chronic disease crises, which are bleeding money and productivity of their governments and businesses.
As noted during Health is Wealth session, not focusing on prevention and wellness will continue to cost world dearly…. The developed countries are seeing epidemic levels of stress, obesity and inactivity.

This globally and nationally respected situation presents unique and timely opportunity for wellness professionals to create business opportunity for themselves as well as life style and health improvement venues for those who ultimately need it.

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7 Contacts

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WELLNESS A SPORTOVNÍ BROWNFIELDY

Miloš KOPŘIVA

Abstract: Negative civilization effects on humans health require preventive physical and psychological compensation. It’s necessary to change the lifestyle in accordance to wellness principles. In cities are negative influences intensified by big mass of people on small area. It means to transform the city sport infrastructure. It’s impossible to extensive occupy other areas, it’s necessary the inner transformation, change current social priorities, in practice change of proportions planned surfaces for sport in favour of wellness. Sport brownfields, especially for their position and size, means for future wellness transformation the biggest reserve.

Keywords: Brownfield, wellness, urbanistic and architectural context, environmental protection, natural values, transformation, long-term urban planning, extensive land occupation, individual movement activities, seasonal areas, moveable lightweight structures

1 Introduction

Wellness is a highly contemporary and relevant topic within the field of sports, both specifically as well as contextually. The urbanistic and architectural context of wellness is fundamentally changing existing trends in the planning of sport area facilities. Contrary to earlier approaches, where newly planned buildings and outdoor sport fields organised by some clubs or sport units – using terms like „civil constructions“ or „civil sport equipment“ – were planned in the place of their living area, civil sport equipment like wellness, which is accessible for everybody without difference, should be localized in a different way.

Before we go into any detail of the present discussion on the need to transform sports brownfields into wellness areas, it is necessary to point out that in my opinion, the export of numerous practices from the USA to Europe didn’t have nor will have a positive influence for the way of life nor the specific environment. In the field of urbanism this primarily concerns the devastation of traditional structure of smaller urban commercial network, which is substituted by supermarkets, fastfoods with excess of advertising and others. From the architectural and urban point of view there are unsuitably unifying the public space, in
particular negating regional originality of city centers, as well as the quality of buildings in the periphery.

The theme of Wellness – the philosophy of healthy lifestyle – seems to me quite different. Paradoxically we got used to the culture of hamburgers, and now we negate it by consuming healthy food in case we want to live in a healthy way.

From the global point of view we simply must respect the limits of our planet, because the unrestricted free behaviour of democratically controlled part of the world, starts to be very close to these limits. The expansion of society fascinated by consumption, cannot be borderless. Take for example the notion of individual holiday recreation transport planning. The infrastructure of some countries cannot cope with the amount of car transfers to touristic destinations – to the sea destinations in the south in summer and in winter to the mountains.

Additional effects of this process like wild privatization, loss of national financial support and undirected sport education are leading causes that especially big sport areas with rich former sport tradition became brownfields. In Czech republic well-known are Strahov in Prague, Ponava in Brno, Malšovice in Hradec Králové among many others.

**Figure 1** Picture 1-3 – views on analysed objects of the study
2 Objective

The aim of presented paper is importance of brownfields as a reserve for planning of sport facilities reconstruction with preferred wellness component is augmented by the fact that these areas are often located in a very close proximity to a catchment area of a city center or concentrated residential areas.

The additional aim is to analyse 3 objects of sport brownfields in Czech Republic.

3 Methodology (project characteristics)

Plan analyses

Strategic and land use plan developments can significantly influence the future environment, also with regard to the lifestyle of next generations. This is pre-eminently the role for politicians, especially municipal ones. In a market-driven context health prevention will never be a primary consideration to improve condition, because in comparison to other types of business it doesn’t have a quick economic payback. This is the reason, why sport brownfields came into existence. The name brownfield is internationally used for not well used locality, which have lost predominant function, fell into disrepair and became an urbanistic problem. Sport brownfields are typical for countries in central and east Europe.

The environmental protection of these favoured destinations require set limitations in the future, in order to save local natural values. This does not solve however the fitness problem of the present population, because it doesn’t compensate for the absence of periodical movement required for health. To improve the society’s physical condition strategic planning of movement activities close to the residence or work areas is necessary, more precisely inside the transit areas of permanent residence of potentional visitors. From this point of view, the wellness philosophy of healthy lifestyle is appropriate and it is necessary to apply it in city developing plans.

4 Results

Sport brownfield at Strahov

The Strahov complex is located on an artificially modified hill above the city of Prague. The area of the sport facilities was created 80 years ago by levelling of quarries then located at Strahov. There is a similar sport complex at Montjuic in Barcelona, where the Olympic games took place in 1992. The major problem of these and similar locations is a difficult transportation access and also a significant concentration of a visitors movement to a sport stadium in a short time. If we would consider a conversion of the initial spectator function
into another kind of a sport utilisation, the site would benefit from a balanced and lighter traffic load with a higher share of the city public transportation.

For Strahov location, an improved accessibility by means of the public transportation will become an important factor, mainly because a portion of target users of wellness facilities would not use a motor vehicle.

Directly in this location, there is an accommodation for five thousand persons who are also potential wellness users, the students who live in dormitories of the Czech Technical University of Prague, located in a close proximity of the biggest stadium in the world.

The big stadium (Sletovy stadion) that served for mass gathering of the Czech sport organization Sokol, hosted during its fame (between 1930 and 1948) up to 180,000 spectators. The transformation of this stadium (with the central area of 6 hectares) to a wellness facility would easily balance the current deficit of public sport facilities for the entire capital city of Prague. For this location, there is a plan for a stadium which is called „National Football Stadium“ with a capacity of 40,000 spectators, however, its utilisation for public sport activities would be zero.

Sport brownfield Ponava in Brno

50 years ago, the central stadium in Luzanky sport complex used to be visited by almost 50,000 spectators. Dreams about similar high numbers of regular visitors can not be currently realistically achieved. In spite of this, there is a plan to build in the brownfield, with the planned main revitalisation element and draw, a giant single function football stadium for 30,000 – 35,000 spectators, multiple cinemas and shopping centrum. This plan falls into the category of buildings which are called internationally „white elephants“. It can be any investment which lacks rational chance for utilisation in periods between peak venues. The original function of brownfield had all attributes of the socialistic performance sports, such as concentration of single function facilities in one complex and a complete absence of sport opportunities for non-organised public physical activities. In this case, more suitable option for this location is use of a gathering form complemented by multifunctional utilisation of spectator stands for several sports or aquapark with complementary elements of wellness, and wide range of activities accessible to the public (climbing walls, skate area, zip lines, etc.), not only a swimming pool for competitive events.
Sport brownfield of Malsovicky stadium in Hradec Kralove

Hradec Kralove with its superb transportation infrastructure, planned by architect Gocar during the „first“ Czechoslovak Republic, has its brownfield area morphologically delineated by a ring road and the river Orlice. The current reconstruction plan represents the worse possible transformation scenario for a territory of sport brownfield. Almost half of the Malsovicky sport complex would be replaced by a supermarket store. In order to free the space for the supermarket, it will mean to relocate the stadium into a sport leftover area. The public and its physical activities in this territory will be represented by a function of a summer swimming pool which is normally utilised only a few tropical days a year.

The irreversible damage to the genius loci of today’s „stadium with popsicles“, how it is being called by the public, might be reversed by the city political oposition at the last minute.

Discussion

The program of transforming sport brownfields to civil wellness facilities is a long-term investment in the area of health insurance. Improving the average population health condition is economically advantageous from the point of view of health care investments. A priority is to build wellness centers for wide range of the public in not well used sport places and at least securing temporary effective sport brownfields protection for sport and freetime.

Potential of transit areas

The support of wellness healthy lifestyle implies change of the current urbanistic relationships in indicators of sport and freetime areas. Currently defined areas in the zoning plan are directed towards rather different sports activities. This leads to discrimination of general public needs for individual movement activities. Contemporary wellness services aren’t sufficient and prefer commercial management principles. In the society-wide wellness services accessibility, there are more private investment of expensive wellness keepers than municipal ones with state or village support. When evaluating sport equipment of areas it is necessary to pick areas suitable for concrete future wellness localities. The potential size of transit areas for wellness is also determinated by the amount of attendees that can safely occupy these areas. The graphic structure for wellness activities and needs of primary schools is almost identical. In many cases it is possible to integrate outside areas into one unit with similar usage for wellness. The potential of transit areas is derived from the number of inhabitants and full-time working people in the area, reduced by requirements from preschool
and school children and performance-related registered athletes. The maximal basis reduction for calculation will be something like 26-30%, which leaves 70%. For this number of users wellness centers should offer services minimally 4 hours per week. The design is based on recommended regularity of active movement minimally two times of two hours weekly. This will result in plan that aims to meet users potential satisfaction. On the other hand it is also necessary to limit the time occupancy of individual activities in wellness centers. The possibilities of particular locations suitable for wellness is necessary to assess individually. The seasonal difference of area usage between winter and summer should not play a dominant role. In the current condition winter usage of outside activities is much lower than in summer period. There is a big reserve of all-year using outside surfaces. The movement outside in natural environment takes an important place in choosing a place for wellness. The amount of reserved area for top level sport cannot escape reduction, it will be necessary to replace the surplus of such areas with wellness needs. This concerns first and foremost the future of big sport brownfields.

**Building of integrated wellness centers**

Financial devices for building of complex equipped wellness centers in city gradient zones is necessary to plan and project purposefully. Big savings of built-up spaces we can expect by integration of operation with different users into one collective unit. In long-term horizon there is an exception for moving the centre of movement activities into a space with artificially regulated microclimate. We remind in this case of the vision of Buckminster Fuller or Frei Otto and Buro Happold and their case studies of microclimatic separation of a city parts from unheathy, permanently damaged environment (Dome above Manhattan, Arctic city).
Scientific progress in combination with the inventiveness of architects and engineers, committed in experimental projects, changes continuously the materialistic basis of buildings for wellness. Traditional building procedures in wet zones are supplying plastics on the basis of extruded polystyren, and to the realisations are now also introduced novel membrane and
foil structures, which allow movement and interaction of the buildings. Moveable lightweight structures allow to find creative and unexpected solutions inspired by the tradition of bathing and skating in natural environment. The climatic character of the four seasons in present doesn’t guarantee stable weather conditions which are suitable for sport as it was in past. Recreational use of natural swimming pools or skating on natural water surfaces will become unavailable for future generations. Currently multi-purpose utilization of bath water surface is under investigation, which can react for temperature changes in the various seasons. Membrane components allows controlled changes of using natural water surfaces. By membrane movement on the boundary of water surface it is possible to use the water for three different seasons.

Experimental projects from SMA (Studio Membrane Architecture) by CTU in Prague are working with mobile membrane components in architecture. This is supporting the above mentioned idea about all-year applicability of outside sport fields. Some projects have been submitted or have already been granted protected designs.

5 Conclusions

The wellness lifestyle began to be popularized first in the USA. Its increasing influence, connected with the development of necessary devices and equipment is highly specific in various continents, mainly in west European countries. The urbanism of European cities basically evolved differently than cities in the USA, which doesn’t have a historical context. In west European countries, especially in Switzerland, wellness is considered as a part of normal life. The principle of placing civil wellness facilities in transit areas is becoming a standard in west European cities. It is not based on the condition of car commuting as practised for example in the USA. Localities are placed in most of the cases in nearby parks inside compact settlements. Fiscal advantages for entrepreneurs who work with seniors, are a manifest sign the support of state and communal support in developed countries. Indeed, central and eastern European countries also have this support and wellness public education, but the main problem is the lack of opportunities.

Commercial management of smaller grade wellness centers are not very interesting for entrepreneurs due to lower purchasing power; the huge wellness centers are usually targeted for the higher income middle class. The communal and state sector keeps to the former concept of sport facility development and prefers top level and high performance sport. In developed countries however, financial support in state and communal finances for top level sport is separated from planning. Specific problem in central and eastern European countries
are sport areas brownfields, which under market pressure are transformed to other functions. Long-term urban planning time horizons and strategic priorities should react to this, especially when we want to keep sport functions in brownfields. Czech republic does have in recent history an example of state and communal support for sport buildings (Sokolská obec), which took place shortly in between the twenty years of independent state existence (1918-1938). State sport facilities grounded at that time still constitute in Czech republic important sport areas in cities and in villages, but also sport brownfields. Unfortunately however, in many cases they are underutilized. The size of these facilities are very attractive for speculators and developers, however for different functions than sport. The state and the villages, who are mainly the owners of these properties and estates, should not give up keeping there sport functions. Reducing the space for sport, particularly in the urban structure of inner cities built up by other functions, is non-returnable and irreplaceable. The opportunity to transform city sport brownfields for sport wellness areas will never repeat. The extensive land occupation will soon be a geopolitical problem of planet Earth, so it’s necessary to avoid it in a preventive way. Currently functional sport and recreational systems have enough space in the cities, it is however necessary to transform and use these spaces more effectively.

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