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DETERMINANTS OF PROMOTING PHYSICAL AND PSYCHOLOGICAL WELL-BEING

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SUMMARY

In this paper we used different research findings on the roles of determinants of promoting physical and psychological well-being of regular physical activity. The main factors in promoting physical and psychological well-being of the exercise participants are proper load dosing and the balance between loads and recovery. Properly dosed physical activity may bring changes in several domains: physical, cognitive, emotional and social development. Empirical researches show that in an individual's health status optimum loads are moderate (45-60%) and medium (60-75%). Implementation of physical activity in everyday life, from period of middle childhood (6-11 years) to advanced late adulthood (65 years-death), presents strong health prevention and intervention and searches for an answer on determinants and well-being of regular physical activity from researchers, physiologists, psychologists and kinesiologists. Research findings indicate that balance between training loads and recovery stimulates the functioning of autonomous, endocrine and immune system. Further studies should reveal what forms and physical activity intensities produce positive effects on physical and psychological well-being in different age groups.

Key words: determinants, well-being, physical activity, age, sex.

INTRODUCTION

For scientist-researchers and scientist-practitioners, it is important to examine what are the actual changes encouraged by regular physical activity and games with regard to age and sex and what is the way to enhance human life since these findings are the basis for creating preventive and interventional programmes for children, adolescents and adults (Trninić, Trninić, & Čavala, 2017).

Shaw, Gorely and Corban (2005) claim that the increase of positive effects of regular exercising is based on the following factors: choosing a fun activity, the type of activity, exercise factors: frequency, duration and exercise intensity. At the same time, behaviors regarding health, adequate diet, keeping appropriate body weight and mental activity (improves cognitive functioning) are of extreme importance since they help in reducing physical and cognitive deterioration (Berk, 2010). Thus, crucial basic goals of systematic physical exercising are learning movement skills, prevention of injuries, neuromuscular programmes (focused on strength, power, flexibility and mobility) and metabolic conditioning (enhancing the development of specific energy systems). In the process of regular exercising, it is essential to use developmental maintaining and regenerative training loads.

Exercising should be enjoying and a positive affective reaction to experience in exercising which results in feeling pleasure and fun and this can influence the modeling of personality in an eligible way (Raedeke, 2007). At the same time, while enjoying physical activity, body and cognitive changes can be affected by activity factors such as intensity, duration, and frequency of exercising (Shaw, Gorely, & Corban, 2005), in addition to motivational climate and personal traits of physical activity programme leader (Trninić, 2015). Further on, technical aids are extremely important as well, the selection of exercise forms satisfying individual characteristics as well as the selection, order and the way the exercises are performed. Empirical findings show some kinds of activities can contribute more to well-being than others, i.e. they can encourage various actual changes (Landers & Arent, 2007). For example, a physical activity involving stomach, rhythmic breathing (e.g. swimming, running/walking, yoga) is related to positive physiological and psychological effects. Such physical

activities give more possibilities to relax and decrease the arousal level, serving at the same time to reduce stress reactivity. Thus, factor manipulation in exercising which involves exercise frequency (e.g. 3 or 5 times a week), load extensity and load intensity results in adaption stimulating of different organic systems, i.e. in numerous physiological and morphological changes in an organism. For example, Legrand and Heuze (2007) state that exercise frequency may be important in reducing depressive symptoms, suggesting that exercising 3 to 5 times a week significantly reduces depression compared to exercising once a week. The most important psychological variables enabling the change of exercisers' behavior are most likely motivation, openness and personal responsibility for changes. Finally, even personal characteristics in psychologists and kinesiologists and their supporting behavior, in addition to combinations of different intervention programmes, influence physical and psychological well-being (Trninić, Trninić, & Pulja, 2016; Trninić & Trninić, 2017).

PROPER LOAD DOSING AS AN IMPORTANT DETERMINANT OF PHYSICAL AND PSYCHOLOGICAL WELL-BEING

Properly dosed physical activity in different age groups can influence the changes in several domains: physical, cognitive, emotional and social development, all of which are interrelated (Berk, 2010). The author claims that, according to the lifespan development approach, an individual's development is a life spanning, multidimensional (under the influence of biological, psychological and social factors), multidirectional (characterized by incline and decline of characteristics) and neuroplastic process (can be changed under the influence of new experiences). In relation to this, there are research findings on the possibility to change neurobiological system under the influence of physical activity (Viru, 1995; Weineck, 2000); Berk, 2010).

Berk (2010) is discussing the question of how much physical activity is recommended for a healthier, happier and longer life considering that biological aging or senescence starts in early adulthood. The author claims that aging can be encouraged by weakening of the endocrine and immune system. Subsequently, she claims that moderately intensive physical activity, e.g. 30 minutes of brisk walking on most of the days in a week, leads to the stimulation of aerobic metabolic processes as well as to positive consequences for the health of people who were previously physically inactive. Moreover, National Center for Health Statistics (2006) recommends 30 minutes of moderate physical activity on most of the days of the week. However, Health Canada (2000) recommends moderate physical activity of at least 60 minutes a day or it can be reduced to 20 to 30 minutes if the physical activity is done with a higher intensity (e.g. running or fast swimming). It is important to stress that "with all other preventive measures, adequate regular physical activity most certainly will not dismiss causes, but is a significant resistance factor of an organism in coping with unwanted reactions to stress" (Heimer, 2016, p. 56).

In the process of regular exercising, physiologists, psychologists and kinesiologists suggest dynamic activities in individuals with appropriate health status for at least three times a week with the duration from 30 to 60 minutes (National Centre for Health Statistics, 2006; Health Canada, 2000). Thus, different age groups ask for different intensity and volume of training loads. For example, during a health related physical activity, kinesiologists suggest using a relatively low intensity load for individuals younger than 50 years where their heart frequency ranges between 130 and 160 beats per minute due to the influence on cardiovascular, respiratory and metabolic system. However, in individuals over the age of 50, regenerative load is advisable and the primary goal is to relieve in addition to regenerate and recover the organism.

The stimulation of developing aerobic or oxygen energy systems enables a positive influence on reducing quantity and intensity of anxiety and depression symptoms (Landers & Petruzzello, 1994; Bartholomew & Linder, 1998; Craft & Landers, 1998; Shaw, Gorely, & Corban, 2005; Berk 2010; Weinberg & Gould, 2011; Cox, 2012), but also affects regeneration and recovery of an organism (Milanović, 2013). Furthermore, regular aerobic activities of moderate load positively influence the functioning of the nervous system, the increase of blood circulation in the brain as well as the increasing of the dopamine and serotonin level, neurotransmitters which are connected to mood regulation and mental health (Landers & Arent, 2007; Weinberg & Gould, 2011; Cox, 2012; Heimer, 2016). It is assumed that the plasticity of neurobiological functioning is displayed in a way that regular exercising and relaxation techniques can stimulate the release of a large quantity of dopamine and serotonin.

Moreover, physical exercising stimulates brain structures to operate as well as multiple biological processes, neurotransmitters „chemicals in the nerve cells that are responsible for the transmission of a nerve impulse from one cell to another" (Larsen & Buss, 2014, p. 649) and hormones „chemical

substances that travel through the blood stream and affect the activity of bodily organs, contribute to psychological characteristic in behavior, and the interplay between psychological and bodily processes" (Cervone & Pervin, 2008, p. 358) and mood regulation (Pervin, Cervone, & John, 2008). Further on, physical exercise of longer duration with moderate or medium intensity provokes adaptation changes manifested in the increase of oxygen uptake, faster recovery and increased activity of aerobic metabolism enzymes which most likely enables improved and stable functioning of organs and organic systems, "and increased level of endorphin, a hormone in charge of improving mood and energy" (Heimer, 2016, p.9). At the same time, physical activity with moderate intensity has anxiolytic and antidepressive effects which reveal the plasticity of neurobiological functioning (Cervone & Pervin, 2008; Berk, 2010; Trninić, Trninić and Čavala, 2016). Furthermore, it is crucial to point out that applying a continuing method with low intensity is basic for the development of aerobic endurance in health related exercising. Gradual progression of training loads and an appropriate life style (e.g. enough sleeping, balanced diet) can be crucial factors determining the effects of physical activity. In the process of physical exercising, it is essential to focus on the reaction of every exerciser and individualize their programme. Recent researches show high intensity aerobic activity is not essential in order to achieve positive effects (Landers & Arent, 2007).

BALANCE BETWEEN LOADS AND RECOVERY AS PREREQUISITE OF PHYSICAL AND PSYCHOLOGICAL WELL-BEING

It may be assumed that balance between training loads and recovery stimulates the functioning of endocrine and immune system and excludes the possibility of an organism's inadequate adaptive response (e.g. exhaustion, overreaching, overtraining and burnout). As opposed to optimal loads, excessive loads can stimulate immune system function decrease in an organism (Weineck, 2000; Milanović, 2013). This is extremely important in late adulthood when "immune system is less efficient which enables disease progress and manifestation of autoimmune reactions" (Berk, 2010, p. 579). Research findings reveal a positive influence of regular properly dosed aerobic activity on immune functions in young and older individuals, while strength training does not positively affect the immune response (Matković & Ružić, 2009), but leads to neural or functional and structural effect (Siff & Verhoshansky, 1999). Due to given reasons, it is necessary to stimulate strength and power development due to neural changes (e.g. intermuscular and intramuscular coordination) and structural changes (e.g. increase of muscle mass i.e. of cross-section, selective hypertrophy of slow or fast muscle fibres). Further on, exercises stimulating development of strength and power in non-training individuals can encourage fast changes in strength and power, they reduce the possibility of decreasing muscle mass, and at the same time potential biological consequences (Heimer & Rakovac, 2006; Berk, 2010) particularly if exercising is followed by balanced diet and supplementation. In relation to this, in middle adulthood and late adulthood it is essential to encourage neuromuscular control of movements and equally strengthen all muscle groups, develop mobility and flexibility since it can reduce the negative impact of arthrosis and the loss of bone mass or osteoporosis. „The autonomic nervous system functions less well in old age and releases more stress hormones"(Berk, 2010, p. 599) which leads us to the importance of performing aerobic physical activities in everyday life.

Furthermore, „the immune system functions less effectively in late life, permitting diseases to progress and making autoimmune responses and stress-induced infection more likely" (Berk, 2010, p. 600). Since this leads to the fall in immune system functioning, physical activity at moderate intensity is still a strong health intervention in late adulthood. Regular physical activity over a period of a few years may be a more efficient prevention of osteoporosis, especially if it is performed in childhood, adolescence and early adulthood. At the same time, physical inactivity can influence the decrease of bone mass which increases the risk of bone fractures. Thus programmes focusing on morphological changes, development, and/or maintaining mobility and flexibility, strength and power are of extreme importance since they prevent a severe loss of mobility due to reduced joint flexibility and to the loss of muscles and bone strength.

CONCLUSION

In this paper we used different research findings on what are the determinants for promoting physical and psychological well-being of regular physical activity. The key method for promoting physical and psychological well-being of the participants in exercising is proper load dosing and balance between loads and recovery. The given factors stimulate positive effects of regular health directed exercise training with a particular stress on life style factors.

Empirical researches reveal that according to the amount criterion of training loads, moderate and medium loads are optimal for health status of an

individual. Applying physical activity in everyday life from early adolescence to advanced old age gives strong health prevention and intervention and looks for an answer from researchers, physiologists, psychologists, and kinesiologists on determinants and well-being of regular physical activity. Scientific literature suggests that accepting efficiency determinants in a health related exercising is crucial for structural and functional or neural effects in exercisers. Further on, findings suggest that biological growing old can be changed by the influence of environment factors which become more and more important with age. Scientists-practitioners indicate that programming of kinesiological operators should be based on biological and functional age, and on medical condition indicators in addition to an individual's preparedness and that the adequate load amount may be the most sensitive part of programming health-related physical activity in exercisers. At the same time, it is important to stress that following and evaluating the impact of regular physical activity is a precondition to manage the process of actual changes. Future research directions should bring more questions and answers. Finally, further studies should determine what physical exercising forms and intensities produce positive effects on physical and psychological well-being in different age-groups and should involve the impact of physically active lifestyle and environment factors in prevention and lowering the risk of diseases.

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