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New trends of physical activity in health education

Abstract

Health is no doubt the most important value of an individual. Every one of us needs to maintain and improve their mental and physical fitness. The body as well as joints are subject to the process of aging. However, these processes can be delayed via applying training programs presented in this paper, which deals with the role of three various forms of physical activity in health education – Power yoga, Pilates and SM system. The aim of this contribution is to present these activities as new opportunities that have a positive effect on physical and mental state of an individual, supported by self-control and self-actuation.

Keywords: Health, Pilates method, Power yoga, SM system.

Introduction

Physical activity is a fundamental expression of a living organism, and it is, in addition to good nutrition, an important component of one’s regimen. Modern humans who want to perform physical activity, want to train properly in order to improve their physique and health. Our description of exercise methods includes instructions on how to train properly and learn to breathe properly. Power yoga, Pilates and SM system deal in detail with the correct way of breathing, provide preparatory exercises for beginners, intermediate and advanced trainees, with special regard to the improvement of one’s health. Medical Pilates and the SM system are focused on people with health problems, primarily problems with their spine.

In 2005, more than 100 million people practised yoga worldwide and about 11 million Americans practised Pilates [29]. Both methods have a lot in common. Pilates took over a number of modified yoga elements.

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Yoga is a timeless system that varies according to people’s needs. Young yoga enthusiasts get influenced by its western style exercises. They developed systems of gymnastic exercises involving basic postures of yoga, dynamically following one another. The names of such styles are as follows: power yoga, vinyasa flow power yoga, fitness yoga, dance yoga, yogalates etc. Yoga has evolved over the centuries. It addresses the physical, mental and spiritual aspects of an individual. It affects human health at its every level.

SM – system deals with the treatment, prevention and regeneration of the spine; muscle chains need proper actuation, thus stretching the muscles of the back upwards, so as to provide intervertebral discs sufficient space for regeneration and treatment [19].

The author of the SM – system, MD. Richard Smišek recommends the exercise to those who suffer from back pain, but also to sportsmen with the aim to compensate for muscle disbalance resulting from unilateral load.

The work deals with Power yoga, Pilates and the SM system – exercises designed for people who do not wish to abide by the rules and regulations of yoga, though they would like to do exercise not only for health, but also for body posture and joy. The main purpose of these forms of exercise is compensation for muscle imbalance or prevention of its occurrence.

The above systems of exercises are accessible to the Europeans and have no strict spiritual significance. They can be practised by anybody, regardless of age or performance limitations, under the supervision of an experienced professional.

**Compensatory exercises**

All three of the above-listed physical activities can be applied in the context of compensatory exercises in physical education, rehabilitation and sports training.

Compensatory exercises (com – compensation, penso – weigh, literally balance) refer to the set of compensatory exercises in various positions during exercise, which can be intentionally modified according to the functional status of the individual’s locomotive system [4].

According their specific focus and physiological effect on the musculoskeletal system, we divide compensatory exercises into relaxing, stretching and strengthening ones.

The main role of compensation exercises is the correction of muscle imbalance or prevention of its occurrence, and thus preventing changes in motion stereotypes of proper posture.

Each muscle contains fibres of both tonic and phasic nature. Science today differentiates between muscle groups with a predominance of tonic motor units (e.g. lumbar erector) and muscle groups where phasic motor units prevail (e.g. the abdominals). In practice, physical training should be based on this
knowledge as different muscle types require a different approach when choosing compensatory exercises. Muscle groups with predominance of tonic muscle fibres are structurally adapted to support postural function. These muscle groups are more resistant to fatigue and are quicker at recovering. They tend to increase their tension excessively (hypertonia), which leads to shortening, stiffening and therefore they need loosening and stretching. Muscle groups with a prevalence of phasic muscle fibres get tired quickly. They are prone to lose tension (hypotonia), which leads to their weakening, and so they need strengthening. Muscle tone is influenced by various factors: climatic (cold, heat), mental (stress), or physical (pain, fatigue). A shortened muscle has increased tone and is usually dominant. It gets actuated, and thereby strengthened, at the majority of movements. This leads to significant overload in that area, to the occurrence of imbalance. Antagonistic muscles react by reducing muscle tone, decreasing muscle strength, flaccidity and a change in postural stereotype. It leads to negative changes in the posture [4].

Posture is an innate reflex. It is linked to factors such as [17]:
— sensory organs (eye, balance, position),
— specific character of activity (workplace, household, leisure activities),
— nervous system (fatigue, pain),
— body size (body weight, height),
— psyche (perception of self-worth, mood),
— performance of active musculoskeletal apparatus (muscles),
— condition of passive musculoskeletal system (bones, joints).

When analyzing the musculoskeletal system, we distinguish among three different levels of the locomotor system on which functional disorders take place [23]:
1. Central (cortical) neural regulation of locomotion. Its disorders appear in the form of so called dynamic movement stereotypes, particularly in their incorrect way or erroneous fixation and processing capability.
2. Musculature represents the second main level of the locomotor system. The most significant malfunction appears in the form of shortened muscles, weakened muscles and developing muscle imbalance.
3. Joints are the third level of locomotor system. Their most significant disorder is a, so called, block – a restriction of active and passive movements of the joint because of their malfunction.

Muscle imbalance is nowadays considered the most common cause of musculoskeletal system disorders. It occurs in all age groups – children, youth as well as adults [23].

Muscle imbalance can be considered a functional disorder that adversely affects posture, movement stereotypes and muscle coordination. It limits the range of motion of the joints by their uneven and disproportionate load [8].

Conducting exercises of power yoga, Pilates and the SM system reduces muscle imbalance, improves posture and the condition of the spine.
Yoga a power yoga

Generally, yoga applies equally to both body and psyche. Yoga considers the human being as a whole – body, mind, feelings – where all the three are interconnected. The word “yoga” means union – harmony at every level. According to the classical Indian philosophy of yoga, it is a way to achieving higher spiritual states and liberation from material existence. The word “yoga” is understood as a synonym for mental practice [16].

The aim of yoga exercises is to achieve physical and mental fitness, prolonging one’s youth, but also moral and spiritual growth. Due to the nature of man, different lines of yoga have developed and those who wish to do yoga can choose the form that best suits their personality.

The most famous lines of yoga are: Raja yoga (royal), Jnana Yoga (yoga of wisdom and knowledge), Karma yoga (discipline of action), Bhati Yoga (devotion and love), Hatha Yoga (body and mind control) [15].

Yoga affects the overall physical condition of the body [15]:
— digestive system (improves bowel function, accelerates the digestive process),
— improves muscle condition and thus contributes to correct posture,
— maintains correct position of internal organs,
— improves breathing,
— improves overall immunity,
— calms the mind, increases resistance to stress.

Yoga is a living tradition. It is practised and learnt by people of various nationalities. In its current perception, yoga is not a religion, but science overhauled by experienced professionals aware of the laws of nature and human capabilities. There exist models of western yoga, such as power yoga (derived from hatha yoga) – “yoga for the people of the west” for whom yoga is represented by physical exercise – asanas and pranayama [14].

Positions (asanas) in a classic yoga keep the body motionless, often holding one’s breath while exercising – not a natural condition, and therefore, some enthusiasts chose its new forms, e.g. power yoga, vinyasa flow power yoga or Pilates.

Power yoga is a system accessible to every individual. It is yoga in the form of physical exercises widely applied also in Slovakia and the Czech Republic. It allows continuous exercise without holding one’s breath. The exercise units – positions are alternated in the rhythm of breathing. The exercises are performed dynamically, under the guidance of an experienced instructor, with regard to the age and health of the individual.

Power yoga focuses on:
— eliminating muscle imbalance,
— shaping the problematic areas of body,
— reducing fat,
— improving muscle flexibility,
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— development of the cardiovascular system,
— improving breathing,
— loosening up and relaxing.

The aim of regularly exercised power yoga is a harmony of body, mind and psyché. Power yoga releases, strengthens and loads evenly the muscles of the entire body. It removes muscle imbalance, which a considerable part of the population currently suffers from. It improves flexibility, strength, maintains natural flexibility of the joints compensates for scoliotic posture, improves flexibility and elasticity of the spine. It serves as a suitable prevention of back pain, often caused by civilization side effects, such as incorrect posture, poor exercise habits or unbalanced load. This type of yoga focuses on yoga positions with continuous breath, that is joining one phase of breath with a single position. It is a dynamic exercise during which the positions are performed within “Sun salutation” – Surya Namaskar A and Surya Namaskar B. The lessons are suitable for beginners as well as more advanced trainees. They are designed for those who have the desire and will to set off on a journey of getting to know their body and mind. Such exercise, on the one hand, perfectly develops flexibility and strength throughout the whole body, while on the other hand it regulates metabolism, the cardiovascular system, the immune system and, in addition, it relieves fatigue, tension and stress [18].

The Pilates method

Pilates is a method of physical exercise worked out and further developed in the early 20th century in Germany, Great Britain and the United States.

It was founded by Joseph Hubertus Pilates, an instructor who first published the method in 1914. The impetus for such exercise arose from his poor health during childhood and the need for regular exercise. Despite the fact that this type of physical activity celebrated its centenary last year, in our country it only got into the public’s awareness a few years ago.

In 2005, about 11 million Americans practised this method regularly. The number of US instructors of Pilates reached 14,000 then. Pilates called his method contrology (derived from the English verb “control” – meaning to manage, and the Greek suffix – “logy”). The aim of Pilates method is to improve control over one’s body, strengthen it and improve its flexibility [28].

Pilates Medical

Pilates Medical is a medical modification of Joseph Pilates’ method, which helps in the prevention and treatment of spinal and musculoskeletal disorders at
any age. Pilates has become one of the fastest developing methods helping to achieve harmony of mind and body, activate the deep muscles of the abdomen and the spine, relieve pain, model the body and improve physical fitness. Pilates Medical puts major emphasis on regular exercise and training the muscular system. One can say that proper use of Pilates “not only straightens the spine, but also the mind” [30].

Pilates’ system was originally designed to be used as an individual exercise of the therapist with the client. Pilates Medical is a medically supported modification of exercises, but also a method which the patient is learning while being treated. It is the only way a physiotherapist or doctor can really help the individual. Every patient is different, so individual approach is inevitable.

**Pilates Institute**

The Pilates Institute was founded in 1999; Its founder Michael King, Director of Pilates Institute practiced and taught this method for more than 20 years in the USA, England and other countries. Based on his experience with the Pilates method, physiotherapy research and experience in working with individual and group fitness activities, has created a comprehensive concept called Pilates Institute Faculty, which is directional, along with other world-renowned universities, in Pilates methodology and didactics.

By merging the classical method of Pilates and modern research about the Core, an improved form of the exercise modification came into existence – Pilates Institute. The program is constantly upgraded and modernized to the latest findings of scientific research by Australian scientists, physiotherapists and doctors who deal primarily with the elimination of muscle imbalance and poor posture from an individual perspective of postural ontogenesis.

Proper procedure of the exercises helps to achieve the right posture, thereby eliminating pain in the spine. It further shapes the body, increasing its fitness and flexibility.

**The basic principles of Pilates exercises** [1]:
1. Conscious breathing – helps in activating the deep muscles.
2. Smooth motion and transitions between exercises.
3. Control – all movements carried out consciously and under control.
4. Concentration on correct execution of exercise.
5. Quality over quantity – precise execution of exercise.
6. Stability – cooperation of abdominal, pelvic and gluteal muscles leads to strengthening the muscles in the middle of the body – important for good posture.

The Pilates method is not about muscle size, like in bodybuilding, but about muscle functionality. The exercises are compiled so that the muscles are practiced in all their features:
1. The muscle shortens at tension – concentric muscle contraction.

2. It gives in to the resistance, it is tense, but lengthens against resistance and reaches its starting position – eccentric muscle contraction.

3. Isometric muscle contraction – the muscle gets tense, but does not stretch.

It is a method that strengthens the abdomen, removes back pain, reduces muscle imbalance and has positive effects on the health of the body as well as on the psyche of the individual, similar to power yoga. Typical for the Pilates method is alternating relaxing and strengthening exercises, which has beneficial effect on psycho-somatics of the trainee. If carried out correctly and regularly, the result will come in a short time.

The exercise is designed for all age groups – children, men and women under the supervision of an expert. It is often recommended by rehabilitation specialists as continuation of rehabilitation therapy or additional treatment to various sports activities. It is equally suitable for individuals with overweight or chronic back pain.

Pilates is a highly effective system of exercises that are performed slowly and precisely in harmony with profound breathing and concentration. The Pilates system strengthens and stretches all muscles in the body. The ultimate aim is to build a strong and stable center of the trunk. First you actuate the deep-seated muscles (stabilizers), and then the surface mobilizers. Pilates exercises strengthen the muscles from the inside outwards [1], [2], [3], [6], [7], [9], [13].

The Pilates method is suitable for everyone – while respecting the fundamental rules and principles of the technique of exercise. The condition is:

— Correct selection of exercises, following individual physical needs of the trainee,
— Perform exercises in the order from simple ones to more complex compositions,
— Gradually increase intensity by a sense of mastering the exercise,
— Get thoroughly acquainted with the correct technique of breathing and follow it properly.

The Pilates method strengthens the deep-seated stabilizing system responsible for stability and the axial function of spine. Good quality backbone is one of the most important requirements of most individual sports performances. The function level of deep-seated back and abdominal muscles, ensuring fixation of the spine contributes significantly to the quality of postural function, i.e. the quality of mechanisms that ensure the maintenance of static upright posture and support of the skeleton during dynamic movement. Pilates exercises should be included in sports training of athletes, as well as prevention for the non-sporting population. It is one of the fastest developing methods intervening in the area of fitness, medicine, and top sports. Pilates can be used within compensation exercises [6], [13].
SM system

At present, the SM system is gaining awareness as a rehabilitation method that helps people eliminate back pain. The SM system means the spine is to be “stable” – strong and “Mobile” – flexible [19].

In this system, we focus on centralization of the spine – alignment of the spine to the middle position, and traction of the spine – stretching the spine upwards. This effect brings along entirely new possibilities for active treatment of protrusion, disc herniation, scoliosis and other spinal disorders.

Its application lies, in addition to rehabilitation, also in physical education and sports, where it positively affects muscle imbalance, correct posture and movement coordination.

The trademark owner of the SM system method is Richard Smisek, MD. It has been developed for more than 30 years now, building on 25 years of clinical experience with this exercise in patients with acute disc removal, back pain, scoliosis etc. This method is primarily about applying strengthening exercises for the weakened muscles; some stretching to extend shortened muscles; actuating exercises, which renew articular mobility; stabilizing exercises, providing the body with stability, and coordination exercises – practising movement patterns such as walking, running.

At the beginning, the author of the SM system method worked out a set of 12 basic exercises which he gradually extended and adapted to the individual patient’s needs. Part of the SM method is the alternating of contraction and relaxation [20].

Due to bad habits (sedentary life, sitting at the computer, lack of physical activity in the regimen) our muscles attenuate and it builds overload of the vertical muscle groups that cause squeezing the vertebrae together, thus causing strain to the intervertebral discs. The SM system method consists of a set of exercises carried out using an elastic rope. Its aim is to properly actuate spiral line muscle chains, thereby allowing the muscles to stretch the spine upwards so as to ensure the intervertebral discs sufficient space for regeneration and therapy [19], [20].

The overall stability of the spine includes passive stability – vertebrae, and active stability – muscles. Effective stabilization is based on correct setting of segments against each other in the particular postural and locomotor task. However, centered position should not only be represented by a static position of the segments, but also balanced muscle activity that follows a centered posture in every position during the movement. In such context, we deal with dynamic centration and stabilization of the segment, which also reflects an active process both in a particular position as well as throughout the movement [20].

Lack of exercise, or poor posture causes excessive load on the spine and results in pain. Particularly efficient are simple slow exercises that strengthen the muscles of the abdomen and the back.
The importance of SM system:
— improving mobility, flexibility in the joints,
— improving body posture,
— eliminating back pain and pain in the joints,
— regenerating the intervertebral disc,
— strengthening abdominal muscles, the gluteus and pelvic muscles,
— allows the body to return to its natural functioning of the muscle system and the entire musculoskeletal system [20].

Conclusion

At present, static muscle activity in humans exceeds several times over dynamic activities. As a result, we can say that the profile of physical activity in human life of today has changed dramatically. Many people have health problems that often result from lack of physical activity. As static load is increasing and they lack natural movement, there needs to be an appropriate way to replace it, and thus restore muscle flexibility and function, but most of all to return the human body its upright posture [11].

The aim of this article was to clarify and illustrate knowledge of physical activity in the process of health education on the example of compensatory exercises (power yoga, Pilates and SM system). We believe that the above compensatory exercises will be applicable in sports and school APE physical education in line with the attitude of the authors [3], [5], [7], [8], [13], [16], [25], and in physiotherapy presented by the authors [3], [6], [9], [10], [17], [19] and [20] for the prevention of functional changes of the musculoskeletal apparatus in athletes and the ordinary, non-sporting population.

Muscle imbalance is today considered the most common cause of musculoskeletal system disorders. It occurs in all age groups – children, youth and adults. Muscle imbalance affects proper posture, which further influences the healthy joints. Improper posture leads to muscle tension and mobility problems, often resulting in pain. Pilates, power yoga and SM system are among the fastest developing methods intervening in the area of fitness, medicine and sports. They can be used in the context of compensatory exercises as a new trend of physical activity in health education. Their application in physical education and the training process is inevitable. Compensatory exercises should be complemented by new insights and knowledge of the Pilates method, power yoga and the SM system.

Following our own practical experience and based on the above literature, we conclude:
1. Implementation of exercises of power yoga, Pilates and the SM system reduces muscular imbalances and improves posture.
2. Compensatory exercises properly complement any training program designed to improve movement patterns.

3. Pilates classes, the SM system or power yoga are methods that can be used within locomotion programs incorporating compensatory exercises as a progressive trend of physical activity in health education.

4. Scientific knowledge should be used in the application of approved exercise methods and more effective physical activity programs in the educational process have to be looked for.

5. Following our own experience, we recommend applying the above methods into the training process in order to reduce muscle imbalance and to improve general motor abilities, at a weekly rate of 2–3 hours of compensatory exercises.

It is recommended to follow the basic principles of these methods: conscious breathing, practising the correct starting position, movements to be carried out knowingly, precisely, combine correct cooperation of the abdominal and the pelvic muscles, and after mastering the basic elements gradually increase the intensity.

Literature


Streszczenie

Zdrowie jest najważniejszą wartością jednostki. Każdy człowiek potrzebuje utrzymywać i ulepszwać swoją kondycję fizyczną i psychiczną. Ciało i stawy podlegają procesowi starzenia. Procesy te możemy jednak opóźnić za pomocą ćwiczeń fizycznych zawartych w programach wymienionych w tym artykule. W artykule zajmujemy się rolą trzech form aktywności fizycznej w edukacji zdrowotnej – power jogą, Pilates i systemem SM. Celem autorek jest przedstawienie tych form aktywności fizycznej jako nowych możliwości, które mają pozytywny wpływ na fizyczny i umysłowy stan człowieka, i które są poparte samokontrolą i automotywacją.

Słowa kluczowe: zdrowie, metoda Pilates, power joga, system SM.