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Functional role of postural control to maintain balance, equilibrium and coordination of human body movements - modern methods of measurement, prevention and correction of postural stability

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Abstract
This article, by means of an in-depth review, reflects «how» and «why» these two parts - the mind and the upright posture are interconnected, and how relevant are the current outlooks of psychophysiological methods for assessing, maintaining, and correcting of a postural tone as well as human balance and equilibrium. At the moment, the subject of a diagnostics and successful correction of a postural tone and stability of the human body in the area of a preventive medicine and physical rehabilitation is relevant and requires additional study and further scientific research. The meaning, purpose, and novelty of this study: a theoretical analysis of the quality of human movement for the subsequent development of a program for correcting disorders in a correct movement stereotype. The **Introduction** contains a brief overview of the current situation in the area of an intellectual and physical development of a person. This part also provides a definition of a term "posture". The prospects and meaning of the following thesis are devoted to the biomechanics of a human movement, its effective psychophysiological assessment and adequate correction of movement disorders, postural balance, coordination, and stability. The **Theoretical justification** contains a detailed analysis of the following theoretical aspects: the vertical posture of a person as part of postural management; the main function of a postural control and statokinetic system; postural tone; the role of diagnosing and assessing the balance and equilibrium of the body to reduce the level of traumatism; future prospects for stabilometric rehabilitation. The **Discussion** reflects the intersection of the author's position with the scientific works of other authors in this area. The author points out the importance of the analysis and synthesis of information from articles about the practical application of single tests as well as balance tests for the scientific research. The **Conclusion** contains a brief description of the main results of the theoretical overview.

Keywords
balance, postural tone, postural control, statokinetic system, stabilometrics

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Функциональная роль постурального контроля для поддержания баланса, равновесия и координации движений человеческого тела - современные методы измерения, профилактики и коррекции постуральной устойчивости

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Аннотация
Данная статья, с помощью углублённого обзора пытается отразить «почему» и «как» две части — разум и прямохождение связаны между собой, и на сколько актуальны на сегодняшний момент современные перспективы психофизиологических методов оценки, поддержания и коррекции постурального тонуса, а также баланса и равновесия человека. На сегодняшний день тема диагностики и успешной коррекции постурального тонуса и устойчивости тела человека в области превентивной (предупреждающей) медицины и физической реабилитации является актуальной и требующей дополнительного изучения, и дальнейших научных исследований. Смысл, цель и новизна проведения данного исследования: теоретический анализ качества человеческого движения для последующей разработки программы коррекции нарушений правильного стереотипа движения. **Введение** содержит краткий обзор актуального положения дел в сфере интеллектуального и физического развития человека. В этом разделе также приводится определение понятия «постура». Излагаются перспективы и смысл последующего диссертационного исследования, которое будет посвящено биомеханике человеческого движения, его эффективной психофизиологической оценке и адекватной коррекции двигательных нарушений, постурального равновесия, координации и устойчивости. **Теоретическое обоснование** содержит развернутый анализ таких теоретических аспектов, как: вертикальная поза человека как часть постурального менеджмента; основная функция постурального

контроля и статокинетическая система; постуральный тонус; роль диагностики и оценки баланса и равновесия тела для снижения уровня травматизации; будущие перспективы стабилометрической реабилитации. **Обсуждение результатов** отражает пересечение авторской позиции с положениями работ других авторов в данной области. Автор указывает на важность анализа и синтеза информации авторов статей о применении на практике простых проб и тестов на равновесие для своего исследования. **Заключение** содержит тезисное описание основных результатов теоретического обзора.

Ключевые слова
баланс, постуральный тонус, постуральный контроль, статокинетическая система, стабилометрия

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Introduction

It is popularly believed that a human of today comes from Homo Erectus (an erect-walking individual), who probably is the ancestor of Homo Sapiens (a rational individual). In case of accenting the key points of the main human characteristics, this name changes into Homo sapiens erectus. Humans have become rational and erect-walking over a long evolution. The aim if a human race is not to lose these two properties because they are inextricably tied up, and determine a seamlessly developed and a healthy person.

At the moment, along with the technocratic progress that has fallen on the way of life and rhythm of every person, there is a tendency to disrupt posture, gait, and physique, intellectual and physical development. As a result, the acquired motor compensations and the loss of important movement patterns with a significant loss of the unique properties of the human body and personality are revealed as a whole. This is a payment for "the blessings" of civilization to some extent, and it also comes from an ignorance and laziness.

This article provides an in-depth review of the connection between the mind and bipedalism. The relevance of a modern outlook on psychophysiological methods for assessing, maintaining and correcting of the postural tone, as well as human balance and equilibrium, has been revised. The term "posture" is defined as the position maintained by the body, either through muscular activity or as a result of a coordinated contraction of a group of muscles specifically working to maintain it.

This article is one of the starting points for the upcoming research, which will be devoted to the biomechanics of a human movement, its effective psychophysiological assessment and adequate correction of movement disorders, postural balance, coordination and stability.

The purpose of this work is to improve the quality of a movement by generating new hypotheses and involving engineers, physicians and scientists specializing in the problems of human body movements, to involve specialists and patients in the community focused on the studying of body movements, to collect and develop a knowledge base, skills and technologies, helping clients and patients to move correctly.

Theoretical justification

Vertical human posture as a part of postural management

A newborn baby cannot walk and sit at once. Being in a venter a child does not experience gravity, so he floats in the amniotic fluid, as if in weightlessness. The embryo is folded into a spiral, which gradually unfolds. At the time of birth, the newborn straightens up a little, but the legs and arms are still pressed. In one way or another, the straightening has already begun. In the further process the diaphragm is the central point of straightening. Figuratively speaking, as the pump pumps up the deflated halves of the ball from below and straightens it from above, so in the chest and abdominal cavities the pressure must be maintained at the proper level, otherwise atmospheric pressure will not allow the organs to work and develop to the full extent. On the other hand, under the influence of a constantly working diaphragm, core muscles begin to form, some of them are postural ones - responsible for bipedalism and posture. And if we touch upon the basic neurological patterns of newborn children, and consider how muscles develop gradually and resist gravity – at first the head is raised and held, so the assessment of the world begins. Then the child rolls over, rises, and begins to sit, stand and walk. It can be said that all periods of development replace each other relatively quickly, but they are of a cardinal nature.

The patterns themselves are quite simple - (1) lie on the back and move arms and legs, (2) roll over from the back to the abdomen, (3) raise the head, (4) crawl, (5) walk on all fours, (6) stand on the feet, (7) walk on two legs (Wisdom of the Body Moving: An Introduction to Body-Mind Centering Paperback 1995). Initially, the child is unsteady, falls and rises. Then by means of long daily trainings their balance and stability improve. At the same time, during the first year the child undergoes the most intensive development and formation of the brain and nervous system (Zdenek, 1999). If we compare the proportions of the body of an adult and a child, the fact of the combined development of the postural and nervous systems becomes obvious.

In the first year of life, the brain of a child doubles and weighs about 1 kg, and the mass of the brain of an adult is just over 2 kg. During this period, neural connections are able to form in areas of the brain that are responsible for physical development, speech and emotions. They develop at a high rate of up to 700 synapses per second, provided that the child actively acquires motor and other skills, often repeating movements, which is a kind of a constant training. Children have the heavier upper part of the body in the size of the head compared to the lower limbs. The child has the center of inertia at the level of the last thoracic vertebra, and the adult - at the level of the fifth lumbar – the first sacral.

Due to the small stature, immaturity of a musculoskeletal system and high center of inertia, children sway more frequently than adults. That is, the task of maintaining the balance in statics turns out to be a little more difficult for children, since the body sways with a bigger frequency and amplitude. However, after the age of 7 years old there is no correlation between anthropometric parameters (height, weight, age) and swaying in the upright position (Lebiedowska, Syczewska, 2000; Masaryk, 1964). Uprightness is a property determined by the harmonious and correct functioning of many organs and systems of our body. Here it is necessary to focus on the following components: firstly, musculoskeletal structures that are responsible for biomechanical interactions between related body segments range of motion in the joints, flexibility of the spine, normal muscle tone (Os'minina, 2020; Lowen, 2000; Lowen, 2006; Lowen, 2007). Second, the neural components essential for postural control consist of the neuromuscular connection (transmission of impulse from the nerve directly to the muscle); from sensory\proprioceptive processes that combine information from the visual, vestibular and somatosensory systems; from cognitive processes of the highest level to ensure activity, prediction and adaptive reactions of postural control. These high level processes can be defined as cognitive influences on the regulation of body position in space. It is important to specify two main processes. The first is the process of adaptive postural control involving the changing in the sensory and motor systems in response to what the person wants to do at the moment in the environment (for example, accidentally slipping). And the process of predictive postural control preparing the sensory and motor systems in advance for postural requirements based on prior experience (for example, when planning to walk on a slippery surface). Other cognitive processes affecting postural control (Duarte, Sternad, 2008; Del Porto, Pechak, Smith, Reed-Jones, 2012; Capodaglio, Cimolin, Tacchini, Parisio, Galli, 2012) include attention, motivation, and aim.

That is, maintaining an upright position is the result of complex interactions of multiple systems in the human body working in concord to control both orientation and body stability. From a biomechanical point of view, the anatomical and functional model of the statokinetic system compares the human body with a model of an inverted pendulum, and its stability is achieved via the work of muscles. The main posture of a healthy person in the projection shown in Fig. 2, is a vertical passing through the CCI (common center of inertia) of the body, descending from the center of the head, passing 1 cm forward from the 3rd–4th lumbar vertebra through the center of the hip joint, onwards the knee joint and lies on the supporting area for 4-5 cm forward the line of the inner ankles. The hip and knee joints are closed passively, the ankle joint is closed by the tension of the triceps muscle of the leg – this is how the balance of the body in the main posture is controlled. Ideal verticalization in a standing posture allows the body to maintain the balance with minimal loss of internal energy.

The main function of postural control and the statokinetic system

Let's consider the major function of a postural control – balance and keeping balance. Balance is one of the most important activities in a daily life. Pathological processes can cause the loss of stability and complicate the daily life of people. Poor posture forces the body to redistribute the energy of the body to maintain balance against the other processes - digestion, respiration, blood circulation, mental work and physical endurance. The consequences of impaired stability reduce vitality and raise the risk of falls. What is the functional role of balance? Balance is a fundamental ability of human movement. Maintaining of balance during antigravity activities, as well as correct body posture is the basis for performing other secondary movements. These features are meant for moving and interacting with the environment (Winter, 1995; Panjan, Sarabon, 2010) A vivid illustrative example of people for whom balance is important but at the same time they have its shortage is the elderly. Falls are a big problem among elderly people. The balance is lost due to the influence of various factors, which is the reason for the increased risk of falls. Approximately 15% of falls require medical attention due to concussions and fractures (Matthews, Ellis, Furness, Hing, 2021). In comparison with the past, the risk of hip fracture has quadrupled due to an increase in osteoporosis in the extremities (Corciulo, Cronstein, 2020; Pang, Ashe, Eng, 2007).

Elderly people mostly fall down while walking, on stairs, and when transferring from one vehicle to another (Michael, Patel, Rabchevsky, 2019).

Postural instability or (impairment of balance) is one of the most common complaints in neurology and orthopedics. At the moment the number of patients with balance disorders is increasing. The frequency of occurrence of pathological disorders of central nervous system ranges from 40% to 100%, depending on the nosological form of the disease and the age of the patient. Imbalance is a short-term or permanent inability to control the body posture in space, shown by unsteady gait, unexpected falls, swaying, and impaired coordination. Postural instability has a high social significance, since the majority of patients are people of working age, and this set of maladjusted symptoms significantly worsens their quality of life and limits their professional activities.

A complex statokinetic system is involved in the implementation of the balance function (Fig. 1), including afferent (vestibular, visual, proprioceptive) and efferent links (neurovegetative, muscular). The receptors of the vestibular apparatus are activated at first. They are the nerve impulses from which the descending vestibulospinal tracts come through to the muscles of the trunk and extremities, as well as through the vestibulocerebellar connections to the cerebellum. The nerve impulses from proprioceptors pass along the ascending pathways into the nuclei of the basal ganglia and the cerebellum. Then they switch over in the thalamus to the second neuron and project into the parietal lobe of the brain, where the body schema is formed.

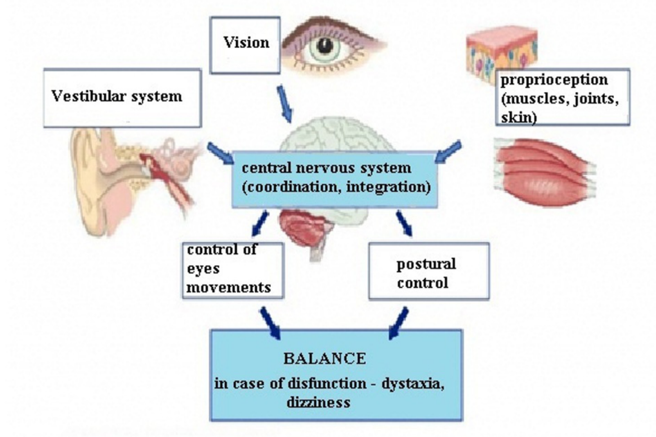

Figure 1. Scheme of the statokinetic system operation.

In a statokinetic system, all its constituent parts are equally important; it's not as if any one analyzer or physiological mechanism plays an exclusive role. At present the statokinetic stability is understood as the ability of a person to maintain a stable functional state, spatial orientation, balance function, professional performance due to the optimal control of all physiological functions under the influence of statokinetic stimuli occurring passively and actively in space. And a concept of similar import "postural balance" is defined as the ability to maintain, control the common center of inertia (CCI) of the body in order to prevent the loss of balance in static and dynamic positions. The concept of a single human statokinetic system is the methodological basis for assessing the function of balance and coordination of movements (Rud, Melnikova, Rassulova, Gorelikov, 2017).

Postural tone

Many researchers have been studying the mechanisms of regulation of maintaining a human posture for 100 years. The founder of the theoretical basis of modern posturology is the Russian physiologist N. A. Bernshtein, who clearly formulated the concept of a feedback in the physiology of movements and three main types of postural balance control mechanisms: reflexes - automatic responses of the nervous system to changing conditions; synergies - the classes of motions with kinematic characteristics; strategies - the complex movements performed unconsciously or consciously to obtain the desired result.

Let's consider the example of difficulty standing at rest. The inability to stand upright at rest is pathological and is a common symptom for those with various types and degrees of disorders. The inability to assume and maintain a stable posture during any movement often requires the use of the arms to maintain balance. So, it limits the use of the arms for carrying out usual tasks. Postural imbalance also increases the risk of falls and injury. The factors contributing stability of a standing person include: body alignment, muscle and postural tone, movement strategies that control spontaneous swaying, and recovery from the loss of stability. To maintain balance in standing posture it is necessary to assess the position of the body in space first of all. This is provided by many receptor sensors perceiving the tension or relaxation of each muscle, whether a person is standing straight or deviating, and the force of the feet leaning on the ground. It is also important to give recognition for the environment. What allows you to take an upright position remaining the body stable? The stability defining the sitting and standing positions is often referred to as "static balance" because the area of support remains constant. The breadth of stance is determined by the space where the feet are placed to make the body is stable. People with postural deficits or a poor posture have a larger breadth of stance than healthy people, so they usually try to stand with their legs wide apart, and if this distance is reduced, then they have to take a step to maintain balance. However, this term can be misleading, since maintaining the verticality of the body is a dynamic process whether a person is sitting or standing motionlessly. A motionless standing is characterized by a small amount of spontaneous swinging. Normally, this is almost imperceptible. A stabilometric platform is often used to determine the degree and type of swaying. A number of factors hold up the stability in this position. First, the straightened position of the body minimizes the effect of gravity tending to decentralize. Secondly, the muscle tone keeps the body from falling down in response to gravity. Three main factors hold up the basic muscle tone when a person is standing still:

- the quality of the muscles;
- basic muscle tension turning out in all muscles due to the influences of the nervous system;
- postural tone - activation of anti-gravity muscles. When a person stands upright he counteracts the gravity, which pulls his body down (Tkach, Huang, Kuiken, 2010; Kendall, H., Kendall, F., Boynton, 1952; Kendall, McCreary, Provance, 1983; Schenkman, Butler, 1989).

In the vertical position of the body the activity of postural anti-gravity muscles increases resisting the gravity. This is called a postural tone. Sensory information from multiple systems is necessary for its maintenance. Damage of dorsal (sensory) horns of the spinal cord leads to decreased postural tone, indicating the importance of somatosensory sensitivity in postural responses. This mechanism is formed during the period of infancy, if the baby slides a finger along the plantar side of the foot, this causes a reflex of support and automatic walking, thereby increasing the postural tone of the extensor muscles.

Somatosensory impulses occurring during the change of the head position can also affect the distribution of muscle tone of the body and extremities. The muscle tone is influenced by the visual and vestibular systems. When the position of the head changes vestibular influences also change the muscle tone in the neck and limbs and are called "vestibulospinal reflexes". In the medical literature much attention has been paid to the concept that a postural muscle tone is the primary mechanism in holding the body against gravity. In particular, a lot of clinicians believe that muscle tone is a key element in maintaining normal postural stability in the upright position (Davies et al., 1985; Schenkman, Butler, 1989).

Researchers have found that lots of body muscles are tonically active during a stationary upright posture (Tkach et al., 2010). Some of these muscles are shown in Fig. 2 and include:

- m.soleus and m. gastrocnemius, as the axis of gravity runs slightly anterior to the knee and ankle
- m. tibialis anterior, when the body leans back;
- m. gluteus medius, m. tensor fasciae latae;
- m. iliopsoas, which prevents hyperextension of the hip;
- chest part m. erector spinae (with periodic activation of the abdominal muscle group), since the gravitational axis runs in front of the spine;
- diaphragm. Recent studies have convincingly shown that the diaphragm plays an important role in maintaining a postural control. It simultaneously performs two functions - postural and respiratory. Diaphragm activation is the basis of any body movement by reducing and then providing the necessary intra-abdominal pressure, thereby stabilizing the lumbar spine.

Figure 2. Active muscles holding the Barre vertical (Adapted on Kendall F. P., McCreary E. K. Muscles: testing and function. 1983)

Scientific studies show that the muscles of the body are constantly tonically active, keeping the body at rest in a limited vertical position. While the term "static" postural control can traditionally be used for an upright position at rest, the process is actually dynamic. In practice, active sensory processing occurs during the holding of a posture, with a constant display of ongoing activities. In this way, the postural system can figure out exactly where the body is and where it will be in space, and what actions should be taken.

The role of diagnosing and assessing the equilibrium and balance of the body to reduce the level of trauma. Future prospects for stabilometric rehabilitation

Let's consider another important aspect of balance observed in sports - a violation of the balance of the body and, as a result, the possibility of injury. It was found that the lack of balance is caused by various pathologies and may even be their reason (de Noronha, Refshauge, Herbert, Kilbreath, Hertel, 2006). But on the other hand, an excellent sports mastery also requires a good balance. For example, a gymnast during the beam training must rely on a good balance to perform various acrobatic elements. Much attention has been paid to understanding the concept of balance (Benvenuti, 2001; Winter, 1995; Winter, Patla, Ishac, Gage, 2003). From a mechanical point of view, this concept is defined as the ability to keep the body center of inertia within the area of bearing (Sarabon, Rosker, Loefler , Kern, 2010). If the athlete is not able to fulfill these conditions, she begins to fall. The area of bearing is determined by the space between the feet or the area the athlete stands on. For example, the size of the area of bearing can be reduced by using a narrower area, as well as by standing on a tightrope in a circus.

Our bodies maintain balance using the different strategies. The two most basic are the "hip strategy" and "ankle strategy" (Winter, Patla, Prince, Ishac, Gielo-Perczak, 1998, Winter, 1995). The first is used by the body when the area of bearing is moving, or when there are more unbalanced conditions. The second strategy is usually used to compensate the rotational and other minor conditions influencing the balance. A clear difference between these two strategies can be seen only in simple movements. As the intensity of balancing increases, they seem to work synchronically, compensating the different types of external interferences, or allowing more complex skills to be performed (Bardy, Oullier, Bootsma, Stofrregen, 2002)

Based on knowledge of the mechanisms used to maintain balance, specific prevention and rehabilitation protocols have been developed (Alentorn-Geli et al., 2009; Hübscher et al., 2010; Myers, 2009; Goble, Cone, Fling, 2014) or general reactions of a body using functional training (Bean, Vora, Frontera, 2004). Usually this type of training is called balance, or teaching the proprioceptive sensation of the sensorimotor system (Lephart, Riemann, Fu, 2000; Aman, Elangovan, Yeh, Konczak, 2015). From the above-mentioned examples, 2 main arguments can be concluded for an even better and more comprehensive understanding of balance. If a healthy person is found to have a prior poor balance, some appropriate preventive measures can be taken to prevent falls and injury (Alentori-Geli et al. 2009). The same applies to the elderly (Karinkanta, Piirtola, Sievänen, Uusi-Rasi, Kannus, 2010). The second argument advises to assess the balance of athletes in advance, as poor balance can negatively affect certain sports skills and future achievements (Behm, Anderson, 2006; Hellström, 2009).

As an example of a further application of the results of this work, the use of advanced technical tools can serve for analyzing the human gait and movements in the process of diagnosing, restoring and developing of the body via retraining and training. By virtue of the versatility of game modules and game exercises, as well as various virtual reality settings with profiles for sports, rehabilitation and occupational therapy, this format can be used both in the field of rehabilitation and in physical therapy. Balance and coordination biofeedback training devices can offer hundreds of ready-to-use exercises and programs for posture training, functional training, balance exercises and strength exercises. It will be possible to perform some loading exercises with a closed and open kinetic chain, which can be suitable for both healthy people and people with pathologies of the lower and / or upper extremities (orthopedic and neurological nature). The training device can also provide objective balance testing to assess fall risk and manage injury.

The specialists in related fields can use to improve their work the following functions of such training devices:

– testing and training in various modes of motor activity and aerobic training; testing and training postural stability during movement; testing and training of coordination and sensorimotor-segmental and general skills; testing and corrective training therapy for joint dysmetria/asymmetry (presence of dysmorphisms and/ or paramorphisms) with an emphasis on the head, trunk, shoulders, hips and knees; biofeedback that evaluates each joint according to its movement physiology.

Use in orthopedic treatment (post-acute phase, if practicable and/or possible), in particular:

– restoration of a shoulder mobility; after prosthetics of the hip joint; after prosthetics of the knee joint; after prosthetics of the ankle joint; reconstruction of ligaments (shoulder, hip, knee, ankle joint); instability and weakness of ligaments (shoulder, hip, knee, ankle joint); restoration of tendons of varying degrees; problems with the spine; degenerative problems; patella; restoration of tone; trophic dynamics.

Use in neurological treatment: (post-acute phase, where practicable and/or possible), in particular:

– restoration of general motor skills (upper and lower limbs); stroke; hemiplegia; disorder of coordination of movements; multiple sclerosis (sm) (Cattaneo, Jonsdottir, Regola, Carabalona, 2014); kinesthetic regulation of motor skills; paraparesis (damage to the spinal cord); parkinson's disease (pd) (Ferrazzoli et al, 2015); degenerative diseases.

Typical users will be able to:

– test and train posture, conduct functional training and fitness; have testing and training therapy to maintain/enhance performance and to prevent/plan recovery activities.

Results and Discussion

In short, I would like to note why I chose the topic of psychophysiological assessment and correction of postural stability for review, annotation and analysis. The topic of my thesis work is directly related to the study of measurement methods and further correction of human postural control. Therefore, this scientific area and disputes about the application and effectiveness of various methods for studying the balance of the human body are very relevant in the conduct and description of my thesis experiment. The analysis and synthesis of the information on the practical application of simple trials and balance tests turned out to be very important. Such as, the Romberg test in all its variations. A more complicated version of the balance assessment is the Flamingo test, the Tinneti balance test for the elderly people to assess the risk of falls, as well as the stellar excursion balance test (SEBT), completely unknown to Russian psychophysiology

It is interesting to note that various data of the balance tests are obligatory included in the methods of modern neurological research (screening) of human motor functions. Moving from the description and analysis of elementary simple balance tests to more complex and expensive ones, various authors touched upon such important concepts for maintaining the stability of a person's balance as: proprioception (the ability to recognize one's body in space), exteroception (the ability to feel touch or pressure), vision (which can be used to monitor changes in balance) and the vestibular analyzer (an important component of the human coordination and balance system). The basis of most methods measuring balance and quilibrium is that the latter is achieved through the combination of several complex neurological systems, namely proprioception, vestibular system and vision. If any two of these systems work properly, the test person should have been able to demonstrate a reasonable degree of balance. And only when you come to grips considering the work of "smart and high" nanotechnologies of the latest generation for assessing, analyzing and training of the balance of the human body, you understand that such achievements could not be successful without the "neurological foundation" which the entire structure of movement is built on: from a stationary position or static body, to motor sequences and all-encompassing movement leading to a change in position or movement in space.

Conclusion

The movements of the human body are performed not only by muscle retraction, each movement has several constituent parts. By the means of movements, a person is born and integrated into society. A movement consists of body positions, simple and complex movements of body parts. Motor skills are part of a person's general abilities and affect the quality and completeness of interaction with the outside world. The catastrophically increasing number of disabled and maladjusted children and adults is shocking.

If a disability is congenital, this is a misfortune, but when a person moves towards his incapacity, it is a fatality, a catastrophe of our modern society. The human body is designed to perform specific actions, and if a person is weak, one will not be able to perform the certain progressive movements leading him to his personal optimum and maximum. The body needs work. It is simply necessary for development and improvement, which must be accompanied by work, pain and effort. This is an inevitability discharging from weakness and vital immobility. An absolutely perfect geometry is put initially in our body. This means a perfect posture, and consequently the real perfection of the physical form of each person.

And in turn this affects not only the area of the human musculoskeletal system, and every sphere of human existence. This article was intended to highlight the current state and level of development of existing methods for assessing (stabilometry) and correcting postural stability (stabilotraining). So undoubtedly, they can help to maintain the geometry of more than one human body with their effective and adequate use in rehabilitation practice.

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