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KINESIOLOGICAL PREVENTION IN PRESCHOOL AND EARLY SCHOOL EDUCATION

KINEZIOLOŠKA PREVENCIJA U PREDŠKOLSKOJ I RAZREDNOJ NASTAVI

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SAŽETAK

U današnjim uvjetima rada prevelike grupe djece i nedostatak materijalnih uvjeta (dvorana, igrališta) čine provedbu plana tjelesnog vježbanja ponekad otežanom. Neupitna vrijednost vježbanja u tim uvjetima se smanjuje pa inventivnost u implementaciji sadržaja Tjelesne i zdravstvene kulture može biti put do zdravlja i edukacije najmlađih.

Kroz ovaj rad autorice promišljaju o kineziološkim operatorima kao prevenciji u predškolskoj dobi i razlažu je: zdravstvena prevencija, socijalna prevencija, odgojna prevencija, prevencija obrazovne zapuštenosti, prevencija ovisnosti, prevencija smetnji mentalnog zdravlja.

Za svaku od navedenih prevencija moguće je osmisliti kineziološke operatore u funkciji ostvarenja danih zadaća i u tome je blagodat kineziologije kao temelja odgojno-obrazovnog rada.

Kineziološki sadržaji odlično nam mogu poslužiti u pripremi djece za školu, jer različitim zadacima obrazovnog dijela pridajemo sadržaje kretanja čime djeca uče kroz igru i radost doživljaja. Djeca tako najlakše usvajaju gradivo, bez dosade ponavljaju već usvojene sadržaje i u pretrpanome rasporedu štedi se vrijeme jer se interpoliraju međusobno gradivo, vještine, kompetencije i sposobnosti na najkreativniji i najefikasniji način.

Ključne riječi: vježbe za stopala, zdravlje, kineziološki operatori, tjelesna i zdravstvena kultura

SUMMARY

In today's preschool occurrence groups are often too big, a lack of material resources (gym, courts) are common, conditions for the performance of physical education is often inadequate. Unquestionable benefit of exercise in such circumstances is decreasing and inventiveness in the implementation of Curriculum of Physical Education can be a path to health and education of the youngest.

Throughout this paper the authors reflect on the kinesiological modalities as ways of prevention at preschool age at many levels: health prevention, social prevention, the educational prevention, prevention of educational neglect, addiction prevention, prevention of mental health disturbances.

For each of these prevention measures it is possible to define kinesiological modalities used to achieve the given tasks and that is the benefit of kinesiology as a cornerstone of educational work.

Kinesiological activities can serve us well in preparing children for school, because we add movement activities to different tasks of educational content, and that way children learn through play and joyful experience. In that way children acquire matter in the easiest way, they repeat already acquired activities without boredom and apart from that, the time is saved in a busy schedule because matter, skills and competences are interpolated in the most creative and effective way.

Key words: exercises for feet, health, kinesiological modalities, Physical Education

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INTRODUCTION

More and more we are aware of the generation of children that left us speechless as we watched their energy which manifested by constant movement. As soon as they walked they would no longer be in one place - we would say, "They constantly run, as if on batteries!". As we turn around they are already on the climber, on the swing, on the bench, in the sandbox. There is a saying which says that if evolution was just, a mother would have eight arms like an octopus. And how do preschool teachers manage in today's conditions where groups are too big, there is a lack of material resources (gyms, courts), climbers are inadequate, conditions for the performance of Physical Education (hereinafter referred to as PE) are unsafefi Even more often, "we kinesiologists" hear justified complaints about the fear of injury, demanding parents, lack of understanding of the working conditions, educational content overload, lack of time for educational work, because the upcoming generations of children are "different." Generally, these are the so called "hyperactive" children who are not yet accustomed to order, they have difficulties in communication, and all that because of the equipment, a large number of children in confined spaces, and similar long-term ailments.

How can kinesiology help as a scientific branch which brings together the delicate flowers of younger age groups and leaves of older age groups who are even more often working in mixed groupsfi

Can we give "hyperactive" children through kinesiological modalities more movement, the introverted children through kinesiological modalities more guided experience of socializing with other children, those extroverted a chance to express themselves, and all that through the content that all children naturally love at that age, and that is to move "as if on batteries"fi How can we get a whiff of spring in our difficult working conditions and a leafy branch of a delicate tree called - our children.

Throughout this paper the authors reflect on the kinesiological modalities as ways of prevention at preschool age at many levels:

› Health prevention (musculoskeletal, cardiovascular, respiratory and other body systems disorders);
› Social prevention (social inclusion, celebration, creative abilities in function of personal and social responsibility);
› Educational prevention (hygienic habits, adopting the manners, independence, security, cooperative relationship with yourself and others);
› Prevention of educational neglect (tactile - muscular sensitivity in function of educational content, self-initiative through the knowledge of tasks in various situations);
› Addiction prevention (satisfying the need for play, rest and meaningful leisure through pleasure and joy);
› Prevention of mental health disturbances (depression and other - develop a sense of self-esteem, confidence, creativity, self-image, feelings of belonging to the group, kindergarten).

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The authors notice that through kinesiological activities comes the prevention of:

- poor motor skills
- poor morphological status of the child
- musculoskeletal, cardiovascular, respiratory and other systems illness
- emotional and mental health problems
- stereotypical thinking of exercise as something "difficult"
- prejudice against children with special needs

and finally show the practical use of kinesiological modalities in health prevention using natural factors such as sun, air and water, and give an idea of how to integrate educational content through kinesiological modalities.

GROWTH AND DEVELOPMENT OF FEET OF PRESCHOOL CHILDREN

Long ago the man was walking barefoot on an uneven terrain continually stimulating reflex zones of all parts of the body located on feet, thereby achieving a balance of the endocrine, blood, nervous and other systems, while children today spend more time watching television or in front of personal computers, what mainly confines them to indoor space. This significantly reduces the quality of their life in terms of physical activity and they are increasingly subject to the new trend of technology, information technology and civilization (4,6,9).

The foot has a dynamic and static task. The foot is the mainstay of the human body through which generally all kinds of basic forms of motion are conducted, but the basic form of human motion is walking which is manifested through steps. In the technique of human walk, a step begins by leaning on heel, then passing over the outer edge of the foot the weight of the body is carried to the front of the foot where, with the help of the big toe, it takes off the surface and moves forward into a step forward. It is assumed hypothetically that we make on average 8 to 20 thousand steps on a daily basis (5). Therefore, the aim of this paper is to present the most basic exercises to strengthen muscles in the feet to prevent flat foot in preschool children.

The bones of the lower limbs grow from the bottom up. Foot bones begin to grow first (so their growth ends earlier). The foot is active (although reflexively) from birth, but its function begins with crawling. The first resistance off the ground begins through the support of the big toe and toes, and it is intensively engaged in attempts of standing by a prop and erecting on feet while maintaining balance. The importance of foot muscles is often not perceived at the beginning of walking. The

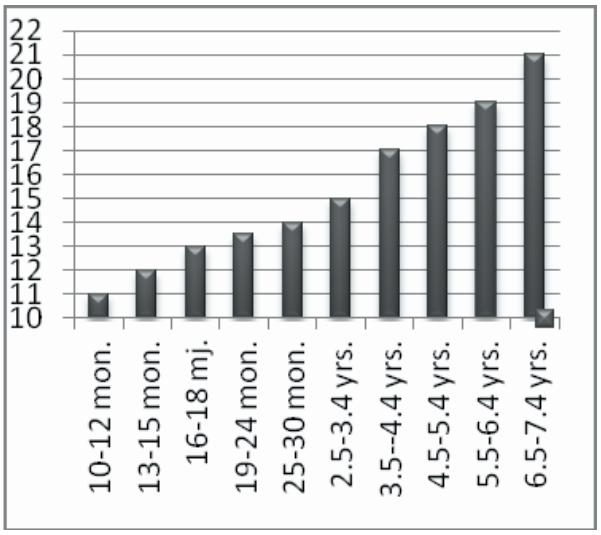
opportunity for barefoot first steps would largely prevent the formation of foot deformities.

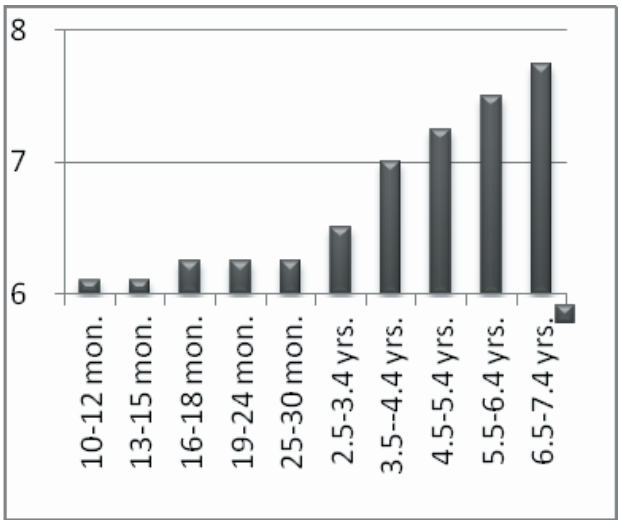
The value of natural movement in a child's development is increasingly recognized, therefore the development of technology enabled special tracks of new foam materials that imitate sand and natural soil, so the children who live in urban areas can get approximately such possibility.

So let's enjoy the natural beauty of the country in which we live, the cheapest and the most natural variant of sand, water and sun. The nature has enabled such an intensive growth by bones being flexible, the skeleton is rich in cartilaginous tissue. Exercising stimulates bone strengthening. By daily exercising muscles and ligaments "receive information" that they must develop, inactivity causes everything to atrophy. By carefully controlled exercising in preschool age we contribute to stronger and more resistant skeleton and create the basis for proper posture in later life.

Reports of findings in younger children show the pain of growth (defined as "Growing Pains"). It was pointed out that "growing pains" are often present in children in primary school too, and are the reason for not exercising because of discomfort. Just the proposed exercises can prevent the growing pains due to better circulation induced by exercising, the benefits of sea water and hydro massage indirectly.

The foot grows 7 cm in length (Graph 1) and almost 2 cm in width (Graph 2) from nursery age through preschool age. The progression of foot width is logically the greatest from the moment of increased movement, when it also comes to significant vertical growth of children. How much the feet must adapt to maintain balance through the increasing parameters of height and weight of the body, with everything passing over feet that must balance everything. This is not just about standing but the full body movement through daily activities of a preschooler. How many steps are taken on average in just one dayfi





Graph 1 Anthropometric measurements of the average foot length of preschool children

Graf 1. Antropometrijska izmjera prosječne duljine stopala djece predškolske dobi

Graph 2 Anthropometric measurements of the average foot width of preschool children

Graf 2. Antropometrijska izmjera prosječne širine stopala djece predškolske dobi

(usporedne vrijednosti dobivene na osnovu podataka Vrdoljak, J. i sur., 2004)

The survey conducted by Vrdoljak (8) and his associates in Croatia on 500 respondents in adulthood on a randomly selected sample, showed that only 21% of respondents have a healthy foot. Egyptian type of foot, where the big toe is the longest toe, has 90% of respondents, and the Greek type of foot, where the big toe is shorter than the other toes, has 10% of respondents.

Is there more important integrative base than kinesiology, taking into account the universality of the influencefi Let us consider the possibilities that we open up for our children by integration of kinesiological activities. With one such natural activity such as moving skilfully integrated into the educational content, we not only educate physical, but also mental and emotional potential of the child. Hand in hand with this there comes the aspect of health, the balance of overall child's development from an early age.

KINESIOLOGICAL MODALITIES IN THE PREVENTION OF FOOT ABNORMALITIES

For children of this age it is characteristic to imitate and for this reason we designated the exercises by associativity to terms that they parallelly perceive through the media or as program content. When determining and distributing loads and deciding how long the selected content will last, we are guided by professional standards (indicators of external and internal load), the mood of

children and monitoring of their interest in content with the goal of finding optimal load (2,3).

These exercises have the purpose of educating the children's motor skills, coordination of movements of arms and legs, which means reducing undifferentiated movements and the development of basic movements required for optimality of walking, consequentially of running and jumping, and possibly later upgrading with sports training. They are designed according to didactic rules of gradualism: from closer to farther; from concrete to general; from simple to complex; from easier to harder, from known to unknown.

Figure 1. Exercises for feet in place
Slika 1. Vježbice za stopala u mjestu

"grow"
„narasti"

"holes in the sand"
„rupe u pijesku"

"cowboy"
„kauboj"

"bambi"
„bambi"

By analogy of the names of exercises with movement (especially if the educator is so enthusiastic to convey it to the children) one can easily reach the optimal load. The children, through unrestrained, but still guided playing activities "give most of themselves" and are on the way of transformation processes. Children of middle age group (4 -5 years), already differentiate the forward – backward motion, they slowly begin to distinguish the left and the right hand, and eventually the left and the right leg, so in this context, these exercises can be enhanced to develop this kind of skills, improve orientation in space, use counting as part of learning to count from 1 to 10. The educator thus by using their knowledge can recognize and integrate program contents of other areas and use them in the physical education and vice versa. For the older age group (5 - 6 and 7 years) these exercises are already acquired subject matter if they have been conducted in the past. At that age they can already line up by height, use the work in pairs, they can be spaced in a row or line, and they can be seamlessly taught to use such way of work in PE class at school and facilitate the work of teacher who works in a class with many more children. In this regard, already formed children will be quicker to switch to a more organized physical exercise, in order to increase motor skills and the level of motor achievements.

There are many factors present from flexion and extension of muscles, strengthening of tendons to the functioning of joint systems and ultimately the most important pillar of the body - the spine (7). By only small shift towards exercising that systematically involves feet, we can improve the child's basic movements like walking, running and landing that are part of their daily movements.

We need motor control in learning the function of movement. Instability in everyday activities that is common in childhood can lead to injuries. At a child's

Figure 2. Exercises for feet in motion
Slika 2. Vježbice za stopala u kretanju

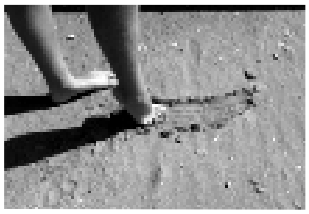
"tree"
„drvo"

"crab"
„rak"

"penguin"
„pingvin"

"elephant"
„slon"

Figure 3. Exercises for feet integrated in education 1 – graphomotorics
Slika 3. Vježbice za stopala integrirane u edukaciju 1 - grafomotorika


vertical line
okomita crta


horizontal line
vodoravna crta


slanting line
kosa crta


meandering line
vijugava crta

early age there is a lack of coordination, such as confused realization of motions, so an optimal power of activation of individual muscles and muscle groups is required for the proper development of the body. If due to improper reliance on feet we have deficient response of straightening of the body and balance, this leads to frequent falls and collisions among children.

Exercises like these contribute to children's sense of orientation in space, and in unforeseen circumstances of falling, passing by other children or a sense of gravity, they are fitter to more easily maintain the direction of moving.

Flat feet are affecting an increasing number of children. Researches in Germany and Thailand have tried to find the causes. Some international studies (1) attempt to link obesity and the problem of flat feet. The results in some studies prove it, while in others there is no correlation. The problem has been detected, but the cause has not yet been clarified.

If we pay more attention to early child development, in order to:

- raise awareness of the parental population by a special program of induced crawling, as a developmental stage of an infant (many kids skip crawling stage for various reasons, and at this stage comes the first pushing away with feet);
- provide conditions for as much movement as possible through the natural feeling of barefoot (central or floor heating at home and kindergarten);
- develop more vital and generally healthier child through a healthy diet,

the main causes of problems with feet will be prevented in infancy. The environment of educational institutions in which it is possible to play on the grass, use hygienic sand, ensure safe climbers and playgrounds for children is not irrelevant.

All that exists in our country and work plans, but because of objective material and hygienic conditions it is difficult to implement it (10,11). How important is that shows the invention of shoes for which the manufacturer claims that the foot in the shoe has a feeling of "walking on sand"; the other world-renowned manufacturer of shoes claims that walking in these shoes is the closest to the natural walking on natural surfaces, which activates the muscles of the feet and the whole body in an optimal way. In our country also an extensive research of foot anthropometry was conducted (8) for the purpose of footwear industry and improving of insoles. It is so important that we all know what we want to wear when we buy shoes. Can we pay that much attention to our feet that carry usfi And isn't it our professional duty as kinesiologists to help in normal development of children's feet. " Shoes protect your head", and kinesiology protects the whole body, and it all begins with feet! (7).

So we can rightly say that kinesiology as a scientific branch contributes to the overall development of an individual - a child from an early age!

THE ROLE OF FEET IN SPORTS ACTIVITIES

Preschool children often breathe abdominally and that way thalassotherapy by the sea has beneficial impact on the developmental dynamics of the internal organs of respiratory and circulatory system and brain. These

Figure 4. Exercises for feet integrated in education 2 – geometric figures
Slika 4. Vježbice za stopala integrirane u edukaciju 2 – geometrijski likovi


circle
krug


triangle
trokut


quadrangle
četverokut


“house”
„kućica“

Figure 5. Exercises for feet in the sea “clearing the board”
Slika 5. Vježbice za stopala u moru „brisanje ploče“

vertical line
okomita crta

horizontal line
vodoravna crta

slanting line
kosa crta

meandering line
vijugava crta

exercises are easy and natural, and therefore compatible for use with handicapped children. Moreover, they may prove suitable for the creation of social contact and help them to want to play, learn and gain experience with other children. Stress in the child's environment, a deviation from the usual habits of the child due to life circumstances can disrupt the dynamics of child development and lead to illness. Doctors often recommend a change of environment, going to the sea so that with adequate care and healthy food they absorb light and air; therefore these exercises can be used in the convalescence.

The feeling of feet in sneakers for athletes is so important that there are specialized sneakers for each sport. Long jumper has different feet motions than the feet motions of basketball players. Take off, landing and quick changes of movement are of great importance in many sports. Let us mention only gymnastics, dancing, diving and finally, but not the least important, the population of people whose movement, although they are not athletes, depends on their feet and legs.

For the sake of all future generations let us not forget that nothing can replace bare foot in the early age of growth and development. Responsibility for future generations depends on the awareness of educators towards the importance of physical exercise. Educator, teacher, professor with their knowledge, but above all their attitude towards PE can affect the most the awareness of importance of physical exercise in the 21 century.

CONCLUSION

Since problems with feet are one of the most common problems today, targeted work from kindergarten age means early prevention and a healthier tomorrow. This includes not only the prevention of flat feet, but also the problems associated with the lower extremities such as Genu valgum ("X-legs"), and Genu varum ("O-legs") that occur as a result of growth and development, and kyphosis, lordosis and spinal scoliosis.

Thus, by setting a small goal in practice, through kinesiological modalities we come to a much bigger goal. Our goal is a happy, satisfied and healthy child who readily goes to school, passes medical examination tasks (of which many are motor tasks, like jumping on the right and left leg), who has mastered the orientation in space and who has a sense of his own body.

For this we need well-trained educators of preschool children that we have, and who with their work and a long tradition of profession and quality prove that day by day.

The results are educated, raised, socially adapted children to whom kindergarten teachers give their life start and thus are remembered for lifetime.

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