Prevention and Correction of the Foot Supporting-Spring Qualities Disorder of Young Basketball Players

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Introduction: The flatfoot is one of the most widespread orthopaedic diseases. According to the statistical data the flatfoot is found in 40–50 % among adults and in more than 40% among children and this number is constantly increasing. The flatfoot is a foot deformation that lies in height reduction of longitudinal arch of foot in combination with pronation of heel and supination deformation of the front foot. The flatfoot is mostly formed in the childhood and in the teens age. There is congenital flatfoot and acquired flatfoot which can be combined with foot pronation [V. Bevzyuk, B. Kedrovskiy]. Many specialists [4, 5] mark that functional insufficiency of child foot has bad influence on body. The flatfoot is often combined with other locomotor disorders also flatfoot can be a reason of bearing disorders (scoliosis, deformation of thorax, osteochondrosis) and other disorders.

Hypothesis: In this work it is planned to study the characteristics of foot structure of basketball-players and its biomechanical properties while performing of specialized exercises (jumps, running, stops, turns and other). It is also planned to develop the program on the basis of the obtained data for foot correction and prevention for young basketball-players on the initial stage of long-term training.

The formation of correct arch of foot is of particular importance for young basketball-players. However, the topic which covers the prevention and correction of foot supporting-spring qualities disorder which depends on engaging in the different sports isn’t well studied. And the known methods of solving of this problem don’t take into account the specific of basket-ball and need correction.

The aim of this work is to develop the technology of foot unfixed disorders correction of young basketball-players.

Research methods. The usage of the following methods is planned to accomplish the specified tasks:

– Analysis and generalization of the scientific-methodical literature, documentary materials.
– Methods of pedagogical research.
– Biomechanical video computer analysis of foot supporting-spring qualities disorder with the use of the program «Big Foot».
– Tensodynamometry.
– Methods of mathematical statistics.

The increasing competition in sport is leading to the increasing volume of training on all stages of the long-term training (Platonov V. N., 2004). Many authors believe that if a considerable training is often given without appropriate rest it can lead to the flexibility loss of ligamentous apparatus and muscles being in constant tension get weak. The ligamentous apparatus bears a load to keep the arch of foot but with time it gets weak and stretches.

Many authors dealt with the problem of the flatfoot control and prevention, K. N. Sergiyenko developed the technology of pedagogical control of the foot supporting-spring function of school age children, I. V. Bulanova dealt with the problem of the influence of sport specialization on the foot morphology. It was established that the sportsmen’s foot height is lower than among the people who don’t go in for sports. But sportsmen of such specialization as running, swimming despite the big training volume have higher arch of foot than among people who don’t go in for sports and higher than the weightlifters, skaters, bicyclists have. It can be explained by the fact that the foot of marathoner does the work of dynamic character; the feet of the swimmers don’t bear the load of the body and while performing a stroke are in the bent position. N. E. Mikhaylova «Correction of pathological feet position of children with the congenital clubfoot with relapse». The author developed in her work the complex of exercises for correction of pathological feet position. V. Bevzyuk and B. Kedrovskiy also dealt with flatfoot in sport «Foot biomechanics of sportsman with flatfoot». The research showed that the flatfoot is mostly found among weightlifters and other sportsmen who lift and move the weight.

The unilateral flatfoot can appear in jumping leg of jumper and also sportsman who had ankle joint injury, foot and shin injury. For the foot prevention and correction the authors recommend: the easy off of...
intensity and volume of load, the training on the special surfaces, the usage of special sport shoes and orthopaedic shoes. And also: massage, swimming and special sanative gymnastics.

Many authors [2, 3, 4] pay attention not only to the pain in the lower limbs, but also to the spinal curvature in different departments and in different planes. It can lead in its turn to the wrong function of thoracic cage, abdominal cavity, it worsens the mobility of the pneumonic edges and diaphragm, as a result heart function disorder, respiratory and digestive organ disorders.

Frostel conducted his research and found that:
1) the usual stand, the 11. and 4. instep bones bear load;
2) one leg stand, the 1. and the 5. instep bones bear load but more often the 2. and the 4;
3) the stand on fingers, the author marks individual deviations of pressure distribution on a foot while standing on high heels in his research.

On this basis the load in the front foot can move from the head of the one instep bone to other depending on a stand, a position of feet and an area of support. Looking of two feet in different directions assists the compression of internal arch of foot, because such feet position is related with their pronation. Many authors mark that in education of children it is necessary to train children beforehand to open the feet while standing and walking. It is considered that the degree of feet expending is the index of foot weakness.

Bukin Y. V. also dealt with the characteristics of the sportsmen’s feet and on the base of the research data he confirms that the correctly established educational and training load provides the normal condition of the arch of feet of young sportsmen.

**Conclusions:** The flatfoot is a big problem for a man and more for a sportsman that is why many authors paid their attention to the foot prevention and correction but the researches of different specializations sportsmen aren’t studied enough. It is very important because the foot of a sportsman bears much more loads than the foot of an average man and is supposed to receive more deformation.

For the foot prevention and correction the authors recommend: the easy off of intensity and volume of load, training on the special surfaces, usage of special sport shoes and orthopaedic shoes. And also: massage, swimming and special sanative gymnastics.

In connection with all said before this is the urgent problem and it needs further researches.

**List of the used literature**


**Annotation**

In this paper, the results of generalization and systematization of scientific-methodological and theoretical literature conducted on the levels of study of disorders of the foot problems in athletes, we prove that flat is the most common disease of the lower limbs, revealed the extent and causes of disease, as well as outline the basic techniques prevention and treatment of flatfoot. In the study, according to the literature on the characteristics of the feet of young athletes and compared with those of young men, not athletes. Flat feet is a big problem for people especially for the athlete, and for this, many authors have paid attention to the prevention and correction of the foot, but a study of athletes of different specializations very little studied. This is important because the foot athlete takes a lot more stress than the average person stop and subjected to large deformations. According to the study found that specialize in sport has a direct effect on the feet.

**Key words:** flatfoot, basketball, children, prevention, correction.
Сергій Строганов, Костянтин Сергиенко. Профілактика та корекція порушення опорно-рессорних властивостей стоп юних баскетболістів. У цій статті за результатами узагальнення та систематизації науково-методичної й специальної літератури здійснено теоретичний аналіз рівня дослідження проблеми порушення функцій стопи в спортсменів, доведено, що плоскостопість є найбільш поширенним видом патології нижніх кінцівок, виявлено ступені та основні причини захворювання, а також окреслено основні методи профілактики й лікування плоскостопості. Під час дослідження за даними літературних здійснено характеристику стоп юних спортсменів та проведено порівняння з аналогічними показниками юнаків, котрі не займаються спортом. Плоскостопість є великою проблемою для людини, там більше для спортсмена, і тому багато авторів звернули увагу на профілактику та корекцію стопи, але дослідження спортсменів різних видів спорту значною мірою безпосередньою вплинули на показники стоп. 

Ключові слова: плоскостопість, баскетбол, діти, профілактика, корекція.

Сергій Строганов, Костянтин Сергиенко. Профілактика і корекція нарушень опорно-рессорних свойств стоп юних баскетболістів. В даній статті на основі результатів обгрунтовано і систематизовано науково-методичні та спеціальні літературні дослідження шляхом здійснення теоретичного аналізу на особливості переносу і стану конечностей, виявлено причини здійснення, які впливають на рівень захворюваності, а також визначено основні методи корекції та профілактики плоскостопості. Профілактика є всебічною проблемою для відомих видів спорту, але наявність даних у матеріалах, а також значна міра безпосереднього впливу на показники стоп.

Ключові слова: плоскостопість, баскетбол, дети, профілактика, корекція.