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Short Communication

Biomechanics and Functionality of the Arches of the Feet

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Speaking about foot deformities, the rapid increase in the number of people diagnosed with flat feet involuntarily wonders what the reason is. For all the previous millennia and until 1950, they talked about 6-19%, today it is more than 90%. What is the merit of medicine? If earlier orthopedic insoles were handled by biomechanics prosthetists who understand the mechanics and biomechanics of the feet, today this is done by people who do not know the laws of geometry, physics and mechanics, who are not able to understand the anatomy of building joints and the kinematics of changing the functions of the feet when walking. Compare both schemes and you will see not only the difference in the designation of the vaults, their position, which results in incorrect actions to eliminate deformations. For an engineer, it is clear how the functionality of the arches changes when the position of the bones of the joints changes, how the elastic, able to adapt to uneven surface of the foot turns into a rigid system capable of dancing on the fingers, pushing and jumping. Not understanding this is the reason for the many diagrams that tell about the structure of the vaults. Here, ignorance of geometry is visible, that two surfaces are in contact with each other at three points, forming a reference triangle. Load, - the projection of the GCG of the body passes through the tops of these arches. It lies at the intersection of the medians. The doctor will not say that a chair with four legs is supported by only three legs. In the feet, these are the points of support of the external and transverse arches: the tubercle of the calcaneus and the heads of the first and fifth metatarsal. But due to the anatomical difference in the lengths of the legs that each individual has, the GCG body's shifts in one direction or another. This is how certain parts of the arches are overloaded, bones are displaced in all parts of the skeleton, up to the head, which is associated with the position of the vestibular apparatus, signaling the fall of the body. Therefore, when correcting the feet, it is necessary not only to give the arches an arched shape, but also to bring them to a neutral position, which cannot be achieved without compensating for functional and anatomical differences in the lengths of the limbs. Specialists do not perform all this, thinking that they are correcting the foot, but in reality they contribute to the development of their deformities.

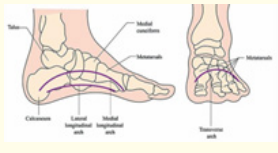

Figure a

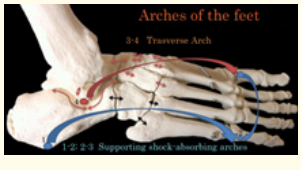

Figure b

Figure c

Figure d

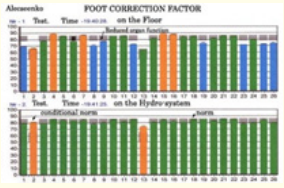

Figure e

The pumping function of the muscles is associated with the neutral position of the skeleton, and this is a violation of the metabolic processes of body cells. It is with this that one can explain the development of various diseases, mutations of cells that bathe not in pure mountain water, but in a swamp filled with slag. Popular wisdom says: movement is life. But our natural, inherent movements are violated. As a result, worsening of arterial blood flow, ischemia of the lower extremities and the brain are diagnosed. All this is a consequence of impaired walking biomechanics, outflow of venous blood, which is the root cause of these disorders. This is what the unskilled actions of specialists lead to, who do not understand the importance of functional correction of the musculoskeletal frame of the body. Without any exaggeration, we can say that a specialist in foot correction is the therapist who solves the issues of normalizing the work of a self-regulating system, which is our body.