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Short Communication

Fundamentals of Diagnostics and Hydrostatic Correction of Feet

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Statistics of the last 50 - 60 years indicate a rapid increase in almost all diseases, where deformities of the feet and spine are in the first place; in percentage terms, they exceed all epidemic levels. So, the deformities of the feet increased from 7 - 19% to 87 - 98%, in second place are the problems of circulatory disorders, the work of the gastrointestinal tract. And this despite the fact that the service for the manufacture of orthopedic insoles has become available to most residents of developed countries in Europe and America.

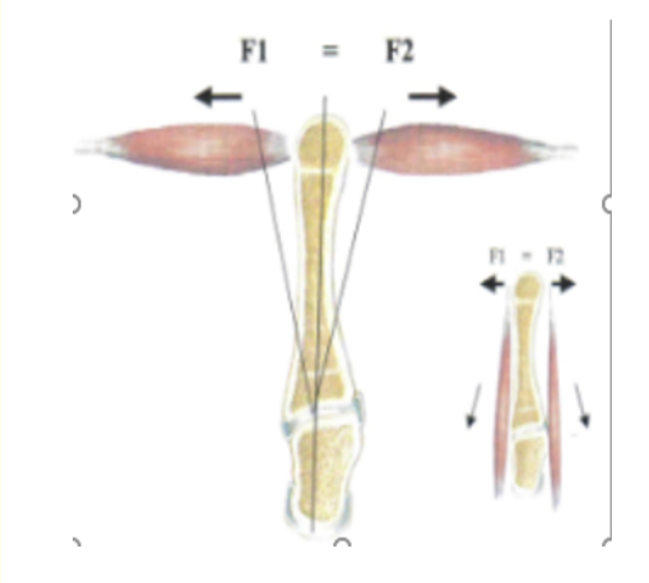

Figure 1: *Engine element skeletal-muscular system.*

In the developing countries of Africa and Asia, this trend is not observed. It is difficult for a specialist to realize that he does not work that way, he was not taught that way. And yet, knowing that medicine does not belong to sciences, then such a situation can be tolerated. I will not characterize the work of orthopedics in the field of foot and spine correction, in one word it is incorrect. I propose to start analyzing the situation by defining what deformation is, it does not fall under the category of disease.

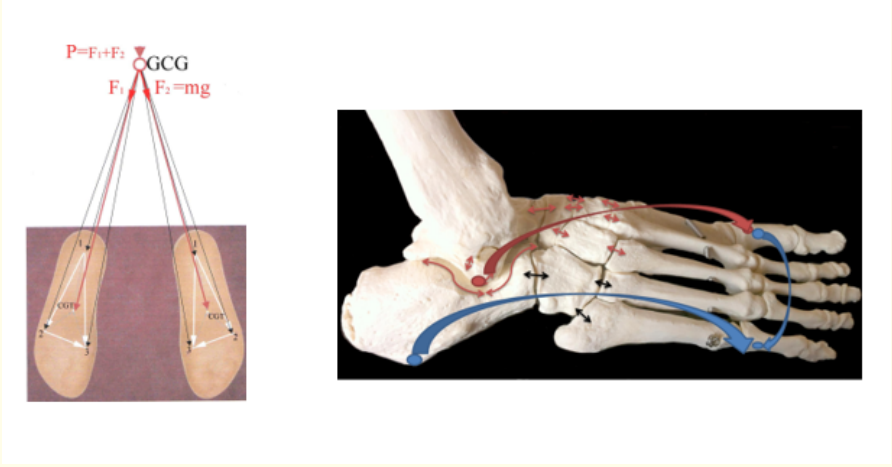

Figure 2

Deformations should be considered from the standpoint of mechanics, theoretical mechanics, which are partially embodied in the section of biomechanics. Deformation is the result of a load on the joint, when the bones are displaced from the average neutral position, and the muscles do not return them to their initial stable state after the cessation of these forces.

Figure 3

It should be understood that eliminating deformations solves the main task of restoring the pumping function of muscles, metabolic processes of body cells, and its vital activity. This is indicated by human physiology, but all this is not taken into account when correcting the feet. Medicine still does not know what the cause of the deformity of the feet and curvature of the spine is, that this is due to the presence of a functional and anatomical difference in the lengths of the legs in each person, due to which the General Center of Gravity (GCG) of the body and the load from the axis are displaced loading of the tops of the arches of the feet.

Figure 4

Knowing the name of the bones of the skeleton of the feet, without understanding the kinematics of their conjugation and the change in functionality at the same time, is not enough to perform the correction. It is necessary to take into account the position of the body GCG and muscle tone, which compensate for the load and the forces of inertia arising from the deviation of the body GCG. In the process of walking, the load on the feet exceeds the body weight by 30 - 50 times.

Figure 5

This load is perceived and partially extinguished by the supporting outer and transverse vaults. These are the main arches, from which all deformations begin in the structures of the feet and body. But no one works with these arches, they are not corrected with insoles. The inner vault does not descend but unfolds on the tubercle of the calcaneus of the subtalar joint. The reason for the turn of the arch, or rather a command to continue the process of damping the speed of the leg transfer, is the appearance of a fulcrum under the apex of the outer arch. At this moment, an overturning moment of forces (M) arises between the point of contact and the line of action of the body's GCG.

Figure 6

When the foot turns outward with the toes when walking, or in a standing position, this moment of forces increases, and the inner arch overturns more. Trying to raise the arch, experts do not understand that by eliminating the gap under it with the insole, they artificially transform the foot into a flat one, deprived of the ability to extinguish the speed of transfer of the leg when it is placed on a support. The arches of the feet and the spine must absorb impacts of the feet against the ground to a level of 0.5g. So, the brain is protected from concussions. In each of the phases of walking, the musculoskeletal framework of the feet occupies a certain position, performing one or another function: support, push, which ensures the sequence of muscle contraction - the rise of blood to the heart.

Therefore, the concept of correction also includes actions to restore the functionality of the feet, - the biomechanics of walking. This means that it is necessary to show a person how to walk correctly and in what shoes. But not in the one that is called orthopedic, in which the anchor points of the heel and the transverse arch do not correspond to the anchor points of the skeleton. But there are more than 90% of such shoes in stores today. The thumb in it is retracted outward and raised up to the position of the push with the fingers. Medicine does not even think that it is the muscles of the thumb that are the deep valve-type pump that lifts the lymph and blood to the heart. The transverse vault perceives the greatest loads when walking and running and is most strongly deformed. The doctor does not say at what height of the heel, his arches will be in a neutral position and the person will not feel cold feet with his fingers. For some reason, the arch correction is not carried out under the metatarsal head, acting on the plantar fascia, stretching them. Correction of the external and transverse arches, bringing them to a neutral position with giving them an arched shape, turning the calcaneus into a vertical position, is possible only after compensating for the functional and anatomical difference in leg lengths.

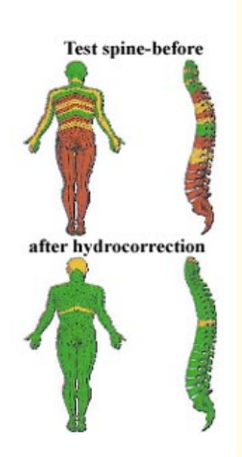

Figure 7

These are the actions that can be called the basis for correcting the feet and above the underlying elements of the musculoskeletal frame of the body. The difference in leg lengths is visible in everyone, it can be seen by abducting and turning one foot and the heel bone, abducting or crossing the legs in a standing position. It always appears as a C-shaped or S-shaped spine. Moreover, the C-shape is found in more than 65% of people. The task of any diagnosis is not to give a name to this or that phenomenon, but to reveal and identify the root cause of the formation of bone displacements. In our case, they are associated with the position of the GCG of the body, with muscle tone. It is necessary to determine which limb is long and which is short. This difference has become more common today, since parents are not recommended to swaddle their legs, they do not understand that this is done to fix the hip joints. Diagnostics should become an analogue of the drawing, according to which the quality of the product is manufactured and monitored, in this case insoles. As such control, one can use computer systems for testing the state of the spine or body systems before and after correction of the feet. Only in this way can the correction process become real, excluding any subjectivity in assessing the quality of insoles, their effect on the body.

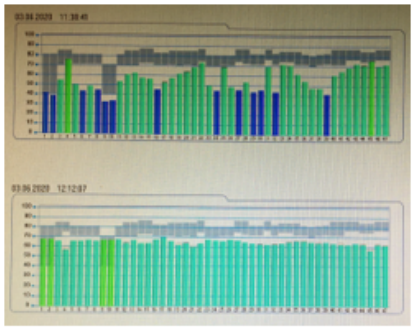

Figure 8

This is why we argue that functional correction is the foundation of any therapy. There will no longer be doubts about what was done right and what was not. This will exclude the production of such insoles, which, apart from surprise, do not cause any other positive emotions. Everything that was discussed in this article has been widely used in Russia and Ukraine for over 50 years. The use of devices for hydrostatic correction of the feet not only simplified the process of correcting the feet and spine, but also helped save the legs from amputations in patients with diabetes, vegetative-vascular diseases, heart disorders.

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