

## Functional Correction of the Musculoskeletal Framework - The Basis of the Therapy of a Self-Regulating System

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## 1. Introduction

The history of mankind dates back thousands of years, and only in recent years has there been a rapid increase in the percentage of cases, including deformities of the feet and spine. If 60 years ago, flat feet were considered in conjunction with the aging of the body, age-related causes of weight loss, today deformities are already diagnosed in preschool children. A general medical examination in 2000 in Russia showed that deformities of the feet and spine are in the first place, about 85%, diseases of the gastrointestinal tract are in second place. At the same time, no one thinks about the relationship of deformations with a violation in the work of internal organs. And they do not say at all that the function of internal organs is to maintain the working capacity of skeletal muscles (Figure 1), the mass of which is more than 50% of body weight. But it is the muscles that are responsible for the metabolism of body cells. And although 75% of the blood and 80% of the muscles of the body is in the legs, the normalization of arterial blood flow, the restoration of the biomechanics of walking is not directed by the activities of orthopedic specialists, shoe manufacturers. No one says that diseases of the body begin with deformities of the feet, wearing shoes, the reference points of which do not correspond to the points of support of the skeleton of the feet. This was noticed 2000 years ago in China. The fact that the pumping function of the muscles manifests itself only with a certain sequence of their contraction, which is violated with deformities of the feet. Violation of arterial blood flow is the result of a violation of the outflow of venous blood, the biomechanics of walking is disturbed.



Figure 1:

Medicine should sort out its mistakes, understand that physics-chemical, thermo-mechanical and energy processes take place in our body. Deformations of the musculoskeletal framework, this is not a flu disease, these are processes from the field of mechanics, biomechanics. Such specialists are not trained in medical universities today. But the functionality of a self-regulating system depends on the motor ability of the musculoskeletal framework, the work of venous and lymphatic pumps. Therefore, it is surprising that until now doctors say; blood circulation in the body is provided by the heart. Its main task is to nourish the brain.

Raising and holding the inner arch of the feet with insoles, the specialist thereby disrupts the outflow of venous blood - arterial blood flow. The deformations begin with the supporting external and transverse vaults (1-2; 2-3), which the experts seem to be unaware of (Figure 2). They are not corrected, they do not take into account the position of the body's BCT, depending on the anatomical difference in leg lengths that each individual has. It is the shortening that is the root cause from which deformations begin and all subsequent disturbances in the work of the body, cell metabolism, biomechanics of walking.



**Figure 2:**

There is an opinion that orthopedic insoles do not help. This only confirms the incompetence of specialists. There is no understanding of the total amount of consequences for the body, to which modern “scientific” developments and manufacturing technologies lead to insoles, which are no longer called orthopedic. In Europe and America, these are orthotics - accommodate, providing comfort. These are not the terms and not the tasks that orthopedic insoles should meet.

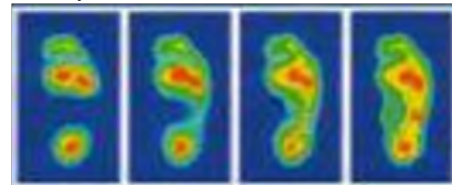
If we say that with deformities the foot loses its specific functions, then the work of specialists, insoles should be aimed at restoring all 6 interdependent functions of the feet, and not selectively one, which cannot be achieved with such a relationship. The reflex function cannot be ignored, since all connections in the body are carried out reflexively (Figure 3). You cannot reduce the role of muscles only to shopping. It is necessary to rethink the role of muscles as the main engine of all body systems and, above all, the system of capillary lymph and blood circulation. This predetermines the leading role of orthopedics in the regulation of the body, which should be understood by specialists.



**Figure 3:**

The fundamentals of body physiology have become basic in the development of functional methods for correcting not only the feet, but also all the overlying skeletal structures dependent on them. An analysis of world practice has shown the similarity of unresolved problems in the field of correction of the feet, spine, causes of diabetic angiopathy, arterial blood flow disorders, which are not solved in the world (Figure 4). A common mistake is that the name assigned to a particular disease, skeletal deformity, does not hint at revealing the cause of its occurrence. So in our case, the main task of the correction was to restore the pumping function of the muscles (Figure 5), the metabolism of body cells. Analyzing the existing methods for diagnosing deformities, attention was drawn to the fact that diagnostic methods are not the drawing by which an insole can be made. Not to mention making adjustments. It is obvious that in orthopedics there is no concept of what a de-

formity is. Usually we hear from a specialist the name of one or another type of deformation, for example: flat feet. Any medical diagnosis is just an abstract name, not talking about the reasons, without understanding which it is impossible to take the right actions. Speaking of arthrosis - the wear of the cartilaginous surface of the bone, they will recommend creams, tablets, injections, but not a single doctor will say about the need to correctly compensate for the load, eliminate distortions on rubbing surfaces, change gait, choose the right shoes. It is for the same reasons that insoles do not solve the problems of spinal correction, restoration of venous and arterial blood flow, and treatment of cardiac ischemia. It would be correct to say that foot correction should be a process of restoring the functionality of the muscles of the entire musculoskeletal frame of the body.



**Figure 4:**



**Figure 5:**

Who can explain why insole specialists do not work with skeletal structures above the ankle joint, i.e. the position of the body's GCG is not taken into account, - the load. Removal (receipt) of footprints is performed with the patient sitting or lying down. The fact that each person has a difference in the lengths of the limbs, due to which the GCG of the body shifts towards one of them, overloading certain arches. It would seem that all these are such simple truths, as well as the fact that 3 points of the supporting arches form the supporting triangle of the feet. The appearance of other points of support under the arch indicates the presence of deformation, but not yet the cause. The monkey will raise the vault, affecting the soft tissues, which will bring even more problems, will not eliminate the deformation.

The loss of the shock-absorbing function of the outer arch is evidenced by the widely used plantograms. And although they clearly indicate an increase in the bearing surface under the outer arch, experts speak of a decrease in the height of the inner arch. It is then raised with a hard insole, which is the equivalent of flat feet. Raising or holding the inner arch, the foot loses the ability to dampen the inertial forces that arise during the period of transfer and plac-

ing the foot on the support during the step. These impacts compensate for the joints of the legs and the spine, bringing to the brain forces not exceeding 0.5 G.

The chain of such errors is not limited to these examples. It remains only to state that the training of specialists, starting with orthopedists and ending with technical workers who make insoles, is not supported by knowledge in the field of physiology, biomechanics, theoretical mechanics, and even high school level knowledge in geometry and physics (Figure 6). How can you take prints from a deformed foot and not understand that this should be done only in a standing position under load, when you compensated for the difference in leg lengths, brought the arches to a neutral position and brought the body's GCG to the CG of the reference triangle.

All this is achieved if you know the laws of hydrostatics and com-



Figure 6:

municating vessels. Standing on the diaphragms of the communicating vessels of the installation (Figure 7), the anatomical difference in the lengths of the limbs is compensated, the vaults are brought to a neutral position, the spine is aligned, the body and head with the vestibular apparatus are in a vertical position.

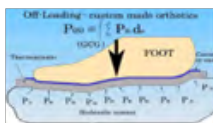


Figure 7:

Biomechanics prosthetists, mechanical engineers, builders, physicists, mathematicians are well versed in all this, who do not need to prove where the CG of the supporting triangle of the feet is located, what is the supporting function of the arches and why, with their deformations, the limb is functionally shortened and the spine is bent (Figure 8). Medicine only says that the causes of scoliosis are adioathic in nature, which requires deep study. But at the same time, he does not know how to eliminate the functional and anatomical difference in the lengths of the limbs, that deformations are the result of a violation of the balance of forces in the system of paired muscles, when they cannot cope with the load, the action of external forces.



Figure 8:

In the sixties of the last century (Figure 9), it was practiced to exchange experience and knowledge with colleagues. Medicine was available to everyone. Today they say that services have risen in price, few people are interested in the future of their own children. Functional correction of the musculoskeletal frame of the body is the effective mechanism for normalizing the work of the body. The use of orthopedic unloading functional insoles of bio-podocorrectors is manifested not only in the normalization of tissue trophism in diabetic feet, but also in blood sugar. Varicose veins or swelling, feeling of cold feet and cystitis, pain in the extremities and lumbar regions, headaches and migraines, constipation or heartburn, are just a small list of disorders that disappear in the first 7-21 days of walking on insoles.



Figure 9: