

## **The effects of micro vibrations on bloodstream.**

The main and **direct** characteristic of vibroacoustic stimulation is the ability to increase the flow of blood and lymph.

### **And the decrease in vascular resistance to the movement of blood**

The main idea for the construction of Vitafon was created thanks to the knowledge of this physical effect.

Each diameter of a blood vessel has its optimal frequency.

The second frequency subrange of Vitafon is aimed at reducing vascular resistance (see Technical characteristics of Vitafon T).

Lower frequency of subrange II ranges between 200 and 1000 Hz

Higher frequency of subrange II ranges between 9000 and 18000 Hz

If you are watching a still plain river, you will notice that a fishing boat going upstream is moving next to the bank, and when it is going downstream, it is moving closer to the middle of the river. The strongest friction is next to the bank and the river is slower there than in the centre part; fishermen usually sail upstream as fuel consumption is smaller and the speed is higher. It is similar with blood vessels: the strongest friction is close to the blood vessel itself.

### **II The second physical effect is the hydrodynamic pump effect in veins**

This effect is realized through the influence of the first frequency subrange of Vitafon.

Lower frequency of subrange I ranges between 30 and 60 Hz

Higher frequency of subrange I ranges between 1200 and 4500 Hz

The hydrodynamic pump was discovered by professor A.I. Arinichinim.

Researching mechanisms of peripheral blood circulation he discovered that muscular tissues were vibrating during acoustic oscillations. "A muscle sings at sound frequencies," writes the professor Arnichinim in his book "Peripheral Heart of Man". Due to the muscular oscillation the hydrodynamic pump effect is obtained in veins. In one moment there is relaxation, loosening and filling veins with blood, in the next moment, contraction, pressure and accelerated pushing of blood. A.I. Arnichinim proved it through experiments and came to a conclusion that if we excluded this mechanism in peripheral circulation, our heart should be several times stronger to perform the function of a pump.

For the veins pump operation it is not necessary for muscles to contract. For the hydrodynamic pump effect it is enough to get low amplitude stimulations.

Pushing ability of arterioles hasn't been excluded either, similar to peristaltic wave in intestines, on the account of rhythmic contractions of muscular fibres in arterioles.

Micro vibrations are a physical factor used by organism to help it reduce peripheral resistance in capillary network and increase vein blood flow.

### **Indirect physiological effects**

On the place of vibroacoustic stimulation application, the intensity of biochemical processes increases and thus the conditions to influence regeneration mechanisms are made. The strength of regeneration processes within the organism is limited by increase in concentration of catabolism products (matters that are created in decomposition processes, toxins...)

Slowing down of regeneration processes is the most pronounced on places with decreased blood flow. Effects of micro vibrations increase vascular and lymphatic drainage and at the same time the level of destruction and catabolism products disposal is also increased. On the other hand, by stimulation of kidney area the filtration ability of a kidney and its role of a blood “cleaner” are improved. We mustn't forget the increased artery blood flow which brings with itself necessary elements for cell metabolism, i.e. regeneration.

### **Possible impact of micro vibrations on ATP formation**

Cell metabolism is a mixture of biochemical reactions which enable a cell to live. The role of a great number of chemical reactions in a cell is transformation of energy from food into a form available for different cellular physiological systems. For example, energy is necessary for muscular activity, glands secretion, nervous and muscular fibres maintenance, for synthesis of matter in a cell, food absorption from gastrointestinal tract and many other functions.

ATP (adenosine triphosphate) is unstable chemical substance which is present in all cells. By breaking of ATP's chemical bonds energy which is used for maintenance of biochemical processes is released. ATP is popularly known as energy money of the body because it is constantly being made and spent. ATP is made by glucose decomposition and in some other chemical ways, but the biggest quantity of ATP is formed by oxidative phosphorylation. This process is performed in mitochondria and it needs sufficient quantity of oxygen to make oxidation possible.

If we regard a cell as a separate system, mitochondria in a cell can be represented as small power plants producing energy. In order to produce sufficient energy the power plant has to burn certain quantities of fuel, and that fuel has to be delivered as much and fast as possible to the place of production. It is similar with a cell, mitochondria and oxygen. For a cell to have sufficient quantity of its “power supply”, sufficient quantity of fuel (oxygen) must reach the mitochondria so that they can operate with their full capacity. Oxygen is transported through blood, blood vessels. In states when bloodstream is disrupted, the functioning of a cell and the whole organism has been endangered. If a cell is ill and does not have enough resources to start regeneration, the organism will get into the state of illness. The role of micro vibrations in such states is indescribably big! If we stimulate bloodstream, we will provide sufficient quantity of oxygen, energy for maintenance of health, or for

starting regeneration or self-healing. We will prevent a disease or help in curing it by providing necessary resources to the cell!