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## GENERAL CONSIDERATIONS OF VIBRATION ACTION ON THE HUMAN BODY ENERGETICALLY POINT OF VIEW

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**Abstract:** The paper contains flew knowledge for preparing the concepts and explanations that are necessary for defining the study of vibration on the human body action. The human body from mechanical point of view is a system consisting of mass damper and spring, therefore both the ensemble, each part, greater or lesser has its own frequency. If you require your body with a quantity of energy which cause a vibration with frequency close to its own frequency, the effect is unimaginable and produce healing the entire body, even though the action has occurred on a small portion thereof.

**Key words:** general considerations, vibration action on the human body, energetically point of view

### 1. SHOT INTRODUCTION

The human body from mechanical point of view is a system consisting of mass damper and spring, therefore the ensemble, each part of it, greater or lesser has its own frequency. If it is require the body with a quantity of energy which causes a vibration with frequency close to its own frequency, the effect is unimaginable and produces healing the entire body, even though the action has occurred on a small portion thereof. This explains the possibility of Bowen Therapy application.

### 2. EXPOSING THE HUMAN BODY TO VIBRATIONS

The study of the vibration of the body through its complexity need knowledge from various disciplines: psychology, physiology, medicin, mathematic, engineering, ergonomics. The man is exposed to vibrations in case of earthquakes, vibration of the building by either home or at his place of employment, the vibration during transport from the place of employment, the vibrations due to machine tools, equipment that uses them or employ them.

Vibrations can be local or global. Local ones occur when the operator comes into contact

with either punctual, either vibration contact done on a lesser part of the surface / body, for example hand-arm. Global vibration in the short expression is WBV (Whole Body Vibration) and occur when the person is in one of the vast following positions – standing on a vibrating platform, upright, or lying on a vibrating platform. In this case, for the study of whole-body vibration on the human body, was elected a basicentric coordinate system references to these directions vibration actuator: axis OX back to the chest, the axis OY from right to left, the OZ axis towards the head.

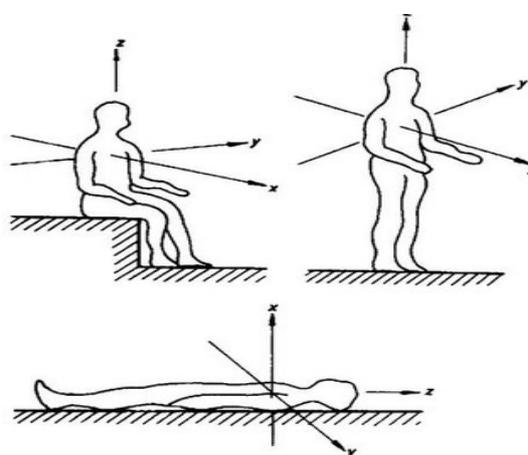


Fig. 1. Basicentric coordinate system [SR ISO 10819]

The human body does not vibrate as a unit mass with a singular / unitary natural frequency - digit numbers, but each part and organ of the body has its own vibration and vibration is transmitted to the contact surface through the skin, muscles, bones, tendons, cartilage, and soft tissue throughout the body. If a body part or an organ shall enter into resonance induced by external power, then appears the specific problems of the area affected, prompting various negative effects on human tissues and organs crossed.

It was found that the experimental area formed in the ribcage and abdomen enters at the resonance to the frequency at a 3-6Hz. Area head-neck-shoulders shall enter in resonance between 20-30Hz. Eyeball shall enter into resonance in the range 30-80Hz, Every part of the body has its own frequency. Between 2.5 to 5Hz have strong resonance in the vertebrae in the neck and lumbar area. Frequencies between 4-6Hz lead to resonance of the trunk. It concluded that the human body presences a maximum sensitivity to vibrations contained in band 1Hz - 80Hz [ISO 2631-1].

**2.1. The effects on the organism under vibration**

During exposure to the vibrations in the human body, appear undesirable effects, which depend on the frequency at which the body is requested. Some examples can found in table 1.

Table 1.

Effects do occur in the case of prolonged exposure to vibration [Ras 96]

Symptom	Frequency [Hz]
General sensation of discomfort	4-9
Headache	13-20
Complaint at the lower jaw	6-8
Speech problems	13-20
Sensation of lump in throat	12-16
Chest pain	5-7
Abdominal pain	4-10
Acute need to urinate	10-18
Respiratory difficulties	4-8

**2.2. Current state of the dissertation**

A large part of researchers made so far in the past dozen years have been focused on the study of the influence of vibration as risk factors

in the occurrence of occupational diseases, assures conditions and solutions that must be met in order to reduce these effects.

Starting in 1960 in the USA over the whole body vibrations have been studied at the base Aviation forces Wright-Patterson. Have tested the limits to which pilots could withstand for performing certain tasks. After testing the different capacities of the staff of the air force, identifying frequency limited in which the body has succumbed, 4-8Hz at longitudinal axis, 1-2Hz at sideways axis. As they have developed the first international standards on the subject of WBV (Whole Body Vibration).

WBV is not considered as immediate threat of human body, but over time can have effects which can result in the inability of a worker to carry out the tasks database. Depending on the time of exposure, the contact surface, the contact force, position and posture of the operator, environmental factors and the frequency of the resonance of tissues, psychic status results operator's effect on the human body (Fig. 2).

Psychic state is particularly important and is determined by mood and immune status of health. Into the two aspects presented above, they are found in the human beliefs, thoughts, experiences, feelings, emotions, the way that they are highly experienced in them and where they are born then actions and behaviors.

Another factor is nutrition and, of course, to be read in conjunction with the person's weight and with its sex. When the status of the immune status which is in linkage with a status of available is down to a minimum, then there are all the chances and the negative impact of vibrations to be great.

**2.3. Parameters that influence the effect of vibrations on the human body**

Studies have revealed that the combined effects on the body of Whole Body Vibration, with handling inadequate cargo, with eating habits contribute to a series of health disorder such as deformation of the spine and intervertebral degradation, sprains, problems of movement and coordination, muscle diseases, skeleton-cardiovascular diseases, ischemic heart disease, gastrointestinal problems, metabolism

disorders and endocrine system. The parameters that influence the effect of vibration action on

the human body are synthetic presented in Figure 2.

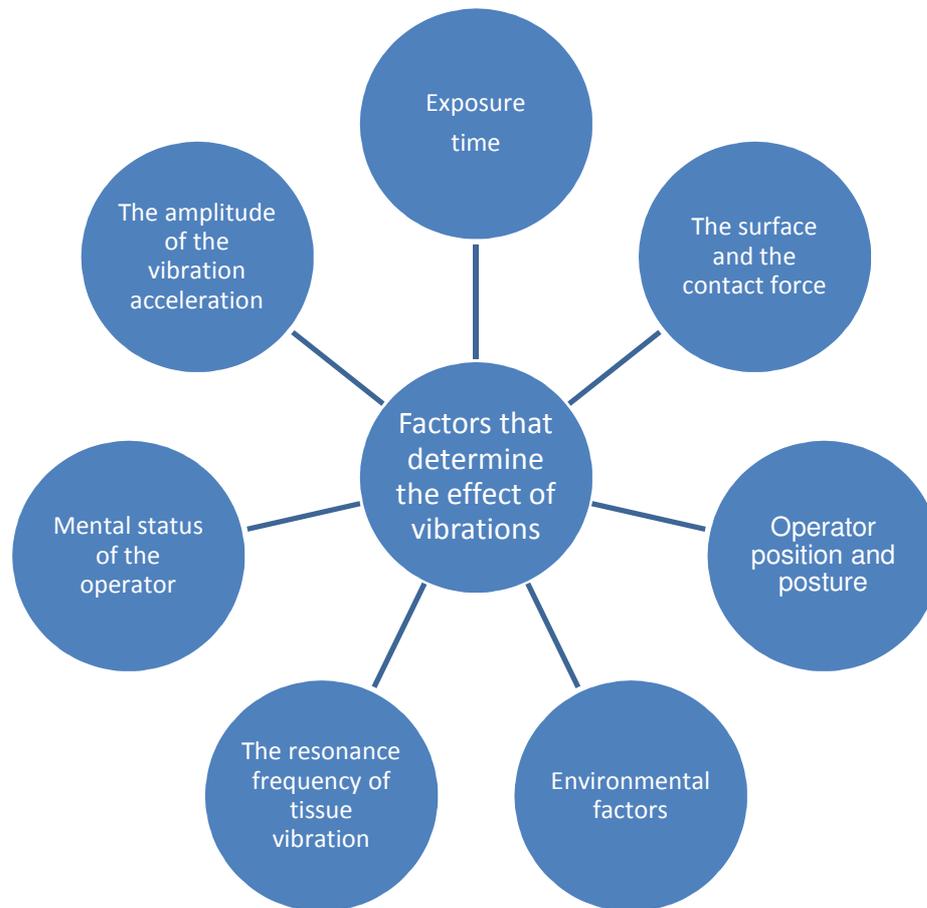


Fig. 2. Synthetic parameters of vibrations

## 2.4. The beneficial effects of vibrations

It was developed relatively recently and the beneficial implications with WBV. It has registered two research directions. One is to improve the lower part aiming to train performance, for the development of détente and force, and another direction is the treatment in order to recovery the athlete as a result of accidents, but also treatment for removal or reduction the degenerative processes that appears due to the age.

Studies on athletes have been using a platform with two kinds of oscillations, as shown in Figure 3. The vibrations were between 15-60Hz and elongations/variable amplitudes between 0.5-10mm, accelerating until at 15g.

Vibrations may cause at a given frequency and answer in metabolism. Another effect has been identified as that of a significant increase in

the mean flow of blood through the popliteal artery after vibration of 26Hz at the amplitude of 3 mm. Blood flow increased from 6.5 to 13 cm/s reducing blood viscosity.

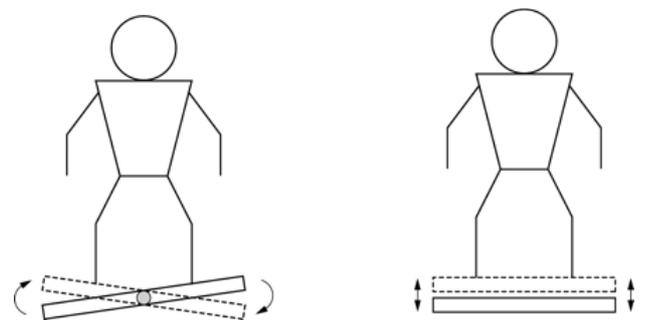


Fig. 3. Vibration exercises for athletes

WBV proved useful for elderly people who can no longer run or practice a sport and who can treat pain in lumbar area using vibrations. Patients with osteoporosis and patients with heart transplant were recorded. An another category that has markedly improved were those with stroke unilaterally, they improve

their state of health – and their stability after a couple of minutes at a frequency of 9 Hz and 3 mm width.

### 3. BOWEN TECHNIQUE THERAPY

Bowen therapy technique can be considered as a technique for applying the local tensions in the muscles, which apply an energy, what determines the production of local vibration, which relieves the affected side and produces the body's recovery in time.

Good health is the normal condition of the human body. In order to achieve such a condition it is necessary to maintain its structural and functional parameters constant, regardless of the permanent changes in the internal and external factors. The self-regulation process, which is of paramount importance to life, is called homeostasis. It is a characteristic of all biological organisms, as well as a universal property of all cybernetic systems.

When the functioning of the homeostatic mechanisms (maintenance of the acid-base balance, regulation of sensory-motor functions, regulation of endocrine secretions, regulation of cardiac muscle activity, regulation of respiration, regulation of metabolic processes etc.) deviates from normality, the therapeutic Bowen technique, by means of stimulus – processing – response, helps the organism to restore the abnormal parameters to their normal values.

#### 3.1. Actual state and origin of Bowen technique therapy

Bowen therapy is a complementary holistic, noninvasive therapy and it is due to the Tom Bowen (1916-1982) and is based in making so movements – called Bowen in places very accurate on the patient's body, which is the moves are executed transverse joints or tendons over muscles, generally over a tissue called fascia. As a result of tissue movement in question sends a message to the brain, which in turn starts the self-healing processes, and autocorrect in the human body (Fig. 4).



Fig. 4. Tom Bowen during a treatment [\*\*\* ma]

The Bowen movement is unique due to the configuration of the Bowen travel, and it is transverse on the muscle structures, it displaces skin first in one direction, then the operator causes the displacement in the opposite direction of the tissue for a few seconds, after which there is a rolling over. The body movement is propagated as a wave.

#### 3.2. Bowen therapy technique application

As a result of Bowen movements, makes passage of the central nervous system on the “sympathetic” component which is responsible with contractions, with spontaneous reactions of the type “attack and run”, on the “parasympathetic” component which is responsible with relaxation.

After a certain number of motions that can be called motions set, take a break to give them time to body for transmitted to process messages. After that follows a different set of motions and break again (Fig. 5).



Fig. 5. Some of Bowen's movement [Ros 09]

Feedback is given to the brain that communicates with the entire body with muscles, with internal organs and sensory organs, to monitor both internal and external environments of the body, including the position of the limbs, muscle contraction levels and organic functions.

### 3.3. Bowen therapy benefits

At this time Bowen therapy is presented in more than 30 countries. There are many references and testimonials of patients. In 2012, a scientific study materialized also through a doctoral thesis of Mrs Christine a. Hansen of the University of Arizona and the music: "A pilot study on Bowenwork for symptom management of women breast cancer survivors with lymphedema" – in translation – " a pilot study with Bowen treatment for management of breast cancer with symptom lymphedema cancer of survivors". The project aims to verify the viability of Bowen therapy in cases of people who had of breast cancer with lymphedema.

Within the framework of the research were selected 21 female persons in three major cities in the U.S., that have been applied to 4 sessions of the Bowen having the 10 days between them. Have evaluated them status through questionnaires also published after the completion of the 4 sessions. The sessions were subjected to a pair of t-tests, first maned SF36 which evaluate the mental health and another FACT-B that put in evidence the functional status of the person.

The results were the following:

- ✓ 95% of the participants in the study had finished the study;
- ✓ It has been found a significant improvement of the mental health and functional status of participants;
- ✓ It has been considerably improve the range of arm motion.

Breast cancer is recognized as the most spread throughout the world. The U.S. survival rate is over 2 million people. It was completely detected the parade then rapid surgery, after case and treatment. The men diagnosed with this cancer represents less than 1% in percentage.

A person's life that suffers of cancer this is full one of the concerns with negative impact on mental state and the functionality in good condition – in one Word, the quality of life is not good. Over these issues for some people may turn to add and lymphedema, which is a chronicle condition. This is a sweat chronicle of the arm, shoulder joint or trunk. Generally a sweating chronicle of extremităților and it seems that it is inappropriate because of the way in which work the lymphatic system acting as is would be a wound. It is possible that after of surgical operations and chemotherapy to be spend this phenomenon. This can lead to infections, skin change and is particularly affecting and arm function.

The Statistic National Cancer Institute USA made a situation in which establish what is the proprortion of the breast cancer regarding the all people with cancer. The situation is presented in the Table 2.

Table 2.

Statistical data from the National Cancer Institute USA

New breast cancer cases expected in 2014	232.670 persons (women)
Percent of total cancer	14 %
Deceased persons in 2014	40.000 women
Percentage of total cases of breast cancer	6,8%

In the period 2009-2011 in the USA did a statistics concerning cases declared illnesses with breast cancer and the estimates made regarding this situation. The data in table 3 are centralised.

Table 3.

Actual situation of the years 2009-2011 regarding the breast cancer

Women who will be diagnosed with breast cancer in a given moment of life	12,3%
Cases for breast cancer in the US.	2.899.726 women
The percentage of those that survive more than 5 years	89,2%

Considering these results it was concluded that it is useful to explore further the study beneficial influence to Bowen therapy.

#### 4. CONCLUSIONS REGARDING THE USE OF VIBRATIONS ON THE HUMAN BODIES

Study of the action of mechanical vibration on the human body is proven in those two components with major implications on the human health. The first relates to the production of machinery, cars, tools, devices, usage, location, and means of reducing vibration, so the operator to safely. With all the implications that are vibration study over the last 60-70 years, are far from being covered.

The second part is the treatment carried out using vibrations. In this second case, the vibrations can bring health and improve substantially the quality of life. In the field is relatively new, the research effort may be consistent, but an optimal time non-invasive procedures have been identified that can bring an extra touch in human life, it is possible for it to be carried out with the maximum comfort of the patient both physically and mentally, and with a minimum of material and financial resources, far less than the huge effort carried out in the field of medico-chemico-pharmaceutical.

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#### Considerații generale ale acțiunii vibrațiilor asupra organismului uman din punct de vedere energetic

**Rezumat:** *Lucrarea conține cateva elemente pentru pregătirea conceptelor și explicațiilor, care sunt necesare definirii acțiunii vibrațiilor asupra organismului uman. Corpul uman din punct de vedere mecanic este un sistem format din masa, amortizor și arc, de aceea atât ansamblul, cât fiecare parte componentă, mai mare sau mai mică are frecvența sa proprie. Dacă se solicită corpul cu o cantitate de energie, care determină apariția unei vibrații cu frecvența apropiată de frecvența proprie, efectul este de neimaginat și produce insanatosirea întregului corp, chiar dacă acțiunea s-a produs pe o mică porțiune a acestuia.*

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