Biological interaction of the magnetic field

- *Most components of the human body tissues are diamagnetic materials. However, many structures have paramagnetic properties. External magnetic field interaction changes the energy state of tissues, which affects their biological functions.*

- *In the body there are various important for its function compounds containing metals that act as ferromagnetic materials, such as iron-containing hemoglobin, which is responsible for blood transportation.*

- *The magnetic field affects the substances with piezoelectric properties, causing their mechanical deformation. These include: collagen-building blocks of bones, many compound proteins, keratin, and dentine – callus formation in the case of non-union.*

- *The magnetic field has the impact on the cell membrane potential, it accelerates the ion exchange, simultaneously stimulating the biochemical reactions as well as reactions involving enzymes and hormones.*

- *It improves peripheral blood circulation, increases oxygen supply to tissues as well as the oxygen partial pressure.*

- *It changes the water physical properties, increases the gas concentration contained therein – oxygen in particular, changes the pH.*

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Magnetotherapy – systemic effects

Magnetic field has a great impact on the human body. Method of application and magnetic field properties offer many advantages. The magnetic field penetrates freely through clothing, the plaster cast and the entire human body.

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As a result of the above mentioned effects we may observe the following beneficial features:

- *Analgesic effect*

- *Anti-inflammatory effect*

- *Anti-oedematous effect*

- *Cardiovascular stimulation*

  (in particular peripheral vascular system)

Processes at the cellular level:

- *Ca² + penetration into cells*
- *ATP activity (sodium-potassium pump of cell membranes)*
- *Increased absorption of proteins*
- *Increased transportation across the cell membrane*
- *Stimulation of prostaglandins E creation*
- *Increased DNA content*
- *Acceleration of soft tissue regeneration*

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