

## **Electrotherapy; characteristics, classification, basic indications and contraindications**

The principle of electrotherapy is that the energy applied stimulates a beneficial response. It is the physiological response, which in turn, brings out the therapeutic benefit. A very important concept is that the electrotherapy intervention is only a component of the treatment. Desired irritant effects can be analgetic, motor irritant for hyperemia or myorelaxative, and motor effect is more for stimulation and training of weak muscles.

Electrotherapy can be categorised into low-frequency (0-1000 Hz), medium-frequency (1000-100 000 Hz) and high-frequency above 100 000 Hz. Low frequency currents include classic currents, diadynamic currents and H-waves. Diadynamic currents are a variant with a basis of galvanic part, and dose with pulse component.

Basic types are monophasic, diphasic, CP (equal phases of DF and MF), LP and RS. Care should be taken, that there will be acidification of solution under the cathode and alkalization of solution under the anode, so there must be applied protective solution after polarity reversal. Safe length of static application is 6 minutes, before we have to change polarity.

Medium frequency- current are also called interference currents. They work in a way that two currents interact when we apply four electrodes, and the interference creates a deeper penetration. Types used are quad-polar, bi-polar interference, isoplanar vector field and di-polar vector field.

Electrical stimulation modalities are TENS, IFT, NMES. Thermal modalities group includes shortwave diathermy, other RF applications and microwave diathermy.

Galvanotherapy is a special type of monophasic current with uninterrupted, unidirectional flow of electrons toward the positive pole. Effects are:

- On the electrodes and in their close proximity by accumulation of products of electrolyte dissociation
- In the electrode pads by change of ion concentration, electrolytic dissociation and iontophoretic incorporation of ions
- In the current path by polarization of tissues, changes in the tissue resistance, hyperaemia, affecting of the nerve irritation, effect on the thrombus and affecting of the muscle excitability

Indications are muscles with trigger points, relaxing muscle spasms, preventing or slowing tissue atrophy due to disuse, increasing blood circulation, re-educating muscles and maintaining or increasing ROM.

Indications for microcurrent, interferential, premodulated and TENS also include:

- Reducing symptomatic, chronic, intractable pain
- Lowering acute pain related to trauma
- Lessening acute pain related to surgery

Contraindications are fever, cachexia, pacemaker, metal implants, trophic changes in skin on place of application, cancer, and placement on sinus carotidis.

### **Phototherapy; dosage, indications and contraindications**

Ultraviolet treatments are usually given in a hospital outpatient department in a walk-in cabinet containing fluorescent light bulbs. The treatment schedule varies from two to five times a week and an average course lasts between 15 and 30 treatments. Psoriasis will for example usually take 5-10 treatments to improve, but optimally 15-25 treatments. The starting dose is done by assessment of sun light sensitivity of the patient. Like how easily he/she gets sunburned. The treatment time is quite short for UV treatment, usually from some seconds to minutes.

Indications are inflammation, skin disorders like psoriasis, atopic eczema, other forms of dermatitis, polymorphic light eruption, generalised itching, pityriasis lichenoides, cutaneous T cell lymphoma.

PUVA is generally indicated for chronic plaque psoriasis and atopic eczema if UVB has not been effective.

Contraindications for phototherapy are if skin condition is made worse by sunlight, xeroderma pigmentosum or lupus erythematosus, skin cancer, immunosuppressive drugs, liver- or kidney disease

### **Reflex massage; indications and contraindications, dosage, effect principle, modification**

Reflexology is a therapeutic intervention led primarily by way of the neural connections in the area of the selected reflex arcs. The reflex massage can be characterized as a manual therapeutic intervention on the body surface, applied in locations, where we find changes that are caused by secondary by reflexive way. Point of action is not primarily ill tissue or organ.

The scope of application of reflex massages is in comparison with classic massage much wider.

Indications are functional and chronic organic diseases of visceral organs. Disorders of blood circulation. Functional, degenerative, and some chronic rheumatic diseases of the spine and joints. Posttraumatic and postoperative conditions. Vegetative and endocrine dysregulations.

If massage is indicated, it should not be procrastinated. The sooner you start, the better the effects will be. The principle of early initiation and sustained implementation is unconditionally true for chronic diseases. Some rheumatic patients may have need for continuous treatment not to deteriorate.

Contraindications are acute inflammation of the tissues or organs which require urgent surgical intervention. Conditions requiring bed rest, fever and infectious diseases and acute and fungal skin infection.

Local contraindications of reflex massage are neoplastic diseases over place of tumors, in the place of the changes resulting from stimulation of tumor changed tissue. Pelvic reflex massage is contraindicated in pregnancy. Thoracicreflex massage is contraindicated in rib resection, pneumothorax, and advanced morbus Bechterev.

Reflex massage seeks to eliminate all reflexively resulting changes in tissues that can be achieved from the body surface. This positively affects the pathogenic reflex arc and improves healing processes. The preferred site is ill joint, tissue or organ.

The effect of reflex massage is not achieved only through nervous system. Humoral compartment like histamine and acetylcholine, as well as hormonal component participate. Suitable interplay of all these components can lead to an overall vegetative realignment.