Physical therapy

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Physical therapy

Definition

- Physical therapy includes the employment of the physical or other effective properties of electricity, light, heat-cold water, massage, manipulation, medical exercises.
- Physical therapy is an integral part of a comprehensive rehabilitation program.
- The uses of physical therapy is one of the most valuable adjuncts in the management of the rheumatic patient.
Classification of physical therapy according to energy applied

I. Electrotherapy
II. Phototherapy
III. Hydro- and balneotherapy
IV. Mechanotherapy
V. Inhalation
VI. Speleotherapy /cave therapy/
VII. Climatherapy
VIII. Diet
I. Electrotherapy

1. Low frequency electrotherapy (<1000Hz)
   - Galvanic currents
   - Stimulatory currents
   - Iontophoresis
   - Diadynamic currents therapy
   - Hydrogalvanic bad
   - TENS

2. Middle Frequency Electrotherapy (1000-100.000Hz)
   - Interferential current therapy

3. High Frequency Electrotherapy (>100.000Hz)
   - Short-waves
   - Decimeter-waves
   - Microwaves-therapy
II. Phototherapy

1. I R (infrared light th.)
2. UV R (ultraviolet light th.)
3. LASER

III. Hydro- and balneotherapy

1. $\text{CO}_2$ bath
2. Underwater massage
3. Mud therapy
4. Underwater traction
5. Balneotherapy
IV. Mechanotherapy

1. Therapeutic exercises (medical gymnastic)
   • Individual exercises
   • Collective exercises
   • Underwater exercises

2. Massage
   • Medical massage
   • Freshening massage
   • Special massage
     • LD massage
     • Segment massage
     • Shiatsu massage, etc.

3. Manual therapy (chiropractic techniques)

4. Traction therapy
   • Underwater tractions
   • TRA Computer Therapy
I. Electrotherapy
Galvanic currents

• **Physiological effects:**
  – Painkiller or painrelieving effects
  – Vasodilatatory and circulatory effects (dilatation of blood vessels, development of hyperaemia)
  – Spasmolytic effect of the muscles

• **Indications for Galvanic currents:**
  1. Neuralgia
  2. Neuritis
  3. Myalgia-fibromyalgia
  4. Tendinitis
  5. Tendovaginitis
  6. Bursitis
  7. Epicondylitis
  8. Ischialgia
  9. Brachialgia
  10. Polyarthritis
  11. Sudeck-syndrome
  12. Fractures
Contraindications for galvanic currents therapy:
- Acute arthritis and other inflammatory process
- Osteomyelitis
- Over metallic implants
- Over known or suspected malignancies or metastases
- Presence of pacemaker
- Injured or inflammed skin
Galvanic currents
Special procedures of low fr. electrotherapy

1. **Kowarschik galvanic treatment** (Ischialgia-brachialgia)
2. **Bergonier therapy** (trigeminal neuralgia)
3. **Bourgignon therapy** (pericerebral current th., cephalgia)
4. **Iontophoresis** (ion transfer)
   /various drugs may be introduced into the deeper layers of the skin by means of galvanic current/
   - Histamine
   - Lidocaine
   - Sulfur
   - Iodine
   - Hyase
5. **Stimulatory current therapy**
   This current induce muscular contractiona, its effects on the damaged nerve-muscular tissue is to a certain extent selective, the intact muscular tissues are not affected at the same time
KOWARSCHIK - FÉLE KEZELÉS

- Brachialgia esetén a kezelés ülő helyzetben történik
- Ischialgia - femoralis neuralgia esetén a kezelés fekvő helyzetben történik
- 2 db. 90 cm hosszú és 8 cm széles lapos elektródára van szükség
- A hajlító oldalra kerül az anód, a feszítő oldalra a katód
- A kezelés transzverzális és bipoláris
- Átlagos intenzitás 20-30 mA
- A kezelés időtartama 15-20 perc

INDIKÁCIÓJA:
- Ischialgia - lumboischialgia
- Femoralgia (Femoralis neuralgia)
- Brachialgia (Cervicobrachialgia)

3. ábra. Ischias kezelése Kowarschik szerint
BERGONIER-féle kezelés:
Lényege: fél maszk alakú aktív /+/ elektródot, ill. egy inaktív elektródot a nyakra helyezünk.
Intenzitás: 10 mA
Kezelési idő: 3-5 perc
Indikáció: trigeminus neuralgia
Hydrogalvanic current therapy
(combination of electric’s and water’s effects)

**Indications:**
1. RA (Rheumatoid arthritis)
2. SPA (Spondylarthritis ankylopoetica)
3. PSS
4. Psoriatic arthritis
5. Reiter’s syndrome
6. Osteoarthritis, Spondylosis
7. Osteoporosis
8. Polyneuropathy
9. Perimenopausa

**Contraindications:**
1. Fever
2. Acut arthritis or spondylitis
3. Embolia
4. Presence od pacemaker
5. Carcinoma
6. Endoprothesis
Hydrogalvanic current therapy
Interferential current therapy

(frequency: 1000-100.000Hz)
High Frequency Electrotherapy

(fr: >100.000Hz)
II. Phototherapy

LASER
III. Hydro-, balneotherapy
1. CO$_2$ Bath – Carbodioxid baths

- This is one of the most important physiotherapeutic form for treating patients with atherosclerosis or cardiovascular diseases

- We use two types:
  1. Mofetta - naturally CO$_2$-gas bath
  2. Artificial CO$_2$ baths

- Physiological effects of the CO$_2$ bath:
  1. Hyperemic effect
  2. Vasodilatatory effect
  3. Sedative effect
  4. Cardiovascular effect
1. CO$_2$ Bath – Carbodioxid baths

• Indications:
  1. Atherosclerosis obliterans
  2. Raynaud syndrome
  3. Sudeck atrophy
  4. Osteoporosis
  5. Hypertension
  6. Osteoarthritis

• Contraindications:
  1. Chr. Obstructive pulmonary disease
  2. Cardiac lesions
  3. Acut disease of skin (e.g. allergy)
CO$_2$ bath, Mofetta
2. Underwater massage

- Usually we use combined therapeutic tub for underwater massage and galvanic current bath
- The tub is double walled with highest standard of safety.
- The interiors dimensions are available for 600-700 liter capacity
- There is a high-power turbine
- The water-jet pressure is 0-6 atm. (max. 0.5-1.5 atm.)
- The distance between water-jet and skin is 10-13cm
- Temperature of water: 35-37°C
- Time of the treatment: 20 min.

**Indications:**
1. Spondylosis
2. Spondylarthrosis
3. SPA
4. Fibromyalgia
5. Osteoarthritis

**Contraindications:**
1. Thrombosis
2. Risk of thrombosis
Underwater massage
3. Mudtherapy - Peloidtherapy

- The use of such peloids as peats, fango or see mud is widely applied in physiotherapy, specially in Europe
- They are applied as hot packs or bath with a temperature of 40-42°C
- Usually this high temperature is well tolerated by the patient
- Mudes are pliable and can easily be applied to the body and extremities
- The conductive heat which is transmitted by mud packs makes several favourable changes in the organism
  - The blood circulation increase
  - Hyperaemia is presented
  - The transferred heat persists over long period
3. Mudtherapy - Peloidtherapy

- Generally the mudes are made from high quality granulated matter filled with volcanic mineral substances.
- The hot water is absorbed by the mineral substances and released in the form of moist heat.

**Indications of mudtherapy:**
1. Degenerative diseases of the locomotor systems
2. Arthritis (not active)
3. Arthrosis
4. Myalgia, Fibromyalgia
5. Fracture
6. Orthopedic problems
7. Some gynecological diseases

**Contraindications:**
- All the concern of thermal water cure
4. Underwater traction Therapy (Moll-Károly)

- Types:
  1. Hanging by neck
  2. Hanging by arms

- Purpose of underwater traction:
  - Decompression of nerve
  - Reposition of prolapsus of disc
  - Reducing contractures of hip or knee

- Used weights:
  - Max. 10kg for treating neck
  - Max. 20kg for treating lowback
  - Max. 5kg for treating contractures of hip or knee
4. Underwater traction therapy (Moll-Károly)

- **Temperature of water:** 34-35°C
- **Time of treatment:** 20 min
- **Indications:**
  1. Discopathy (osteoochondrosis)
  2. Spondylosis – spondylarthrosis
  3. Cervicobrachialgia – ischialgia
  4. Occipital neuralgia
  5. Intercostal neuralgia
  6. Cervical migraine
  7. Osteoarthritis
- **Contraindications:**
  1. Spondylolysis – spondylolysis
  2. Spondylitis (TBC)
  3. Osteoporosis
  4. Tumor vertebral
  5. Spondylarthritis (SPA)
  6. Cardiac problems
  7. Hypertension
4. Underwater traction therapy (Moll-Károly)
5. Balneotherapy
5. Balneotherapy

- The usefulness of the treatment with thermal water has been demonstrated by several years of successfully medical experiences.
- The thermal water influences the organism considerably, reduces or relieves the unpleasant symptoms of the patients.
- After the treatment with thermal water, the body’s reaction capacity improves and the general state of health becomes better.
- The curative effects of thermal baths are constituted by hydrological, thermic and mineral components.
- The hydrological and heat effects in balneotherapy are well known, however the chemical and pharmacological effects till the present day are controversial.
- Therapeutic benefit was also demonstrated by many balneologists all over the world and most of rheumatic patients are treated every year at hot springs.
5. Balneotherapy

**Effects of thermal bath**
1. Mechanical effects
   a. Buoyancy
   b. Hydrostatic pressure
2. Heat effects
3. Chemical effects

**Symptoms of the ‘thermal bath reaction’**
1. Fatigue
2. Weariness
3. Headache
4. Insomnia
5. Restlessness
6. Exitability
7. Loss of appetite
8. Slight fever
Thermal bath cure

Indications

1. Inflammatory joint diseases (rheumatoid arthritis, psoriatic arthritis)
2. Ankylosing spondylitis (Morbus Bechterew)
3. Arthrosis
4. Degenerative disorders of the spinal column (spondylosis, spondylarthitis)
5. Diseases of the soft tissues of the locomotor system (tendinitis, tendosynovitis, tennis elbow, myalgia)
6. Paralysis
7. After treatment of fractures and amputations
8. Orthopedic diseases
9. Arteriosclerosis
10. Dermatological diseases (psoriasis, chr. ekzema, chr. dermatitis)
11. Chr. gynecological diseases,
12. Psychosomatic conditions
13. Chr. Diseases of the respiratory tract (inhalation)
14. Drinking cures (ulcers, chr. gastritis)
Thermal bath cure

Contraindications

1. Acut inflammatory diseases
2. Active tuberculosis
3. Cancer
4. Cardiac failure
5. Grave hypertonia
6. Contagious diseases
7. Fever
8. Hyperthreoidism
9. Phlebitis
10. Under the effect of alcohol
IV. Mechanotherapy
1. Therapeutic exercise

- Therapeutic exercise has become one of the important agents in physical medicine.
- The extensive use of exercise in rehabilitation of patients is irreplaceable.
- Proper employment of therapeutic exercise required specialized technical knowledge which the physiotherapeutum may acquire.
- The chief physiological effect of exercise is to increase the circulation of blood and lymph, rise the metabolism of muscle.
- The medical exercise is the only means by which the bulk and strength of muscles may be increased.
- Exercise help prevent muscular atrophy, maintenance of a normal range of joint motion or prevent formation on contractures.
- Exercise as used in physical medicine is of several of types:
  1. Passive exercise
  2. Isometric muscular contraction
  3. Assistive exercise
  4. Active exercise
  5. Resistive exercise
  6. Hydrogymnastics
1. Therapeutic exercise
2. Massage

- The use of massage for relief of human suffering dates back to antiquity
- Often was preceded by bathing in hot water or hot mud
- It is one of the most useful, easily obtained, and frequently applicable method of medical therapy in rheumatism and rehabilitation
- Electrical apparatus and other devices cannot effectively replace it
- The physiological effects of massage are mediated through reflex and mechanical reactions
- There are many technics of massage:
  - Sweden
  - Special indoasiatic
Physiological effects of massage

1. Of reflex nature
   a. Dilatation of superficial capillary vessels
   b. Reflex relaxation of muscles (with gentle stroking)
   c. Initial stimulation of sensory nerve ending and deeper nerve trunks
   d. Decrease in pain sensibility

2. Of mechanical nature
   a. Increase of blood flow
   b. Acceleration of venous and lymphatic return
   c. Improvement in the nutrition of the muscles
   d. Prevention of fibrosis and adhesions
Massage