

# Physical and Rehabilitative Medicine – Terms and Definitions

## Results of the Consensus Conference 2013/2014

### Autoren

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### Bibliografie

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### Preface



The field of “physical and rehabilitative medicine” represents not just the physical medicine procedures that are indispensable for curative medicine, but also the medical rehabilitation that is of central importance to physical medicine. However, “physical and rehabilitative medicine” also includes the medical knowledge that is necessary for spa treatment and social medicine.

The interdisciplinary character reported in the regulation on further education is of crucial importance. This means that the medical specialist for “physical and rehabilitative medicine” is responsible for patients with illnesses affecting various organ systems, or for the consequences of these diseases. Notwithstanding the fact that in many areas the methods of physical therapy are still also used subject-specifically in terms of rehabilitation, experience shows that the variety of increasingly differentiated treatment methods of physical medicine and the great socio-medical importance (including the International Classification of Functioning, Disability and Health [ICF] of rehabilitation) require their own specialised medical expertise. The field is also increasingly responsible for providing medical aids to patients. Since the main goal of medical intervention is the preservation or recovery of quality of life, the success of curative medicine – often achieved at the expense of functional deficiencies with the risk of permanent disability or even the need for long-term care – is ultimately only useful for many patients with early and consistent use of

medical rehabilitation. This is set against the background of the increasing importance of geriatric patient care.

The integration of outpatient medical rehabilitation in statutory medical care, including secondary and tertiary prevention, is just as important because the principles of physical and rehabilitative medicine in inpatient rehabilitation are already established.

The 2nd edition of the Physical and Rehabilitative Medicine Consensus should also give those with an interest in the area of physical medicine and medical rehabilitation the opportunity to learn about the diagnostic and therapeutic possibilities and challenges of this field. A revision of the definitions and terms in the field of physical and rehabilitative medicine is sought every two years. This is made apparent by the validity data of the respective editions (2nd edition 2013/2014).

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## Physical and Rehabilitative Medicine

As a scientific medical discipline, physical and rehabilitative medicine includes the speciality-related diagnosis and treatment of physical impairments, as well as structural and functional disorders using physical therapy and rehabilitative intervention methods for prevention, cure and rehabilitation. It also includes manual medicine, specialized pain therapy, social medicine, balneotherapy and climatotherapy as well as science-based naturopathy (► Fig. 1).

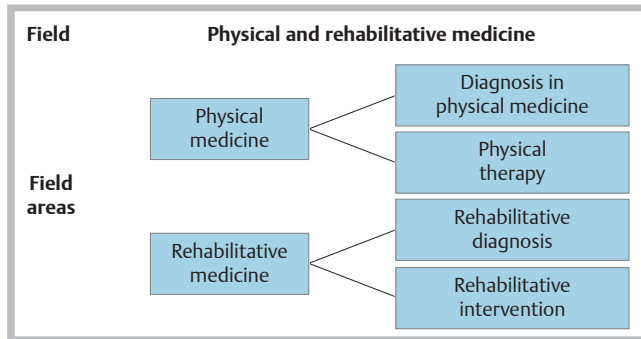


Fig. 1 Field of physical and rehabilitative medicine.

### 1 Physical Medicine

Physical medicine includes identifying functional and structural disorders and treating them using methods of physical therapy, with the aim of prevention, cure and rehabilitation. Its therapeutic principles are protection, activation, attenuation, functional adaptation, as well as sensory-motor learning, training and behavioural adjustment.

#### 1.1 Diagnosis in Physical Medicine

Diagnosis in physical medicine is used to identify and evaluate functional and structural disorders of organs or organ systems and the whole organism, with the aim of using physical therapy rationally and efficiently. Its specific principles are performance and functional analysis, topodiagnosis, reaction prognosis, as well as methodological and indication-based therapy monitoring.

##### 1.1.1 Methods

1. General and specific history for identifying and evaluating local functional disorders and those that affect the entire organism, as well as vegetative responsiveness and pain
2. General and specific clinical examination as a complex functional analysis of the affected organs and organ systems, as well as the entire organism, Function-related measurement methods
3. Imaging procedures with particular attention to functional aspects including, in case of illnesses of the musculoskeletal system, the cardiovascular system, the respiratory system as well as the central and peripheral nervous system
4. Laboratory examination with particular attention to individual resilience and for monitoring progress
5. Preliminary neuropsychological diagnostic assessment

##### 1.1.2 Procedures

1. Special medical history including necessary assessment procedures
  - Speciality-related pain history
  - Speciality-related function history
  - History regarding stress and relief
  - History regarding vegetative functions
  - History of means of therapy
  - Socio-medical history
2. Specific clinical examination
  - Tissue-based structure analysis (topodiagnosis ► Fig. 2)
  - Speciality-related functional and performance analysis
  - Complex functional examination of the affected organs and organ systems as well as the whole organism
  - Manual medical examination
  - Diagnostic interventions
3. Function-related measurement procedures
  - Mobility measurements
    - Angular measurements
    - Distance measurements
  - Girth measurements
  - Muscle function analysis
    - Isokinetics (conditional attributes)
    - Myotometry
    - Strength measurement systems
  - Stance and gait analysis
    - Force plates, pressure measuring systems
    - Goniometric systems
    - Opto-electrical systems
    - Topometric systems
  - Electrodiagnostics
    - Electromyography (EMG)
    - Nerve conduction velocity (NCV)
    - IT curve diagnosis (creating stimulus parameters for individual muscles)
    - Functional electromyography
    - Kinesiological electromyography (EMG polygraphy incl. EMG mapping)
    - EMG posturography
    - Myofeedback
    - Motion analysis
    - Optical systems
    - Ultrasound topometrical systems
    - Goniometric systems
  - Force and torque measurements
    - Static systems
    - Dynamic systems
    - Isokinetic systems
  - Cardiological function examination
    - ECG
    - Ergometry
  - Blood flow measurement/fluidity of movement measurement
    - Doppler ultrasound examination
    - Laser Doppler flowmetry
    - Plethysmography
  - Pulmonological function examination
    - Spirometry
    - CPET
  - Algometry
    - Clinical algometry

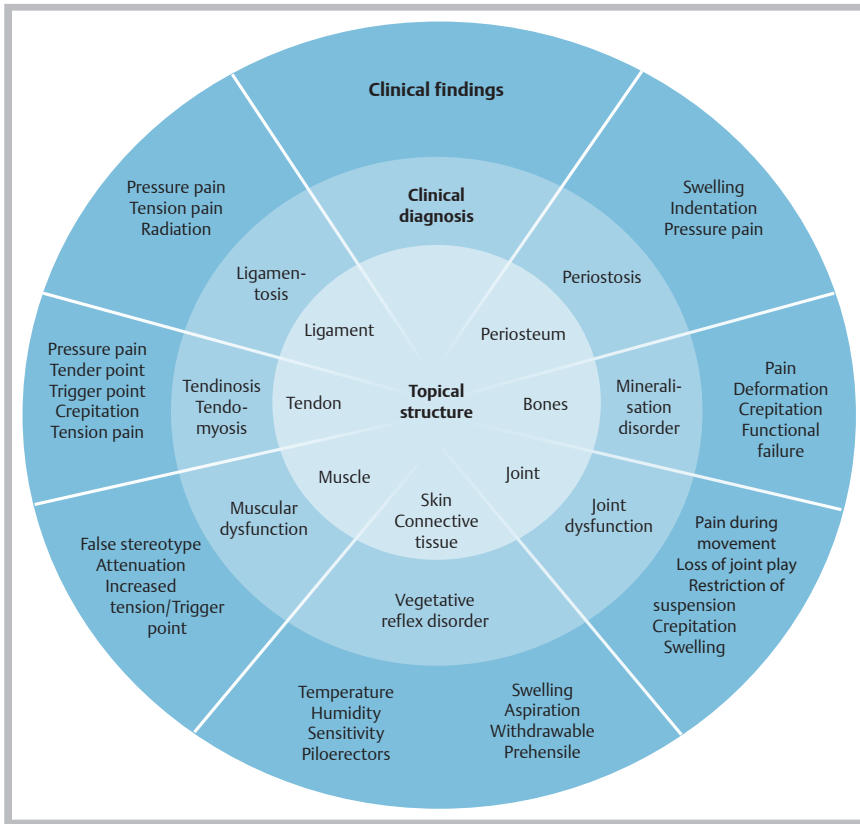


Fig.2 Topodiagnosis in physical and rehabilitative medicine.

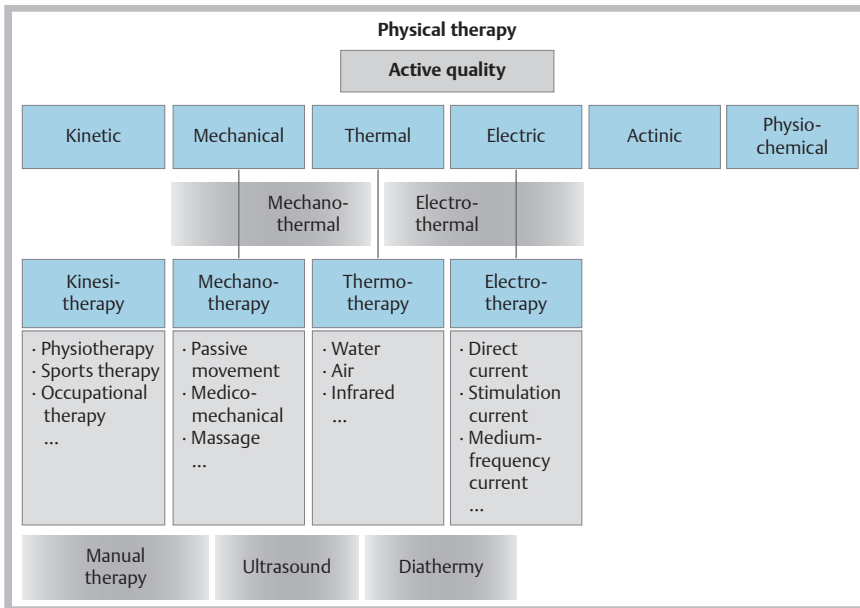


Fig.3 Active qualities of physical therapy.

- Instrument-based algometry (mechanical, electrical, thermal)
- ▶ Evaluating the tissue state
  - Sonography
  - Thermometry
  - Skin thickness measurement
  - Volume measurement
- 4. Imaging methods
  - ▶ Sonography
  - ▶ X-Ray
  - ▶ Computed tomography (CT)
  - ▶ Magnetic resonance tomography (MRT)
  - ▶ Scintigraphy
- 5. Laboratory examinations
  - ▶ Basic diagnosis
  - ▶ Follow-up of disease-specific laboratory parameters
  - ▶ Stress-related metabolic parameters
- 6. Preliminary neuropsychological diagnostic assessment
  - ▶ Memory tests
  - ▶ Orientation tests
  - ▶ Vigilance tests
  - ▶ Tests for attention deficit disorders

## 1.2 Physical Medicine Therapeutic Methods

Physical therapy is the diagnosis-oriented and systematic serial use of kinetic/mechanical, as well as thermal, electrical, actinic and psychochemical action qualities in prevention, cure and rehabilitation (● Fig. 3).

### 1.2.1 Therapy Lanning

#### Definition

Therapy is planned by a doctor. The plan is the creation of an overall concept of targeted instructions/orders of coordinated physical therapeutic measures, targeting physical impairments as well as structural and functional disorders. The therapy is planned individually, documented and updated regularly. Prescriptions are based on the therapy plan.

#### Methods

1. Treatment plan
2. Provision of medical aids

### 1.2.2 Branches of Physical Therapy – Methods and Means of Therapy (● Fig. 3 and ● Fig. 4)

#### 1.2.2.1 Physiotherapy

#### Definition

Physiotherapy includes both active as well as passive forms of kinesitherapy and movement therapy, as well as complex concepts

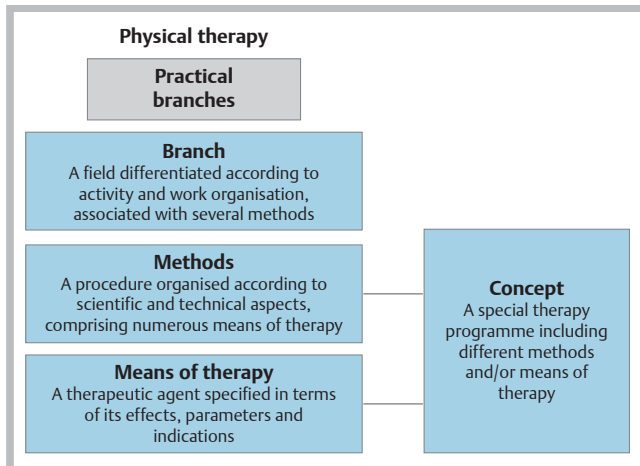


Fig. 4 Allocation table of the branches, methods, means of therapy and concepts.

under continuous examination for treating physical impairments, structural and functional disorders of the movement, nerve, cardiopulmonary, intestinal and urogenital systems and the mind.

#### Methods

1. Passive measures
2. Active movement therapy
3. Physiotherapy with a neurological basis
4. Movement therapy with physiotherapy aids
5. Physiotherapy with functional bandages (tape)
6. Respiratory therapy
7. Relaxation therapy

#### Means of therapy

1. Passive measures:
  - ▶ Positioning
  - ▶ Mobilisation
  - ▶ Extension and traction
  - ▶ Stretching
2. Active movement therapy:
  - ▶ Stress exercise
  - ▶ Guided and/or assisted movement
  - ▶ Active, correct axial and/or complex physical exercises
  - ▶ Rhythmically dynamic physical exercises
  - ▶ Movement against resistance
  - ▶ Physical exercises in water
  - ▶ Complex movement and postural positions (e.g. walking, grabbing, standing)
3. Movement therapy with a neurophysiological basis
  - ▶ Facilitation and reactivation of movement patterns
  - ▶ Reflexive control of motor function through proprioception and exteroception
  - ▶ Activating early childhood movement patterns
  - ▶ Inhibition using spinal reflexes
  - ▶ Inhibition using proprioceptive reflex apparatus
  - ▶ Promoting physical activity through gradual induction
  - ▶ Influence of sensory and mechanical properties of the joint capsule
  - ▶ Sensorimotor training
4. Movement therapy with physiotherapy aids
  - ▶ Balls, bands, twist boards, soft floor mats, wobble boards, vibration plates, wall bars, climbing walls, sling tables

Physical therapy			
Practical branches			
Physiotherapy	Heat and cold therapy	Manual therapy	Ultrasound therapy
Occupational therapy	Hydrotherapy	Massage therapy	Mechanical vibrations
Sports therapy	Balneotherapy	High-frequency electrotherapy	Phototherapy
Medico-mechanical therapy	Climatotherapy	Low-frequency, Medium-frequency, Direct current electrotherapy	Inhalation therapy

Fig. 5 Branches of physical therapy.

5. Physiotherapy with functional bandages (tape)
  - ▶ Stabilisation, limitation of movement
  - ▶ Sensorimotor-supportive
  - ▶ Decongesting
6. Respiratory therapy
  - ▶ Positioning
  - ▶ Trigger point therapy
  - ▶ Vibration, striking, chest compressions, vertical vibrations
  - ▶ Inspiratory and expiratory techniques
  - ▶ Body positions to facilitate respiration
  - ▶ Coughing techniques
  - ▶ Upper body callisthenics
  - ▶ Using aids
7. Relaxation therapy
  - ▶ Post-isometric relaxation
  - ▶ Relaxation using breathing techniques
  - ▶ Conscious voluntary relaxation
  - ▶ Relaxation using tactile stimuli

#### Concepts (examples)

- ▶ Proprioceptive Neuromuscular Facilitation (PNF)
- ▶ Bobath's neuro-developmental treatment
- ▶ Vojta's developmental kinesiological treatment
- ▶ Maitland concept
- ▶ McKenzie concept
- ▶ Brunkow method
- ▶ Sensory integration concepts
- ▶ Cyriax treatment concept
- ▶ Brügger concept
- ▶ Klein-Vogelbach's functional kinetics
- ▶ Feldenkrais concept
- ▶ Schaarschuch-Haase solution therapy
- ▶ Scoliosis therapy concepts
- ▶ Hippotherapy
- ▶ Janda's sensorimotor facilitation
- ▶ Alexander's concept
- ▶ Progressive muscle relaxation
- ▶ Concentrative relaxation, autogenic training
- ▶ Concepts for treating incontinence

#### 1.2.2.2 Occupational Therapy

##### Definition

Occupational therapy is function-based movement therapy involving a specific provision of aids with the objective of optimising or compensating for impaired sensorimotor, neuro-psychological and psychosocial functions. The priority is on attaining the greatest possible independence in everyday life. Another aim is to prepare for professional reintegration.

##### Methods

1. Functional therapy
2. Self-help training
3. Provision of aids
4. Neuro-psychological training
5. Diversionary exercise treatment (keeping busy)
6. Joint protection
7. Adjusting the domestic and professional environment including the necessary occupational stress test
8. Occupational therapy

#### Means of therapy

1. Functional therapy
  - ▶ Craft techniques (wood, metal, paper, textiles)
  - ▶ Use of devices (functional web devices, computers)
  - ▶ Design techniques (painting, pottery)
  - ▶ Functional games
2. Self-help training
  - ▶ Personal hygiene
  - ▶ Moving around and transfers
  - ▶ Dressing and undressing
  - ▶ Eating and drinking
  - ▶ House keeping
3. Provision of aids
  - ▶ Selecting commercially available aids and customising them if necessary
  - ▶ Testing and training in using aids
  - ▶ Manufacturing and adapting personal aids
  - ▶ Technologically assisted communication (computers, telephones, etc.)
4. Neuro-psychological training
  - ▶ Brain performance training for increasing attention and perception
  - ▶ Memory, orientation (training the mental and cognitive functions)
  - ▶ Language training
  - ▶ Swallowing therapy
  - ▶ Visual exploration training
5. Treatment techniques for distraction (as individual or group treatment)
  - ▶ Games
  - ▶ Design techniques
  - ▶ Creating interests
  - ▶ Promoting social communication
6. Joint protection
  - ▶ Joint protection advice
  - ▶ Independence training
  - ▶ Splint support
  - ▶ Adapting everyday commodities
  - ▶ Adjusting movement patterns
7. Occupational therapy
  - ▶ Product and performance-based training of basic work skills
  - ▶ Work training (craftsmanship, clerical, industrial)
  - ▶ Occupational stress test

#### Concepts (examples)

- ▶ Perfetti
- ▶ Bobath
- ▶ Frosting
- ▶ Affolter method
- ▶ Facio-oral therapy
- ▶ Kleinert
- ▶ Montessori
  - ▶ Sensorimotor integration therapy

#### 1.2.2.3 Sports Therapy

##### Definition

Sports therapy is the application of movement therapy measures for the sick organism using suitable means of sport based on scientific movement and training theory. The aim is to normalise or compensate for impaired physical, psychological and social func-

tions, to prevent secondary damage and to promote health-oriented behaviour.

#### Methods

1. Endurance training
2. Strength training
3. Speed training
4. Agility training
5. Coordination training

#### Means of therapy

1. Endurance training
  - ▶ Continuous performance training
  - ▶ Interval training
  - ▶ Repetition training (“Repetition method”)
2. Strength training
  - ▶ Maximum strength training
  - ▶ Restricted anaerobic strength training
  - ▶ Strength endurance training
3. Speed training
  - ▶ Reaction speed training
  - ▶ Action speed training
4. Agility training
  - ▶ Flexibility training
  - ▶ Elasticity training
    - Dynamic
    - Static
5. Coordination training
  - ▶ Mental training
  - ▶ Sensorimotor training

#### Concepts

- ▶ Medical training therapy
- ▶ Psychosocial behavioural training
- ▶ Indication-specific group training
- ▶ Functional therapy

#### 1.2.2.4 Medico-Mechanical Therapy

##### Definition

Medico-mechanical therapy comprises functional treatment with mechanical therapy equipment and aids.

##### Methods

1. Continuous passive motion (range of motion splints/braces)
2. Medical equipment training
3. Sling table treatment
4. Instrument-based extension treatment
5. Use of orthoses
6. Gait training using equipment
7. Wheelchair training
8. Compression treatment
9. Assistive devices for standing up, standing and walking

##### Means of therapy

1. Continuous passive motion
  - ▶ Motorised splints/braces
  - ▶ Supported ergometer systems
2. Medical equipment training
  - ▶ Sequence training equipment
  - ▶ Isokinetic training equipment
  - ▶ Isometric training equipment
  - ▶ Ergometer, treadmill, step trainer

- ▶ Cable systems
  - ▶ Sensorimotor training equipment (vibration sticks, vibration plates)
3. Sling table treatment – sling table (active, passive)
  4. Instrument-based extension treatment – Extension equipment
  5. Immobilisation, manual correction, activation with orthoses
  6. Gait training using equipment
    - ▶ Crutches, walking sticks, rollators, Zimmer frames, parallel bars
  7. Wheelchair training – Wheelchair, transfer training
  8. Compression treatment
    - ▶ Compression aids, compression bandages
  9. Assistive devices for standing up, standing and walking
    - ▶ Standing boards

#### 1.2.2.5 Manual Therapy/Osteopathy

##### Definition

Using theoretical foundations, skills and procedures from other medical areas, manual medicine clinically examines the musculoskeletal system, the head, visceral and connective tissue structures for the differential diagnosis and treatment by hand of dysfunctions with the aim of prevention, cure or rehabilitation. Diagnosis and therapy are based on biomechanical and neurophysiological principles.

As part of a multimodal therapy concept, manual medicine includes the interdisciplinary application of medical and therapeutic techniques for identifying and treating impaired functions of the musculoskeletal system and the symptoms arising from these. Chains of dysfunction within the musculoskeletal system, vertebrovisceral, viscerovertebral and viscerocutaneous as well as psychosomatic influences are taken into consideration in the process.

##### Methods

1. Soft tissue techniques
2. Mobilising joint treatment
3. Neuromuscular therapy
4. Manipulation

##### Means of therapy

1. Soft tissue techniques
  - ▶ Local digital compression
  - ▶ Longitudinal traction of the muscular system
  - ▶ Transverse extension of the muscular system
  - ▶ Strain and counter-strain techniques
2. Mobilising joint treatment
  - ▶ Repetitive passive joint play movement, repetitive technique
  - ▶ Repetitive active joint movement
  - ▶ Myofascial techniques
3. Neuromuscular therapy
  - ▶ Post-isometric relaxation (PIR)
  - ▶ Muscle Energy Techniques (MET)
  - ▶ Neuromuscular techniques
  - ▶ Myofascial release techniques
  - ▶ Visceral and neurofascial techniques
  - ▶ Techniques in the cranial and orofacial area
4. Manipulation
  - ▶ Joint manipulation – high velocity manipulation
  - ▶ Repetitive manipulation

**Concepts**

- ▶ Terrier's manipulative massage
- ▶ Janda's short foot
- ▶ Maitland's nerve mobilisation
- ▶ Cyriax's capsular pattern
- ▶ Osteopathic procedures

**1.2.2.6 Massage Therapy****Definition**

Massage therapy is a treatment with mechanical stimuli, during which functionally or structurally impaired tissues are manually influenced directly or indirectly.

**Methods**

1. Classical massage
2. Reflexology
3. Instrument-based massage
4. Lymphatic drainage

**Means of therapy**

1. Classical massage
  - ▶ Effleurage (massage strokes)
  - ▶ Kneading
  - ▶ Friction movements
  - ▶ Tapping
  - ▶ Circling
  - ▶ Vibrations
2. Reflexology
  - ▶ Connective tissue massage
  - ▶ Segmentary reflex massage
  - ▶ Periosteal massage
  - ▶ Colonic massage
3. Instrument-based massage
  - ▶ Underwater jet massage
  - ▶ Brush massage
  - ▶ Vibration massage
  - ▶ Instrument-based decongestion
  - ▶ Vacuum massage
4. Lymphatic drainage
  - ▶ Manual lymphatic drainage

**Concepts**

- ▶ Complex physical decongestive therapy
- ▶ Manual joint drainage

**1.2.2.7 Direct Current, Low-Frequency and Medium-Frequency Electrotherapy****Definition**

Application of direct-low and medium-frequency currents for direct or reflex pain treatment, neuromuscular activation or inhibition, creating sensory movement patterns and influencing vegetative reaction.

**Methods**

1. Direct current electrotherapy
2. Low-frequency current therapy
3. Medium-frequency current therapy

**Means of therapy**

1. Direct current electrotherapy
  - ▶ Galvanisation
  - ▶ Partial hydrogalvanic bath (chamber bath)

- ▶ Full hydrogalvanic bath (hydro-electric bath)
  - ▶ Iontophoresis
2. Low-frequency current therapy
    - ▶ Diadynamic currents
    - ▶ Ultrastimulation current
    - ▶ Transcutaneous electrical nerve stimulation (TENS)
    - ▶ High voltage therapy
    - ▶ Microstimulation current
    - ▶ Exponential current
    - ▶ Pulsating current
    - ▶ Myofeedback
    - ▶ Functional electromyostimulation
  3. Medium-frequency current therapy
    - ▶ Interferential current
    - ▶ Amplitude-modulated medium-frequency current

**1.2.2.8 High-Frequency Therapy****Definition**

High-frequency therapy is the application of high-frequency electrical and/or magnetic fields and waves for inducing heat in deeper tissue layers.

**Methods**

1. Shortwave
2. Decimetric wave
3. Microwave
4. Magnetic field

**Means of therapy**

1. Shortwave
  - ▶ Capacitor field
  - ▶ Coil field
2. Decimetric wave
  - ▶ Radiation field
3. Microwave
  - ▶ Radiation field
4. Magnetic field
  - ▶ Static
  - ▶ Dynamic/pulsing

**Concepts**

- ▶ Electroacupuncture
- ▶ Cold-assisted nerve stimulation (KENS)

**1.2.2.9 Ultrasound Therapy****Definition**

Ultrasound therapy is the application of high-frequency mechanical vibrations to generate heat in deeper tissue layers. It can be combined with analgesic stimulation currents or with drugs.

**Methods**

1. Ultrasound
2. Ultrasonic stimulation current
3. Phonophoresis

**Means of therapy**

1. Ultrasound
  - ▶ Direct sound
  - ▶ Pulse sound
2. Ultrasonic stimulation current
  - ▶ Ultrasonic stimulation current



### 3. Phonophoresis

- ▶ Phonophoresis e.g. with topical NSAIDs, anesthetics, hyperemising drugs

#### 1.2.2.10 Mechanical Vibrations

##### Definition

Therapy with mechanical vibrations is applied to stimulate neuromuscular and cellular tissues.

##### Methods

1. Low-frequency stimulation: Vibration platforms
2. High-frequency stimulation: Shockwave therapy

#### 1.2.2.11 Phototherapy

##### Definition

Phototherapy includes the therapeutically useful areas of the optical spectrum: infrared (IR), visible light (VIS), ultraviolet (UV) and lasers.

##### Methods

1. Heliotherapy
2. Infrared therapy
3. Light therapy
4. Ultraviolet therapy
5. Laser therapy

##### Means of therapy

1. Heliotherapy
  - ▶ Rest cure
  - ▶ Terrain cure
2. Infrared therapy
  - ▶ Light infrared radiator (IR-A)
  - ▶ Dark infrared radiator (IR-B, IR-C)
3. Light therapy
  - ▶ Speciality lamps for seasonal affective disorder
  - ▶ Blue light therapy (icterus neonatorum)
  - ▶ Chromotherapy
4. Ultraviolet therapy
  - ▶ UV-A lamp
  - ▶ UV-B lamp
5. Laser therapy
  - ▶ Low-dose laser
  - ▶ High-level laser

##### Concepts

- ▶ PUVA therapy
- ▶ Brine phototherapy
- ▶ Laser acupuncture

#### 1.2.2.12 Inhalation Therapy

##### Definition

Inhalation therapy is the therapeutic use of natural and artificial sprays, mists and aerosols in the upper and lower airway region.

##### Methods

1. Instrument-based inhalation
2. Open-air inhalation

##### Means of therapy

1. Instrument-based single inhalation
  - ▶ Jet nebuliser inhalation
  - ▶ Ultrasonic nebuliser inhalation

- ▶ Steam inhalation
- ▶ Compressed air inhalation
- ▶ Instrument-based chamber inhalation

### 2. Open-air inhalation

- ▶ Salt vapour inhalatorium
- ▶ Sea water inhalation

#### 1.2.2.13 Heat and Cold Therapy

##### Definition

Therapy with warm and cold sources is the application of solid, liquid or gaseous media to transfer or remove thermal energy by conduction or convection to exert a direct influence on the tissue temperature and for reflex therapy (water and light are separate thermal transfer media: see hydrotherapy and phototherapy).

##### Methods

1. Cold therapy/cryotherapy
2. Heat therapy

##### Means of therapy

1. Cold therapy (cryotherapy)
  - ▶ Ice, ice water, ice packs
  - ▶ Cooling gel packs
  - ▶ Peloid packs
  - ▶ Cataplasms
  - ▶ Cold air/cold gas (spray)
  - ▶ Cold chamber (whole body)
  - ▶ Peltier elements
  - ▶ MMF cushions/cuffs
2. Heat therapy
  - ▶ Packs/pads (peloid, paraffin, fango, warming lubricant packs)
  - ▶ Cataplasms
  - ▶ Thermophores (hot-water bottle)
  - ▶ Hot rolls
  - ▶ Hot air
  - ▶ MMF cushions
  - ▶ Peltier elements

##### Concepts

- ▶ Hayflower bags

#### 1.2.2.14 Hydrotherapy

##### Definition

Hydrotherapy is external water treatment with dosed, thermal, mechanical and chemical effects on blood flow and metabolism for long-term influence on regulatory functions, as well as specific effects of bath products.

##### Methods

1. Washings
2. Wraps, packs, pads
3. Showers
4. Baths
5. Rubs
6. Vapours

##### Means of therapy

1. Washing
  - ▶ Partial washing
  - ▶ Full washing

2. Wraps, packs, pads (heat depriving, heat accumulating, diaphoretic)
  - ▶ Local wraps, pads
  - ▶ Short wraps, body wraps
  - ▶ Three quarter packs
  - ▶ Full packs
3. Showers (cold, alternating temperature, hot)
  - ▶ Flat showers (local showers, full showers)
  - ▶ Jet showers (local jet showers, full jet showers, segment jet showers, jet shower baths)
4. Baths (baths with localised remedies → Balneotherapy)
  - ▶ Baths with a predominantly thermal effect
  - ▶ Baths with additives (e.g. CO<sub>2</sub> baths; sulphur/radon baths)
  - ▶ Baths with mechanical action (underwater jet massage, jacuzzi)
5. Rubs
  - ▶ Partial rubs
  - ▶ Full rubs
6. Vapours
  - ▶ Steam showers
  - ▶ Partial steam (head steam bath)

### Concepts

- ▶ Sauna
- ▶ Hydroelectric baths (see also Direct Current, Low-Frequency and Medium-Frequency Electrotherapy)
- ▶ Kneipp spa

#### 1.2.2.15 Balneotherapy

##### Definition

As part of balneology, balneotherapy is the application of natural, primarily local remedies for prevention, treatment and rehabilitation. It is usually applied in sequence and as part of complex therapy. It uses both physical and chemical effects of its therapeutic agents, whereby functional adaptation as an active principle is the main focus.

##### Methods

1. Baths
2. Drinking cures
3. Inhalation
4. Packs
5. Rinses

##### Means of therapy

1. Baths
  - ▶ Full and partial baths with
    - Medicinal waters
    - Peloids
    - Medicinal gases
2. Drinking cures
  - ▶ Temporary drinking cures
    - Medicinal waters
    - Deep sea water
    - Peat drinks
  - ▶ Continuous use of medicinal water
3. Inhalation
  - ▶ Single, chamber and open-air inhalations with
    - Medicinal waters
    - Medicinal gases
4. Packs
  - ▶ Peloids (subaquatic, terrestrial)

5. Rinses
  - ▶ Medicinal waters

#### 1.2.2.16 Climatotherapy

##### Definition

As part of medical climatology, climatotherapy is the application of thermal, hygric, mechanical, chemical and actinic stimulating and benign factors for prevention, therapy and rehabilitation as part of complex spa treatment.

##### Methods

1. High-altitude climate therapy
2. Medium-altitude climate therapy
3. Thalassotherapy
4. Speleotherapy (exposure to caves)

##### Means of therapy

1. High-altitude climate therapy
  - ▶ Allergen-free
  - ▶ Rest cures
  - ▶ Air baths
  - ▶ Heliotherapy
  - ▶ Terrain cures
2. Medium-altitude climate therapy
  - ▶ Rest cures
  - ▶ Air baths
  - ▶ Heliotherapy
  - ▶ Terrain cures
3. Thalassotherapy
  - ▶ Sea water inhalation
  - ▶ Sea baths
  - ▶ Heliotherapy
  - ▶ Staying in low-allergen air
  - ▶ Air baths
4. Speleotherapy
  - ▶ Rest cures, moving in cave environments under the influence of
    - Thermal factors
    - Inhalational factors
    - Allergen-free
    - Actinic factors (including radon)

#### 1.2.3 Traditional Naturopathy

##### Definition

Within alternative medicine, naturopathy includes the stimulation of the personal physical regulatory and healing powers, optimised according to intensity and chronological order, by using natural resources and processes that have less or no adverse effects.

##### 1.2.3.1 Phytotherapy

##### Definition

Phytotherapy is the study of using medicinal herbs as medicine.

##### Methods

Fresh herbs, infusions, decoctions, cold water extract, pulverisation.

##### 1.2.3.2 Hydro and Thermo/Balneotherapy

- ▶ 1.2.2.14 – 1.2.2.15

### 1.2.3.3 Movement Therapy

- ▶ 1.2.2.1 – 1.2.2.4

### 1.2.3.4 Regulative Therapy

#### Definition

Regulative therapy is a balanced lifestyle with a regular rhythm and in harmony with nature on a physical, psychological and socio-cognitive level.

#### Methods

1. Chronotherapy
2. Chronopharmacology
3. Psychagogy

### 1.2.3.5 Nutritional Therapy/Dietetics

#### Definition

Supporting treatment by eating a healthy diet and a diet adjusted to the symptoms.

#### Methods

1. Therapeutic fasting
2. Nutritional therapy including certain diets
  - ▶ → 2.2.3.12

#### Concepts

- ▶ Buchinger therapeutic fasting (vegetable juices and broths, tea with honey)
- ▶ F. X. Mayr therapy (milk/bread diet, special stomach treatment)
- ▶ Schroth treatment
- ▶ Whey cure
- ▶ Zero diet (tea/mineral water diet)
- ▶ Very low calorie diet
- ▶ Crash diet

## 2 Rehabilitative Medicine



Rehabilitative medicine comprises all the medical measures involved in the rehabilitative diagnosis and intervention of physical impairments and structural and functional disorders to prevent or compensate for a functional limitation or participatory disorder.

### 2.1 Diagnosis in Rehabilitative Medicine

Diagnosis in rehabilitative medicine involves identifying and evaluating physical impairments, problems that impair function, structure and ability as well as participatory disorders in terms of the patient's need, ability and potential for rehabilitation, with the objective of using rehabilitative intervention in a carefully planned manner and evaluating the results of the rehabilitation. This includes functional tests and measurements (performance, ability), patient-centred measures (outcomes/activity) and evaluating functional capacity (participation) using standardised measurements and evaluations (assessments).

#### 2.1.1 Methods

1. Sensorimotor tests
2. Performance, behavioural and functional diagnostic tests
3. Neuropsychological tests
4. Socio-medical assessment

### 2.1.2 Procedures

#### 1. Sensorimotor tests

- ▶ Pursuit rotor task tests, tapping tests, aiming tests, etc.
- ▶ Complex tests (timed up and go tests, Tinetti)

#### 2. Performance, behavioural and functional diagnostic tests

- ▶ Tests to determine basic bodily function (alertness, breathing, circulation, etc.)
- ▶ Tests to determine activities of daily living (ADL, Barthel Index, FIM [Functional Independence Measure], motor assessment, etc.)
- ▶ Tests to determine quality of life (SF 36 [“Short Form” health questionnaire], EQ5 D [EuroQol Group health questionnaire], etc.)
- ▶ Tests to determine social integration (IRES [Indicators of Reha-Status])
- ▶ Tests based on region (upper limb DASH [Disability of the Arm, Shoulder and Hand]; lower limb WOMAC [Western Ontario and McMaster Universities Osteoarthritis Index], Harris Hip Score)
- ▶ Test based on specific illnesses (RADAI, depression scale)
- ▶ Tests of pain perception (Geissler Scale, Gerbershagen/chronification)
- ▶ Tests to determine professional performance (IMBA [Vocation integration of disabled persons], Ergos, EFL [evaluation of functional capacity])

#### 3. Neuropsychological tests

- ▶ Vigilance tests
- ▶ Orientation tests
- ▶ Tests for attention deficit disorders
- ▶ Memory tests
- ▶ Tests for planning and problem solving

#### 4. Socio-medical assessment

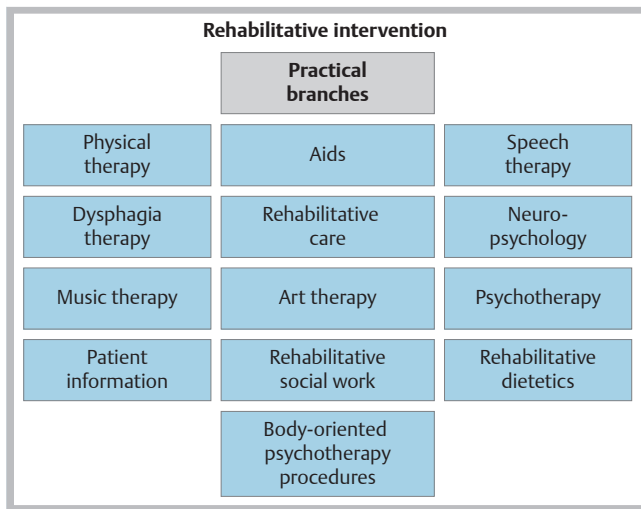
- ▶ Evaluation of the social environment
- ▶ Determining professional capacity
- ▶ Determining the grade of disability (GdB [German disability grade])
- ▶ Determining the inability to work

### 2.2 Rehabilitative Intervention

Rehabilitative intervention is the planning, implementation and evaluation of rehabilitative processes using appropriate intervention instruments and methods, depending on the capacity and potential for rehabilitation and taking the social environment into consideration. The aim is to socially integrate the patient with imminent or actual disability by overcoming or compensating for physical impairments, problems that impair function, structure and ability as well as participation.

Rehabilitative intervention is based on the creation, implementation and monitoring of rehabilitation plans in medically supervised rehabilitation teams, including advising and instructing the patient and their relatives. Important intervention instruments and procedures include rehabilitation-focused methods of physical therapy including providing aids with the involvement of psychotherapy, neuropsychology, pharmacotherapy, nutrition therapy and patient education.

The potential for rehabilitation is the sum of the existing mental, emotional and physical ability, including dynamic stimulation (=rehabilitation procedures), which can result in an improvement to the living situation or can prevent a deterioration.



**Fig. 6** Branches of rehabilitative intervention.

### Definitions

The potential for rehabilitation is the theoretically achievable level of rehabilitation in the areas of damage, activity and participation.

The personal capacity for rehabilitation corresponds with the potential for rehabilitation modified by contextual factors.

The rehabilitation prognosis is a statement on the likelihood that the potential for rehabilitation will be realised. It depends on the capacity for rehabilitation and the possible quality and intensity of the rehabilitation processes. The estimation of the personal rehabilitation prognosis is used for validated predictors.

## 2.2.1 Organisational Forms of Rehabilitative Intervention

### 2.2.1.1 Inpatient Rehabilitation Including Early Rehabilitation

Inpatient rehabilitation is understood as the use of all rehabilitative intervention methods and means under inpatient conditions.

A distinction is made between early rehabilitation in the acute care hospital (Section 39(1) paragraph 3 of volume V of the German Social Security Code) and full inpatient rehabilitation in specialised facilities, depending on the therapeutic area and the level of care (including follow-up rehabilitation, follow-up treatment and inpatient medical treatment).

The early rehabilitation phase in acute care hospitals is characterised by an urgent existing need for acute inpatient treatment at the same time as a need for rehabilitation and care by a rehabilitation team led by a medical specialist.

Inpatient rehabilitation is carried out in close cooperation with specialised medical expertise in the field of physical and rehabilitative medicine as well as the other relevant medical fields.

### 2.2.1.2 Semi-inpatient or Day Hospital Rehabilitation

Semi-inpatient rehabilitation is understood as the use of all rehabilitative intervention methods and means under all semi-inpatient or day-clinic conditions, with particular consideration to restricted mobility, the degree of social care and resilience. In contrast to inpatient rehabilitation, the patient returns to the home environment overnight (geriatric, neuropsychological and psychiatric rehabilitation) or during the day (e.g. night clinical rehabilitation of diabetics) for early reintegration into the family, profession and society (including follow-up rehabilitation, follow-up treatment and semi-inpatient or day-clinic medical treatment).

### 2.2.1.3 Outpatient Rehabilitation

Outpatient rehabilitation is the use of all rehabilitative intervention methods and means near the home under outpatient conditions to maintain the ability to integrate, or for early reintegration into the family, profession and society. In contrast to the inpatient and semi-inpatient forms of rehabilitative intervention, particular conditions on the part of the patient are necessary. These conditions are sufficient mobility, motivation, social-sufficiency and resilience. One advantage is that the patient remains in the social environment with the resulting increased possibility of using, among other things, follow-up rehabilitation, follow-up treatment and outpatient treatment. At the same time, this organisational form of rehabilitation offers the earliest possible implementation of vocationally oriented rehabilitation, with simultaneous occupational reintegration and pursuance of rehabilitative measures.

## 2.2.2 Rehabilitation Planning

### Definition

Rehabilitation is planned by a rehabilitation team led by a specialist. The plan is the creation of an overall concept of targeted instructions/orders of coordinated rehabilitation measures which target functional deficiencies. Rehabilitation planning is based on the assessment of the need for rehabilitation, the potential for rehabilitation and the establishment of a rehabilitation objective that must be constantly updated. It should be limited to manageable periods of time and be accompanied by prognostic assessment.

### Intervention procedures

Rehabilitation plan

## 2.2.3 Branches of Rehabilitative Intervention – Procedures and Means

### 2.2.3.1 Physical Therapy

→ 1.2

### 2.2.3.2 Rehabilitative Care

#### Definition

Rehabilitative care comprises all the care measures for rehabilitating problems that impair function, structure and ability, as well as participation to prevent or compensate for impairments.

#### Intervention procedures

1. Basic care
2. Therapeutic care
3. Activating nursing care
4. Supportive care

#### Means of intervention

1. Basic care
  - ▶ Measures for personal hygiene
  - ▶ Measures for nutrition
  - ▶ Measures for excretion
  - ▶ Measures for moving and positioning
  - ▶ Measures for communication (unless part of other means of intervention)
2. Therapeutic care
  - ▶ Supportive observation
  - ▶ Measures related to procedures and doctor's measures
  - ▶ Measures related to the administration of drugs
  - ▶ Insight from examination material

- ▶ Instrument-based breathing training
  - ▶ Suction (mouth, nose, throat, tracheostomy)
  - ▶ External treatment (wound treatment, drainage care, skin treatment, application of cold and heat)
  - ▶ Transporting patients
3. Activating nursing care
    - ▶ Training activities of daily living (independent positioning, continence, transfer, locomotion, self-sufficiency, communication, cognitive skills, stoma training)
  4. Supportive care
    - ▶ Patient discussions to provide relief and guidance (motivation)
    - ▶ Terminal care
    - ▶ Talking with and counselling relatives
    - ▶ Informative discussions relating to the patient

### 2.2.3.3 Speech Therapy

#### Definition

Speech therapy is the diagnosis and therapy of language, speech, voice, hearing and swallowing disorders.

#### Intervention procedures

1. Language exercises
2. Speech exercises
3. Vocal exercises
4. Hearing exercises
5. Swallowing exercises

#### Means of intervention

1. Language exercises
  - ▶ Language initiation
  - ▶ Restricting excessive speech flow
  - ▶ Reactivating language skills (comprehension, speaking, reading, writing)
  - ▶ Developing communication options using mimicry, gestures, drawing and compensatory procedures
  - ▶ Exercises for specific disorders
  - ▶ Consolidation (communication) in everyday life
2. Speech exercises
  - ▶ Improved breathing
  - ▶ Improved articulation
  - ▶ Improved phonation
  - ▶ Improved prosody
3. Vocal exercises
  - ▶ Improved voice quality
  - ▶ Improved voice power
  - ▶ Improved voice stability
4. Hearing exercises
  - ▶ Promoting auditory discrimination
5. Swallowing exercises
  - 2.2.3.4

### 2.2.3.4 Dysphagia Therapy

#### Definition

Functional treatment of dysphagia treats oropharyngeal swallowing disorders on the basis of a function-specific diagnosis. The objectives are to improve swallowing efficiency, prevent aspiration and to initiate oral ingestion of food.

#### Intervention procedures

1. Restitution procedures
2. Compensation procedures
3. Adaptation procedures

#### Means of intervention

1. Restitution procedures
  - ▶ Thermal stimulation
  - ▶ Brushing
  - ▶ Vibration
  - ▶ Pressure
  - ▶ Stretching
  - ▶ Resistance exercises
  - ▶ Independent movement exercises
  - ▶ Biofeedback exercises
2. Compensation procedures
  - ▶ Compensatory head postures
  - ▶ Repetitive swallowing
  - ▶ Supraglottic swallowing
  - ▶ Super-supraglottic swallowing
  - ▶ Mendelson technique
3. Adaptation procedures
  - ▶ Dietary adjustments with regard to the rheological and cohesive properties of food
  - ▶ Special eating and drinking aids

### 2.2.3.5 Neuro-Psychological Training

#### Definition

The use of procedures to reduce the extent of impairment caused by brain damage and to promote the highest level of acquirable skills, thereby allowing the impairment to be overcome.

#### Intervention procedures

1. Cognitive training to increase overall mental performance and gradual specific function training in order to give insight into the type of disorder, thereby facilitating learning conditions and stabilising remaining skills.
2. Training compensatory strategies
3. Training cognitive cycles to preserve adequate problem-solving behaviour and its generalisation in everyday life
4. Using and practising with aids to replace lost performance skills

#### Means of intervention

- ▶ Exercise for visual exploration
- ▶ Exercise for planning and problem-solving techniques, inspiration for ideas and flexible thinking
- ▶ Exercises on analogical and deductive thinking
- ▶ Memory training with encoding techniques and retrieval cues
- ▶ Computer-assisted attention training
- ▶ Exercises for guidance

### 2.2.3.6 Supportive Psychotherapy – Medical Psychotherapy and Clinical Psychology

#### Definition

Supportive psychotherapy is the psychological guidance and monitoring of patients and their caregivers in the rehabilitation process for somatopsychic, post-traumatic and psychosomatic disorders. The aim is to support the patient and their environment, to mobilise resources and strengths, to develop coping and adaptation strategies, to learn how to deal with illness and disability and to provide assistance in coping with their illness

and developing a different way of life. Supervision of the treatment team in caring for the patient.

#### Intervention procedures

1. Consultative discussions
2. Supportive conversational therapy
3. Analytical psychotherapy based on depth psychology
4. Body-oriented psychotherapy
5. Behavioural therapy
6. Psychosocial individual counselling and family support services to assist in coping with the illness

#### Means of intervention

- ▶ Therapeutic framework – Setting
- ▶ Regular discussions with the patient
- ▶ Regular discussions with the patients together with the caregivers and/or alone with the caregivers
- ▶ Relaxation techniques individually or in a group
- ▶ Body-oriented techniques orientated towards psychoanalytical and behavioural therapy individually or in a group
- ▶ Behavioural training individually or in a group
- ▶ Individual and family support and case management to develop coping and solution strategies

#### 2.2.3.7 Patient Training and Information (Education)

##### Definition

Patient training and information are integral parts of all rehabilitation concepts. They are used to impart knowledge, skills and abilities that allow patients to actively participate in their rehabilitation process and to deal with their disability. They aim at functional disorders of the present illness and at risk factors. The rehabilitant should be supported as a self-sufficient partner in the rehabilitation process.

#### Intervention procedures

1. Function-related patient education (joint and back exercises)
2. Illness-specific patient education (education)
3. Risk-based patient education (lifestyle change)

#### Means of intervention

- ▶ Seminars
- ▶ Group discussions
- ▶ Demonstrations
- ▶ Practical exercises
- ▶ Presentations
- ▶ Home exercise programs
- ▶ House protocols

#### Concepts (examples)

- ▶ Back exercises
- ▶ Endoprosthesis training
- ▶ Osteoporosis training
- ▶ Non-smoking training
- ▶ Nutrition training
- ▶ Pain management training

#### 2.2.3.8 Music Therapy

##### Definition

Music therapy is a communicative, interactive, initially non-verbal event through which the patient is given the opportunity to express repressed or unspeakable traumatic experiences and emotional qualities. It offers the possibility of initiating commu-

nication for severely brain-damaged patients in the early stage of medical rehabilitation.

#### Intervention procedures

1. Re-experiencing feelings and reflecting on them on a more conscious linguistic level for better self-understanding (or even self-worth) or for solving communication and relationship problems.
2. Initiating and building communication – initially non-verbal, but ultimately also verbal – in patients with organic brain-related loss of linguistic or gestural communication.
3. Help with coping with the illness (patient-therapist dialogue in a psychotherapeutic sense), also in groups

#### Means of intervention

- ▶ Receptive music therapy (listening to and experiencing music, played by the therapists or through recording media)
- ▶ Active music therapy (free play on instruments, improvisation)

#### 2.2.3.9 Art Therapy

##### Definition

Art therapy is the use of artistic means with the objective of enabling patients in life crises or with mental disorders to discover their own strengths and problems, and to be positively influenced by the creative process. One focus is on rehabilitating patients with acquired brain damage.

#### Intervention procedures

1. Initiating and developing non-verbal (and verbal) communication on a pictorial level
2. Developing and training the functions of organic brain-related disorders of motor skills, action planning and perception
3. Expressing feelings and reflecting on them on an artistic level to promote ego strength
4. Help with coping with the illness (individually or in groups)

#### Means of intervention

- ▶ Creating using various media individually, with a partner or in groups (drawing, painting, graphics, plastics, printing, photography)
- ▶ Inclusion of musical and creative activities

#### 2.2.3.10 Body-Oriented Psychotherapy Procedures

##### Definition

Body-oriented psychotherapy uses complex psychosomatic and somatopsychic functional relationships to treat psychological and psychosomatic disorders, where both the influence of psychological functions through sensory and movement stimuli as well as the effects of mental and cognitive functions on the body are used therapeutically.

#### Intervention procedures

1. Relaxation therapy
2. Procedures oriented to psychoanalysis
3. Procedures oriented to behavioural therapy
4. Diversionary procedures

#### Means of intervention

- ▶ Integrative movement therapy
- ▶ Concentrative movement therapy
- ▶ Autogenic training
- ▶ Progressive muscle relaxation

- ▶ Functional relaxation
- ▶ Eutony

### 2.2.3.11 Rehabilitative Social Work

#### Definition

Rehabilitative social work includes advising and supporting in financial, nursing, professional and legal-official issues, as well as assisting in implementing rehabilitative measures. The aim is to maintain or recover social integration.

#### Intervention procedures

1. Consultation on/initiating medical rehabilitation measures
2. Consultation on/initiating economic assistance and social measures
3. Consultation on/initiating the provision of outpatient and inpatient care
4. Consultation on/initiating occupational rehabilitation measures
5. Consultation on/initiating re-socialisation measures

#### Means of intervention

- ▶ Initiating and reimbursing follow-up treatment and special inpatient follow-up treatment, preparing social reports, initiating support
- ▶ Initiating sick pay, housing supplement, social assistance, pension affairs, unemployment benefit, investigating insurance claims, initiating severely handicapped passes
- ▶ Initiating outpatient care services, home economic aids, regulating costs for day care
- ▶ Supporting and initiating a gradual integration into working life, transfer to the work place, occupational stress tests, occupational therapy
- ▶ Housing in therapeutic residential community institutions, traveller assistance, applying for housing adapted to the needs of the disabled

### 2.2.3.12 Rehabilitative Dietetics

#### Definition

The purpose of rehabilitative dietetics is to create the optimal physical conditions for successful rehabilitation. It targets either a diet that prevents or improves illnesses, or a temporary change in diet to improve autonomic regulation. The necessary knowledge for this should be taught during nutrition counselling. Nutritional training also includes elements of behavioural therapy and targets a permanent change in diet.

#### Intervention procedures

1. Diets with specific metabolic effects
2. Diets with specific organ effects
3. Diets with regulative (general) effects

### 2.2.3.13 Provision of Medical Aids and Technical Aids

#### Definition

Medically prescribed provision and fitting of medical aids, technical aids and prostheses to prevent an impending disability, to compensate for an existing disability or to ensure the success of a treatment. Medical aids and technical aids are material, medical services, i.e. items that, through a replacing, supporting or relieving effect, ensure the success of the medical treatment or enable physical disabilities to be overcome.

Independent of the reimbursement obligation: EN ISO 9999 „Assistive products for persons with disabilities – Classification and terminology“.

List of technical aids approved by statutory health insurance (pursuant to Section 139 of volume V of the German Social Security Code).

#### Intervention procedures

1. Medical aids
2. Technical aids

#### Means of intervention

1. Medical aids (examples)
  - ▶ Electro-stimulation equipment
  - ▶ Walking aids and wheelchairs
  - ▶ Aids for compression therapy
  - ▶ Positioning aids
2. Technical aids (examples)
  - ▶ Dressing and undressing aids
  - ▶ Eating and drinking aids
  - ▶ Aids in the hygiene sector
  - ▶ Handicapped accessible vehicle
  - ▶ Aids for communication (writing aids, reading aids, emergency telephones, electronically controlled communication aids)
  - ▶ Orthoses and prostheses

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