



International Classification Project in Balneology

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The Problem

- ▶ **Balneology (or Balneotherapy) often is seen as a traditional paramedical treatment without a scientific basis or evidence**
- ▶ **Balneologic treatments and concepts are dependent on geologic preconditions and socio-medical traditions and therefore vary from country to country**
- ▶ **Looking at the medical scientific literature the definitions differ significantly** (terms like balneology, hydrotherapy)
- ▶ **As a first (basic) step towards a better understanding of balneology and an improvement of scientific knowledge, internationally accepted definitions are indispensable**



The Problem

- ▶ **Balneology in German speaking countries is defined as therapy with natural mineral waters, gases or peloids as defined in the guidelines of the German Spa Association (“Begriffsbestimmungen”)**
- ▶ **Hydrotherapy is the therapy with plain water using mostly thermal effects**
- ▶ **Underwater exercise in the respective countries therefore is not included in the balneology nor in hydrotherapy**
- ▶ **Looking into medline underwater exercise is found under the key words “balneotherapy” as well as “hydrotherapy”**



Definitions in Germany

GERMAN SOCIETY OF PHYSICAL MEDICINE AND REHABILITATION BALNEOLOGY AND MEDICAL CLIMATOLOGY SECTION

Definition of terminology Medical Balneology – Medical Climatology – Health Resort Medicine

Introduction

Besides from specific active components, which are for example a result of the chemical composition of medicinal mineral waters (balneology) or the quality of the air (climatology), the therapeutic application of medical balneology and medical climatology includes numerous therapeutic principles and factors of physical medicine. These factors induce physiological changes in the human organism (immediate effects and long-term effects, for example relaxation, activation and functional adaptation), which are used for preventative purposes as well as for therapeutic and rehabilitative purposes. The therapeutic value of many of these mechanisms has been proven in controlled clinical trials. Due to the broad mutuality of physiological therapeutic mechanisms of medical balneology and medical climatology on the one hand and physical therapy on the other hand it is justified to consider balneo- and climatotherapy as subspecialties of the field of physical medicine.

Preventive, therapeutic and rehabilitative measures performed in health resorts

Preventive, therapeutic and rehabilitative measures performed in health resorts ("Medizinische Kuren") are treatments under the management of a physician and performed in an ambulatory or inpatient setting, generally in some considerable distance from the patient's residence and lasting for several weeks. They comprise the following therapeutic components:

- change of environment (climatic change and change of the social setting)
- balneotherapy
- climatotherapy
- hydrotherapy
- other forms of physical therapy (kinetotherapy, thermotherapy etc.)
- nutrition
- psychological care
- health education

The infrastructure (health resort, local therapeutic remedies/agents) has to be matched to the individual health condition as well as the individual and social requirements of the patients. Functional adaptation and modification of behaviour are the most important principles. Medical treatments in health resorts can be prescribed with a preventative, therapeutic as well as rehabilitative aim. Their efficacy has been proven in clinical studies. Generally, the specific diagnostics have already been completed by a physician in the patient's residential area; however, additional diagnostic measures are required to individually match therapeutic measures and the resulting adaptation

Health resorts medicine (spa medicine) and health resort science

Health resort medicine includes all medical areas/fields connected with the special conditions of the individual health resort, in particular:

- functional assessments, prognosis of reaction
- balneotherapy
- climatotherapy
- hydrotherapy
- education in nutrition
- physiotherapeutic methods
- health instructions (education)

Health resort medicine represents the medical part of health resort sciences, which also includes health resort economy and oecology, planning of capacity etc. Additionally the non-medical parts of balneology and climatology (see below) can be regarded as part of health resort sciences.

Balneology

Balneology is the science of natural remedies (water, gases, peloids (muds)) corresponding with the definition of terms/quality standards of the German Health Resort Association. As the components of balneology are present in health resorts and used, balneology is part of health resort science. Apart from medical balneology and balneotherapy (therapeutic application of these remedies) balneology also includes balneotechnique, balneochemistry (analytics) and balneophysics as well as the science of geological prerequisites as part of hydrogeology.

In a broader sense application of natural remedies as well as medicinal baths outside the health resort and baths with medicinal additives or constituents occurring in natural remedies (medical baths) are considered to be part of medical balneology.

Due to the historical development hydrotherapy has a special place. It is also part of the health resort medicine, but not ascribed to balneology as there are no defined chemical components.

Medical climatology

Medical Climatology includes science and research regarding the influence of the effects of weather and climatic conditions on humans. Health-improving as well as detrimental effects are studied. The use of natural climatic and weather factors for therapeutic purposes is termed climatotherapy. In a broad sense prevention and therapy of diseases with the application of artificially produced climatic factors can also be seen as part of climatotherapy. The term medical meteorology includes weather and climatic factors influencing well-being and diseases. The combines effects of medical balneology and climatotherapy (elements of the sea and its climate) are used in thalassotherapy.

German version: Gutenbrunner Chr, Schuh A: Begriffsdefinitionen Medizinische Balneologie – Medizinische Klimatologie – Kurortmedizin. Phys Med Rehab Kuror 2002; 12: M13-M14

**Gutenbrunner Chr, Schuh A: Begriffsdefinitionen
Medizinische Balneologie – Medizinische Klimatologie –
Kurortmedizin. Phys Med Rehab Kuror 2002; 12: M13-M14**



“Balneotherapy” (Medline 1999-2005)

- ▶ **Balneotherapy at the Dead Sea** (Elkayam et al. 2000)
- ▶ **Balneotherapy – underwater-douche massage** (Shamenova 2000)
- ▶ **Balneotherapy – carbon dioxide and mud bathes** (Ekmekcioglu et al. 2000)
- ▶ **Radon hot spring therapy** (Yamaoka et al. 2000)
- ▶ **Physiotherapy including balneotherapy** (Broll-Zeitvogel et al. 1999)
- ▶ **Balneotherapy (hydrotherapy and spa therapy) in osteoarthritis** (Verhagen et al. 2000)
- ▶ **Aquatic therapy is a subgroup of balneotherapy** (Bartels et al. 2001)



“Hydrotherapy” (Medline 1999-2005)

- ▶ **PUVA (3,4,5, trimethylpsoralen and UVA)** (Radenhausen et al. 1999)
- ▶ **Strech reflex after hydro-kinesi-therapy** (Pagliaro & Zamparo 1999)
- ▶ **EMG in dry and underwater exercise** (Poyhonen et al. 1999)
- ▶ **Legionnaire´s disease in Whirlpool spa** (Benkel et al. 2000)
- ▶ **Hyperthermic water bath** (Blazickova et al. 2000)
- ▶ **Balneotherapy (hydrotherapy and spa therapy) in osteoarthritis** (Verhagen et al. 2000)
- ▶ **Aquatic therapy is a subgroup of balneotherapy** (Bartels et al. 2001)



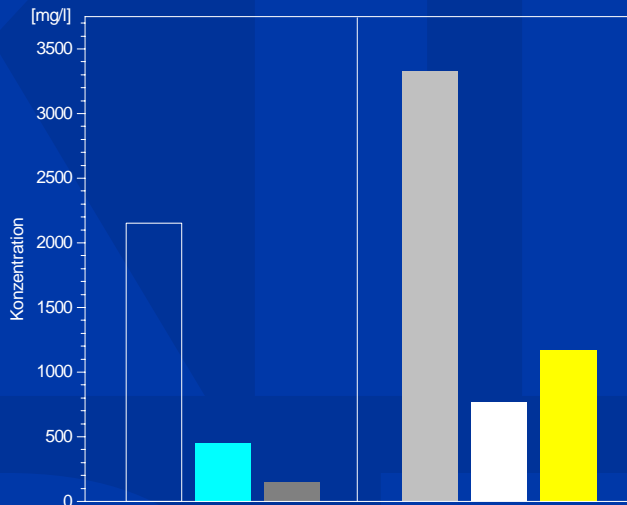
The Problem

- ▶ **Threshold values used for the classification of medicinal mineral waters are not medically driven**
- ▶ **Mineral waters with total concentration of minerals over 1,000 mg/l are seen as medicinal mineral waters**
- ▶ **Ions that exceed 20 mmol% are used for the so called characteristic of a mineral water**
- ▶ **This leads to significant misunderstandings in professional and laymen (and misuse too)**

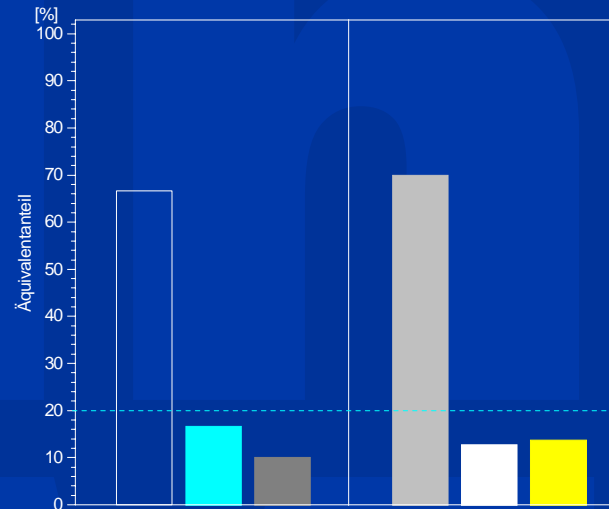


The Problem

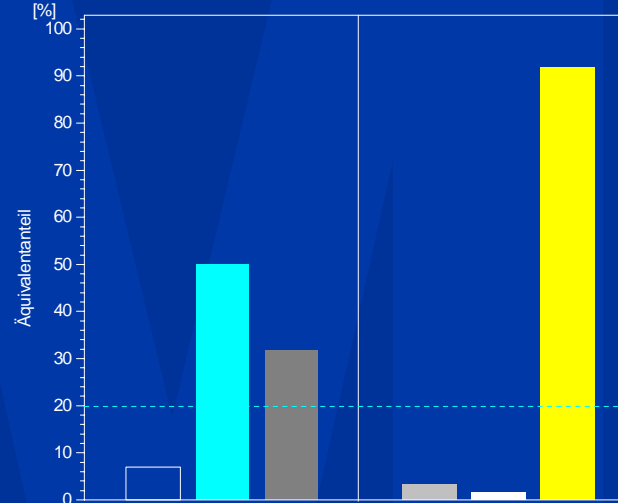
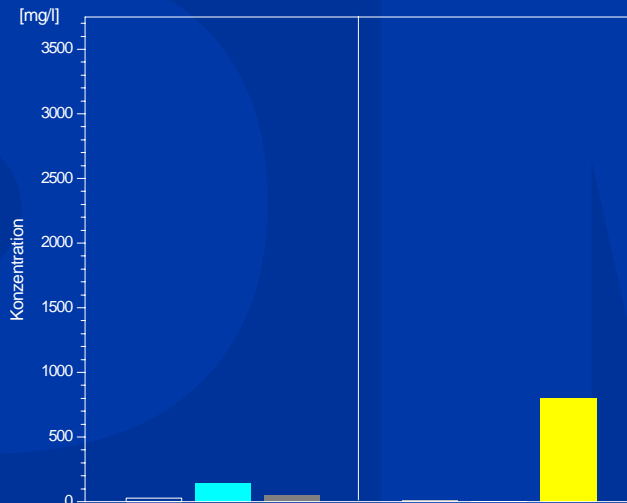
Massenkonzentrationen



Äquivalentanteile



Natrium-Chlorid-Säuerling
(9.136 mg/l feste gelöste Bestandteile)



Eisenhaltiger Calcium-Magnesium-Hydrogencarbonat-Säuerling
(1.116 mg/l feste gelöste Bestandteile)

Legend: Natrium (white), Calcium (cyan), Magnesium (grey), Chlorid (light grey), Sulfat (white), Hydrogencarbonat (yellow)



The Problem

Physical Therapy Reviews 2002;7: 67–87

EFFICACY OF BALNEOTHERAPY FOR RHEUMATOID ARTHRITIS: A META-ANALYSIS

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ABSTRACT

Balneotherapy is an accepted therapeutic approach in Europe. However, its efficacy for treating rheumatoid arthritis (RA) remains controversial in North America. This is a meta-analysis of randomized (RCT) and controlled clinical trials (CCT), case-control and cohort studies of balneotherapy compared to control (no treatment) or active therapy (head to head studies). All the included studies ($n=7$) in this review were identified as RCTs. This meta-analysis examines different balneotherapy modalities: Radon-carbon dioxide baths, mud packs, hot sulphur baths, Dead Sea baths, Red Sea baths, and grey sand. Several types of balneotherapy, including radon-carbon dioxide baths, mud packs, hot sulphur baths, combination of hot sulphur baths and mud packs, Dead Sea baths, combination of Dead Sea baths and sulphur baths, and Grey sand and Red Sea baths compared to control were found to be beneficial for RA. These modalities were found to be especially beneficial for pain, grip strength, tender/swollen joints, patient and physician, and global function. These improvements ranged from 5–93% greater improvement relative to the control group. However, methodological considerations including the poor quality of trials impact the conclusions of this review.



The Project

- ▶ **Definition of basic terms in balneology for the use in medicine**
- ▶ **Definition of (preliminary) quality standards for the use of balneologic agents in medicine** (including threshold values for waters etc.)
- ▶ **Systematic reviews of outcome studies in patients with defined conditions or for preventive purposes** (meta-analysis; evidence based medicine)



Methodology (*1st step*)

- ▶ **Systematic literature research on terms like balneology, hydrotherapy etc. as well as on balneologic agents and procedures** (including medically driven thresholds)
- ▶ **International Delphi exercise** (based on an single experts proposal)
- ▶ **Consensus conference with an international panel of experts** (with systematic voting processes)



Topics (*range of problems*)

- ▶ **Basic definitions** (balneology, hydrotherapy, health resort medicine etc.)
- ▶ **Goals of balneologic interventions** (prevention, therapy, rehabilitation)
- ▶ **Modalities** (bathing (*whole body immersion, immersion of parts of the body, exercise in water*), drinking, inhalation etc)
- ▶ **Agents and thresholds** (mineral waters, gases, peloids, medical baths, plain water etc)
- ▶ **Professional qualification** (medical specialty, competence)
- ▶ **Outcomes** (using the ICF-classification)



Partners and funding

▶ Possible partners

- ISMH
- UEMS-PRM-section
- ESPRM
- ISPRM
- national societies
- single experts or institutes

▶ Coordinator: to be appointed

▶ Possible funding

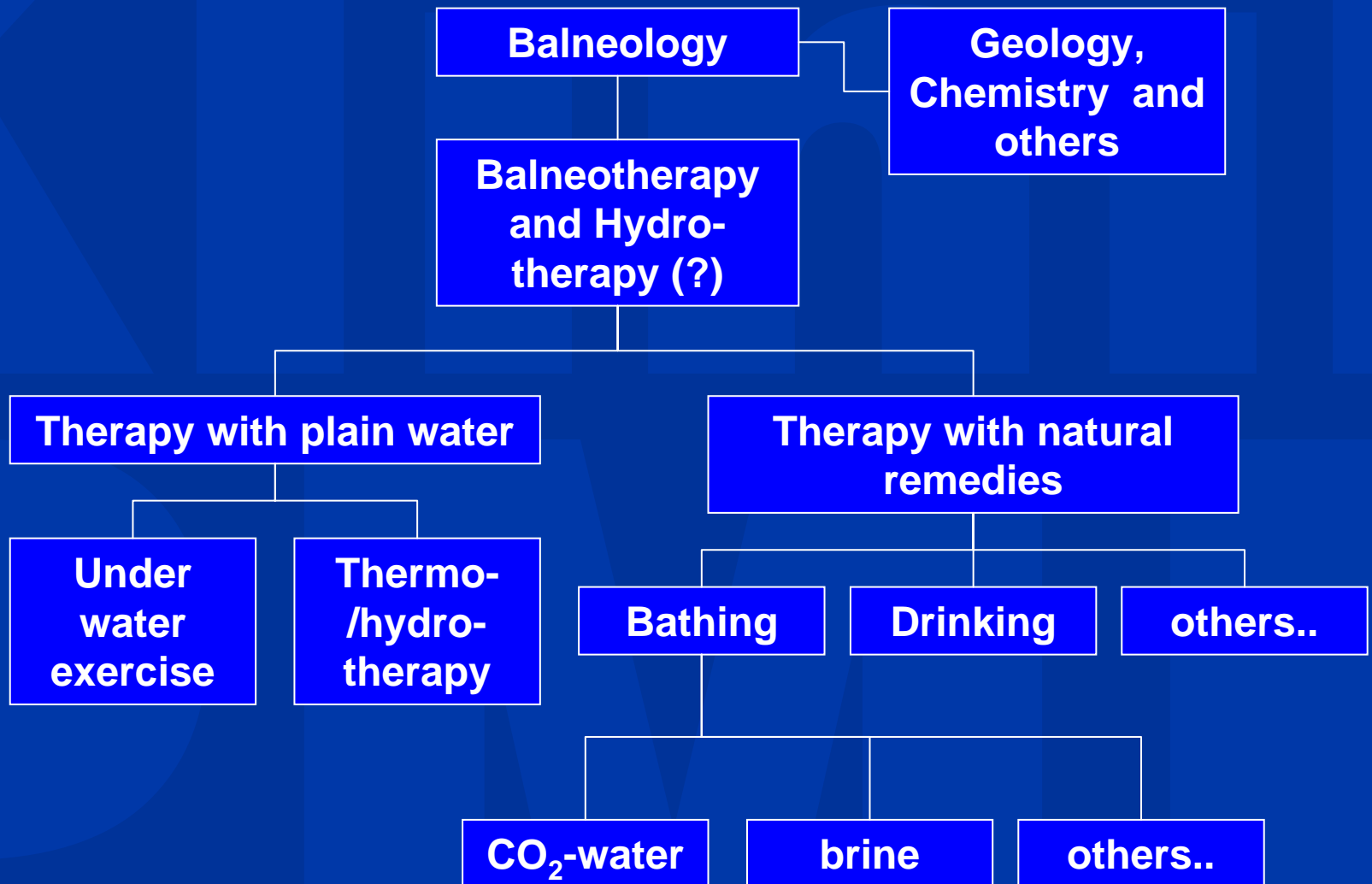
- European spa association
- European Union (*regional or economic development*)
- others (*national bodies or organisations*)

▶ Estimated costs

- International consensus conference (3 days; 25 experts): 50,000 €
- Systematic review and Delphi exercise: 50,000 €



Basic definitions





Basic definitions

