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Top 10 Romanian Balneary Resorts, 2017

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Annually, the Romanian Association of Balneology performs the evaluation of the Spa Resorts, the assessment for 2017 will be presented at the National Balneology Congress, Baile Govora, 4-7 May 2017.

For the assessment of spa resorts, 10 criteria are used, for which a value coefficient is set in the range 1-10.

The ten evaluation criteria taken into account are:

1. Accessibility, infrastructure, public patrimony, urban management, involvement of local authorities;

2. The existence of scientific education and research structures in connection with close academic centers, the presence of university staff in the resort, the existence of a nucleus of scientific research - scientific works for the promotion of natural therapeutical factors;

3. External promotion of the resort: identifying elements to promote the resort internationally, English video spots, English web sites, participation in international fairs, scientific articles in English, participation in international events, External links, the presence of intranational tour operators, the existence of external investors, the organization of international events;

4. Domestic promotion of the resort: identification of modern elements of internal promotion of balneary staying, organization of specific events promoting the spa sector - congresses, conferences, tourism scholarships, participation in domestic tourism fairs, articles and promotional materials in Romanian, Promotion sites;

5. The quality of the natural factors used in the analyzed spa resort, the certification of the National Institute of Recovery, Physical Medicine and Balneoclimatology, elements of scientific research of the natural factors, the diversity of the natural factors used, the degree of their presentation, scientific works of promotion of the natural factors;

6. The quality of the tourist and medical services within the analyzed spa resort, the qualification level of the human resources, the presence of the resort animators, the personnel employed in the spa resort;

7. Development strategies of the resort identified by the plans of the local authorities and the operators of the analyzed spa resort;

8. The level of investment in treatment facilities and accommodation units at the level of the spa resort analyzed, the total number of accommodation places in the resort, the occupancy rate of the accommodation places;

9. Availability of dialogue between local decision-makers and investors / economic operators in the resort, participation in the National Balneology Congress, the establishment of local discussion groups with the invitation of representatives from the Romanian Balneology Association;

10. Scientific prizes, medals, mention of the resort in the documents of the central authorities, visibility of the spa's excellence level.

Ocna Sibiului – the transylvanian seaside

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Known as the “Transylvanian seaside”, Ocna Sibiului spa resort is visited every year, especially during the summer months, by thousands of tourists who come to enjoy treatment and rest in a natural setting that is particularly favorable to physical and mental recovery. Through its many *natural therapeutic factors* represented by: the *concentrated salt waters* of its 50 saline lakes, with a concentration reaching saturation (300 g/L) due to direct contact of water with the salt massif, which are renowned for their heliothermal properties; the 3 *mineral water springs: Horea, Cloșca, Crișan; sapropelic mud and sedative bioclimate*, the resort offers therapeutic possibilities for a wide range of locomotor system diseases (post-traumatic, degenerative rheumatic, abarticular or inflammatory), peripheral neurological disorders, respiratory, dermatological, gynecological diseases. Viable strategies for developing the spa sector in Ocna Sibiului and for leveraging the enormous potential of natural factors available in the resort are required. The first steps in this direction have been taken by recent analyses of mineral waters and mud and by initiating clinical studies regarding the efficacy of therapy with natural factors for various groups of diseases, in collaboration with the Romanian Association of Balneology, studies which are in progress and whose results will be presented at a later stage.

Băile Olănești – prevention and spa treatment

Dr. Tărău Angelica Daniela

S.C. Olănești Riviera S.A., Băile Olănești

Introduction. Băile Olănești was first mentioned as a locality in a document in 1527, and the first references to its mineral waters date back to 1760. The spa resort started to develop in 1855, following the visits of Doctor Carol Davila, accompanied by medical students, who studied the mineral waters in this area.

Material and method. Băile Olănești spa resort combines two natural therapeutic factors: climate and mineral waters. Research has shown that bioclimatic stress in Olănești has low values, which makes the bioclimate of this spa, a favorable sedative bioclimate throughout the year, less stressful for the organism. Băile Olănești ranks first among Romanian climatic and spa resorts regarding the number of springs, their total daily flow, and the variety of the composition and concentration of mineral waters. More than 35 mineral water sources are found in the spa resort, of which 15 are used for internal treatment (crenotherapy). Two mineral springs and four mineral water wells are used for external treatment (balneation). Mineral spring no. 24 – which has been known since the 18th century – contains weakly sulfurous water that is widely appreciated, mainly for its diuretic effect. Therapeutic indications: reno-ureteral lithiasis, urinary infections, chronic glomerulonephritis, uric and oxalic acid diathesis, gout, diabetes mellitus, dyslipidemia, chronic hepatitis, chronic cholecystitis, heavy metal poisoning.

The methodology of mineral water therapy includes: sulfurous crenotherapy (internal treatment); sulfurous water aerosol therapy; parenteral sulfurous water administration (injections), sulfurous balneation (external treatment).

In Olănești spa resort, modern treatment facilities are available, with electrotherapy, hydrotherapy, massage, paraffin, aerosol and kinesiotherapy rooms, all with specialized equipment. The rooms are designed so as to accommodate a number of apparatuses and to provide privacy during treatment. Medical offices for consultations and medical laboratories are also available.

Conclusions. Olănești is the Romanian spa resort with the greatest variety of mineral waters, with special effects, particularly in chronic renal diseases and allergic disorders. What individualizes the spa tourist product is the uniqueness of treatments for body desensitization in the case of allergic patients, by isotonic sulfurous mineral water injections, and the diuretic effect of mineral waters in patients with renal diseases. Professionalism, as well as the equipment and appearance of the Parang Hotel treatment facility adds to these assets.

The mineral springs in Olănești are comparable to Vichy, Ems, Bourboule waters. Comparative studies with other mineral waters in Europe have shown that mineral spring no. 24 in Băile Olănești equals or surpasses the effects of waters in Contrexville, Karlsbad, Martingni, Vittel, Evian, Tahanon, mineral springs no. 3 and no. 9 have properties similar to those of mineral waters in Ems and Eaux Bonnes, and mineral source no. 20 (used for baths) surpasses the qualities of waters in Hall, Salies de Beurn, Bax, Eaux Bonnes.

Calimanesti - Caciulata – history and tradition

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Introduction: My experience accumulated in time leads me to speak about “prevention and medical rehabilitation”. This paper is not meant to be “a treatment guide”, but rather “an experience guide”.

Material and method: This material comprises three parts:

- History of balneology in Calimanesti
- Balneology in the period 1990-2016
- Prevention and medical rehabilitation.

Conclusions:

Balneology is not a dead treatment method in the age of globalization, when pharmaceutical industry and laparoscopic surgery have received a new impetus. As Arkadie Perkek says, medicine should look not only at the future, but also at the past; it should use not only the predictions of the future, but also the experience of the past.

Balneo Resort, Modern perspectives, from History to Future

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Progress of any domain happens in inquisitive, dynamic, and open environment. History of science teaches us how the persistent searching questions of scientists have led to generation of the world's present knowledge base. Maintaining the continuity and connectivity threads between past and present is essential to show us right direction to future. Studying history of Balneology is important because it teaches us evolution, progression, and the context in which to understand the present and glimpse the future.

Băile Tuşnad-prevention, health, research

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2. Tuşnad Spa Complex - Băile Tuşnad

Introduction. Băile Tuşnad spa and climatic resort, also known as the “Transylvanian Pearl”, is one of the most beautiful Romanian resorts. The beneficial effects of mixed carbonated waters, mofettes and subalpine bioclimate in Băile Tuşnad are well known and recommended for prevention and rehabilitation treatment in a number of cardiovascular, digestive, renal, nervous system and endocrine diseases.

Material and method. From 2014 to the present, three clinical studies and an experimental study were performed. The aim of the studies was the scientific grounding of therapy performed at the treatment facility in Băile Tuşnad, by using natural therapeutic factors, i.e., carbonated mineral waters, mofettes, climate, along with physio-kinesiotherapy, in disorders such as stroke, Parkinson’s disease, diabetes mellitus complicated by polyneuropathy and vascular involvement, as well as to assess the influence of treatment with carbonated ferruginous mineral water from spring 3 in alcoholic liver disease, an experimental study. There are also some case reports regarding carbonated mineral water treatment in chronic obliterating arteriopathy.

Results. The results of the clinical and experimental studies performed were disseminated in national and international meetings aimed at promoting Băile Tuşnad resort as a tourist destination. A number of articles were also published in specialized journals.

Conclusion. For the development of spa tourism, the importance of studies on natural resources available in Băile Tuşnad spa and climatic resort is essential to the elaboration of a plan for the promotion and development of this spa resort. Thus, information can be obtained regarding the therapeutic properties of natural factors existing in this area, their contribution to prevention and treatment, the biological mechanisms through which they act on the organism, a scientific grounding of these treatments. All this contributes to an improvement in the quality of medical care. For this purpose, further research is intended by conducting a modern and original study, in order to obtain nationally and internationally competitive results, with a potential technological transfer to the socio-economic area.

Plants as sources of bioactive principles with anti-inflammatory activity

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Introduction: Since ancient times, people were interested in understanding the mysteries of plant life. The evolution, ecology, composition and utility of plants have been studied. Over the years a lot of researches have been conducted to identify compounds with anti-inflammatory activity from plants that can be used as adjuvants or as potential alternative agents. Inflammation is a complex biological process of the body's defense against aggressions of non-immune origin (physical, chemical, infectious) or immune (autoimmune diseases, allergies etc.), represented by a number of homeostatic phenomena.

Objective and materials: This paper provides an overview on the chemo-profiles of some plants having anti-inflammatory activity, by analyzing the specialty literature.

Results: Generally, plants and their metabolites are used in complementary medicine. Due to a higher degree of safety in utilization compared to synthetic drugs, current investigations are directed to the isolation, characterization and testing of pharmacological activity of natural compounds from plants. Phytopharmaceutical agents responsible for anti-inflammatory activity belong to various classes of compounds like flavonoids, phenolic compounds, terpenoids, glycosides, resins, essential oils, alkaloids, polysaccharides etc. Depending on the class of compounds to which they belong, the mechanisms underlying the anti-inflammatory activity involves the inhibition of some pro-inflammatory molecules by different signaling pathways and the ability of modulating the immune system. For example: boswellic acids inhibit the synthesis of pro-inflammatory enzyme 5-LO, TNF- α and PGE₂, reduce IL-1 β , IL-6 cytokines secretion and glycosaminoglycan degradation.

Among the plants and natural products that contribute to the inflammatory activity of pharmaceutical products in the form of tablets or ointments, are: *Harpagophytum procumbens*, *Boswellia serrata*, *Arnica montana*, *Salix alba*, *Tamus communis*, *Zingiber officinalis*, *Achillea millefolium*, *Aconitum napellus*, *Symphytum officinalis*, *Hamamelis virginiana*, *Hypericum perforatum*, *Eucalyptus globulus oil*, *Cinnamomum camphora oil*, *Rosmarinus officinalis oil*, *Mentha piperita oil*, *Lavandula angustifolia oil*.

Conclusions: The plants can be considered an inexhaustible source of bioactive compounds that can be valuable for the research in anti-inflammatory chemistry domain.

Health and wellness in tourism

Ioana Marian

President of The Romanian SPA Association, founder of despreSpa.ro, Global Wellness Day Ambassador in Romania, and Global Mentorship Program Ambassador in Romania.

Since 2013, wellness tourism has witnessed a spectacular growth: if in 2013 it was worth US\$ 439 billion, in 2020 it is estimated to reach US\$ 808 billion (the approximate level of the world's cultural tourism), of which about 41% is represented by spa tourism. What exactly has caused this sudden increase in interest in wellness and prevention? Is there such interest in health through prevention in Romania as well? What can be done to place Romania on the map of wellness tourism? We all know that our country possesses natural therapeutic factors and yet, we fail to attract customers. Why is that? What can be done differently? How can Romanians be attracted to spa and wellness tourism? I will start by presenting what "wellness" means, which activities can help us in our attempt to balance body, mind and soul, and what "wellness tourism" means. I will provide data from a World Health Organization report, as well as the results of a scientific study conducted during a wellness retreat program – with assessments at the beginning, at the end of the wellness retreat, and six weeks after the retreat. I invite you to discuss these subjects, as well as international trends in wellness tourism at the Congress of Balneology.

KI-OM—LOGY

*A shift paradigm from Recovery to Prevention, Performance and Anti-Aging
The Integration of the Romanian Balneology into the Economy of the Third Millennium*

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- **KY-OM-LOGY :**
- is the art and science of restoring, managing and increasing of the human KI resources
- is a new part of the Health Tourism that will synergic complement with the Balneology and the Climatology
- was first presented at SITH Congress on 2003 September - Beppu - Japan
- The Wellness is the next trillion dollar industry as presented by US Ec. Paul ZANE in The Wellness Revolution
- **KY-OM-LOGY goals**
- **KY-OM-LOGY Synergy with SPA treatments, climatology cures, physiotherapy, movement therapy & medical treatments:**
- Improving in the human body the potential of response
- Decreasing the secondary effects
- **KI-OM-LOGY components:**
- Active Stress Management Courses using The Radiance Technique(R) - Real Reiki(R)
- Anti-Stress Services using the Radiant instruments from Active Stress Management Courses
- **The STRESS:**
- Definition - Stress is the human response to a sense of danger (real or imaged)
- The 4 stages of interaction with the Stress - Optimal Health, Alarm Reaction - Acute Disease, Over-stress - Adaptation, Exhausted - Chronic Disease
- Evaluation of Stress Level:
- Stress Control Cards - by Dr. Alfred BARRIOS
- Spectral Analysis of the Hearth Rate Variability using emWave from Hearth Math Institute:
- Effect on the Human Body & between 2 Human Bodies under 3 meter distance
- 2 UE Campaigns: 2002 Work without Stress & 2014-2015 Healthy Workplaces Manage Stress
- **KY-OM-LOGY in:**
- The Health Promotion
- The Insurances for workplace accidents and professional illnesses
- The Health & General Insurances
- The Working Cardiology

Prevention of stroke in patients with cardiovascular risk factors

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In Europe, mortality after a stroke is 10% in men and 15% in women. In Romania, stroke is the third cause of death after cardiovascular diseases and cancer. Primary prevention aims to reduce stroke risk in asymptomatic individuals, and is based on identification and control of risk factors. It is well known that almost 10 potentially modifiable risk factors are responsible for producing 90% of all strokes. The prevalence of risk factors in Romania was established in 2011: a prevalence of 40% for arterial hypertension, 31.4% for hypercholesterolemia, 11.8% for diabetes mellitus; 21.4% of the study population were smokers. The detection of risk factors in the general population should be an active process, involving general practitioners, nurses and patients themselves: blood pressure measurements, periodic ECG determination, regular blood tests (glycemia and cholesterol levels), policies promoting smoking cessation. Once discovered, all risk factors should be treated according to medical societies' guidelines. All treatments involve lifestyle changes (healthy diet, sodium restriction, regular physical exercise, body weight control, smoking cessation, lowering alcohol consumption, stress control) and drug treatment (for hypertension, for diabetes, for dyslipidemia, for atrial fibrillation, for carotid artery stenosis, aspirin in selected patients). Only active screening for the main risk factors in the general population can allow detection of persons at high risk for having a stroke. Persons identified as being at high risk for stroke should be followed up periodically, assisted in implementation of lifestyle changing measures and regularly evaluated for efficacy, adverse events or compliance with their drug treatments. With these measures, we expect stroke incidence to decrease in our country.

Balneology and System biology - modern medicine and balneology

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Introduction: P4 Medicine is Predictive, Preventive, Personalized and Participatory. Its two major objectives are to quantify wellness and demystify disease. Medicine has always focused on treating disease after it occurs, with both treatment and diagnosis based largely on population averages, and patient decisions confined to choices among alternatives provided by their physicians. The revolution in medicine will come and the big change will be from reactive medicine to preventive medicine, oriented to individuals in a personalized approach, which will be focused on integrated diagnosis, treatment and prevention. Systems medicine is the application of systems biology to human disease. Both systems biology and systems medicine take holistic but quantified approaches to the challenge of biological complexity. Systems medicine uses high throughput technologies – such as DNA and RNA sequencing – to produce global data sets tracking multiple dimensions of dynamic network interactions.

Materials and Methods: Research of databases regarding therapeutical properties of natural therapeutic factors, statistical methods aimed to evaluate the valorization of natural

therapeutic factors, research on various medical and experimental aspects related to balneology.

Results: Systems biology will revolutionize the practice of healthcare in the coming decades. Today, medicine is largely reactive. It waits until a person is sick and then treats a disease, with varying levels of success. The revolution will emerge from the convergence of systems biology and the digital revolution's ability to create consumer devices, generate and analyze "big data" sets and deploy this information through business and social networks. With this information we can begin to understand how an individual's genetic makeup and environment together produce health and disease. In scientific terms it is necessary to identify the relevant biomarkers of aging, to reveal biological targets upon which the medical act to be possible, resulting in a favorable adjustment of these mechanisms for decreasing aging rate, preventing the development of pathological processes or aging complications and giving individuals a positive social role.

Conclusions: Currently, health is understood as the removal of diseases in a defensive manner to the pathological process and with higher costs. Would be more effective the maintenance of health through prevention mechanisms identified by modern science. Combining the balneotherapy with using products with healthy-aging effect provides a significant advantage and represents the sustainability for the new balneology. The strategies, technologies and analytic tools of systems medicine have given us the ability to decipher biological complexity, making it possible to provide care that is predictive, preventive and personalized. By adding the 'participatory' component, P4 medicine maximizes the effectiveness of systems medicine by expanding its application.

What do we know and what do we not know about malpractice?

Dr. Duma Dorina

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The medical profession, through its specific nature, is subjected to deontological and legal norms. The legal and professional responsibility of doctors is a highly debated issue, which has often led to many attempts of regulation in the field of medical law. The doctor's professional liability can be civil, criminal or disciplinary, based on the nature of the legal norm that regulates the obligation that has been infringed. A frequent confusion found in practice is that between disciplinary liability and civil liability. The analysis of disciplinary liability currently falls under the authority of the professional body, represented by the territorial Discipline Commissions of the College of Physicians and the Superior Discipline Commission of the College of Physicians in Romania. The procedure for establishing malpractice cases is the responsibility of the Monitoring and Professional Competence Commission for Malpractice Cases, affiliated to County Public Health Authorities, according to the provisions of Ministry of Health Law no. 95/2006 regarding health care reform. The area of malpractice comprises medical errors related to scientific medical procedures, as well as medical errors related to the ethics and deontology of the medical profession. This paper presents in a systematic manner aspects of the laws in force regarding the conditions of disciplinary liability, as well as procedural aspects for establishing civil and criminal liability of the medical staff for medical malpractice.

New technologies for healthy lifestyle promotion, prevention and rehabilitation of chronic diseases

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This presentation explores the potential of different new technologies in the process of promotion of a healthy lifestyle, prevention and rehabilitation of chronic diseases. There are presented the characteristics, possible advantages and disadvantages of computer based technologies, mobile phone based technologies, portable devices and imaged based technologies. The information is based on data from literature, as well as authors' personal experience.

There are several methods using new technologies which help the process of gathering information about the lifestyle of a person (dietary patterns, physical activity, smoking and alcohol use) as well as development and implementation of several educational programs and counseling for healthy lifestyle promotion and chronic disease prevention. Moreover, different new technologies allows the development of rehabilitation programs for patients with chronic diseases (ex. cardio-vascular diseases) when the clinician and patient are not in the same location, increasing the accessibility and compliance of the patients for these type of programs.

Nevertheless, despite of the growing popularity of these new technologies, evaluation of their efficacy, acceptance and safety is very important, but still limited. The presentation discusses several examples from Romania and Europe, underlying strengths, weaknesses and opportunities for future development with regard to use of new technologies for healthy lifestyle promotion as well as chronic disease prevention and rehabilitation in Romania.

Climatotherapy in balneary resort, research and applications

Hoteteu Mihail, Munteanu Constantin

Asociatia Romana de Balneologie, SC Biosafety SRL

Climatotherapy is defined as the treatment of disease or ill health by travel to a place with a beneficial climate. Therapeutic objective of climatotherapy is adaptation to natural environmental factors or relief from stressful climatic elements. Climatotherapy includes the planned medical application of climatic factors that are effective for the prevention or treatment of diseases. Climatic factors with relevance for therapy are radiation (ultraviolet, light, infrared), thermal stimuli (temperature, wind, humidity, etc.) and air composition (pO₂, therapeutic aerosols, absence of pollution and allergens, etc.). Psychological reactions from the experience of landscapes may also be a factor.

Climatotherapy is conducted in three bioclimatic zones: near the sea, in upland areas, and in alpine regions. These three zones differ in the intensity of their climatic stimuli. Marine climate provides strong stimuli, which forces adaptation. The stressors are low temperature, high wind speed, UV-radiation and maritime aerosol. The relieving elements of sea climate are air purity, absence of allergens and absence of heat load. These provide for an increase of the respiratory function and for a reduction of allergic reactions of the respiratory system and the skin. The absence of heat load relieves the cardiovascular system.

Climatotherapy modalities employed at the Dead and Black sea area include heliotherapy (sun exposure), thalassotherapy (bathing in the Sea water), balneotherapy (immersion in baths and pools of thermomineral water), pelotherapy (heated Sea mud pack), this type of treatment utilizing the atmosphere, temperature, humidity, barometric pressure and light.

The high mountain climate exists, by definition, at locations more than 1000m above sea level including valley. Increased UV-radiation and wind speed, and reduced oxygen partial pressure, air temperature, air humidity and air pollution are the most important factors.

In the regions defined by upland climate the altitudes used therapeutically range from 300 m to 1000 m above sea level. The topography influences the course of the weather significantly. The medium altitude climate shows mostly the same parameters as high mountain areas, nevertheless with reduced intensity. For a successful climatotherapeutic treatment the body has to be exposed daily over several weeks, with an exact dosage, to the biometeorological conditions like temperature, wind and UV-radiation. In climatotherapy, four different methods to provide rest or to apply stimuli are described: climatic terrain treatment, fresh air rest-cures, air baths and heliotherapy.

Bazna waters physical and biological properties

dr. Trâmbițaș Dan

BAZNA, SNGN ROMGAZ SA SUCURSALA MEDIAS

Introduction. Bazna is one of the oldest resorts in our country, documentary attested in 1302. Natural spring waters were discovered, following up natural gas reservoirs discoveries in 1671. Therapeutical indications: degenerative rheumatic complaints (abarticular rheumatic complaints); inflammatory rheumatic complaints; spondylosis and all kind of spondylitis ; scapular-humeral peri-arthritis; gouty; post traumatic conditions; peripheral neurological diseases (post-traumatic paresis and paralysis, stiffness following polyneuropathy symptoms, poliomyelitis effects); gynecological conditions (ovarian insufficiency, cervicitis).

Objective. Bazna waters were previously characterized from chemical point of view . The objective of the present study was to characterize this water from physical and biological point of view, and to further analyze the nitrogen compounds, especially NH_4^+ .

Materials and Methods. Qualitative analysis of animal and vegetable organic material in the four basins' water. Nitrogen compounds were dosed in the form of ammonium ion (NH_4^+). The chemical determinations of the ammonium ion were performed using ISO 5664/84 ISO. 7150/84 analytical method.

Results. Primary, ionic ammonium which enter in the composition of Bazna mineral waters, results from ammonium salts dissociation, mainly carbons and ammonium chlorate, in the conditions of aquifer thermodynamical transition between underground geochemical conditions and emergence. NH_4^+Cl thermal dissociation from the aqueous solution is sustained by previous hydrolysis to a different pH from 7,4. The hydrolysis chemical results have the collision effect of mineral water pH change tendency in the emergence process, $\text{NH}_3(\text{g})$ leaving the system like an entropic solution, while HA remains in solution. That is the reason why when the drilling is over, the mineral water has a slightly acid pH (6,4 ÷ 6,6) favourable to NH_4^+ ions (the pH variation domain in H_3BO_3 medium is 6,0 ÷ 7,4). We notice that chemical analysis for dosing the chemical species resulted from $(\text{NH}_4)_2\text{CO}_3$ dissociation point up more bicarbonate ($\text{H}_2\text{NH}_4\text{CO}_3$) and carbonate ($(\text{NH}_4)_2\text{CO}_3$) stages and less thermal dissociation step, represented by ammonium carbonate acid ($\text{NH}_2\text{COONH}_4$). To bring NH_4^+ in Bazna mineral water is used another geochemical method based on NH neutralization.

NH_4^+ results in splitting, amination and decarboxylating processes (in the catalytic presence of Sarmatian clay) with a weakly dissociated diprotical acid, as: $\text{NH}_3 + \text{HOH} \rightleftharpoons \text{NH}_4^+ + \text{HO}^-$.
Conclusions. Mineral water from Bazna has such a complex mixture, that total action is formed from the interplay of multiple items. Because are reservoir water, contain ammonium ions in big quantities without being hygienically dirty; ammonium ions are toxic only in high alkalinity pH waters, when they are delivered as ammonia, which is not the case of Bazna basins.

The efficacy of thermal mineral waters in the treatment of gonarthrosis

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Introduction. Gonarthrosis is a chronic degenerative disease with a high incidence and prevalence, which continues to be one of the main causes of years lived with disability worldwide. Symptomatic gonarthrosis is very widely distributed among the population aged over 50 years, becoming an increasingly serious health care problem. The current management of gonarthrosis includes pharmacological and non-pharmacological treatments. Mineral water therapy is one of the most frequently used non-pharmacological approaches to gonarthrosis in many European and other countries.

Aim. The aim of this meta-analysis is to summarize the currently available information regarding the clinical effects and action mechanisms of mineral water therapy in gonarthrosis.

Material and method. In the meta-analysis "Evidence based on hydro- and balneotherapy performed in Hungary", three randomized double-blind studies conclude that immersion in thermal mineral water significantly improves the clinical index, i.e. pain (measured on the visual analogue scale VAS) and function (WOMAC scale) after balneotherapy applied in gonarthrosis. The systematic analysis "Scientific evidence regarding the therapeutic effects of Dead Sea treatments" reveals that Dead Sea mud and water therapy proved to be beneficial in rheumatological diseases, including rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis and knee arthrosis. The clinical statistical study "The efficacy of mineral water therapy in Sillene spa center, Chianciano, Italy" supports that mud bath therapy in Chianciano spa improves the clinical status of patients with gonarthrosis and significantly reduces the frequency and severity of symptoms. The randomized single-blind controlled study "The efficacy of balneotherapy on pain, function and quality of life in patients with gonarthrosis", conducted in Italy, indicates the fact that a cycle of mineral baths containing sulfate, bicarbonate and calcium has significant beneficial effects on pain. The randomized controlled clinical study "Thermal water baths in the treatment of gonarthrosis", carried out in Brazil, shows that hot baths were effective in reducing pain and improving physical status in patients with gonarthrosis. Hot sulfurous water baths were the most effective treatment in reducing pain during movement at the end of treatment, and global effects lasted longer than in patients treated with hot non-sulfurous water baths.

Results. Various randomized controlled clinical studies were conducted in order to assess the efficacy and tolerability of treatment with thermal mineral waters and mud packs in patients with gonarthrosis. The data of these clinical studies support a beneficial effect of balneotherapy on pain, function and quality of life in gonarthrosis, which lasts up to 6-9 months after treatment.

Quality parameters of natural mineral water in Romania

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Keywords: Mineral waters, Effective dose, Natural radionuclides, Natural radioactivity.

Romania is rich in natural mineral waters. Although it is assumed that these waters are less polluted with organic and inorganic substances, their monitoring is important. An extensive study was conducted on a natural mineral water spring from Romania, located in the northern part of the country, for a period of two and a half years. The water originates from a volcanic aquifer containing carbonate rocks. Seasonal influence over the chemical composition due to long period of water sample collection was studied regarding the major ion composition and possible rain infiltrations. This study has great importance for assuring the quality of natural mineral waters especially regarding the radioactivity concentration: highlighted in the Council Directive 2009/54/EC of 18 June 2009 on the exploitation and marketing of natural mineral waters, laying down requirements for the protection of the health of the general public with regard to radioactive substances in water intended for human consumption. Therein, the activity concentrations of gross alpha, gross beta, and gamma natural emitting radionuclides were determined, as well as the associated effective dose for these radionuclides. The results obtained for the effective doses calculated for an adult member in Romania, derived from the intake of naturally occurring radionuclides in water vary between: 1.24-2.08 ($\mu\text{Sv}/\text{yr}$) for ^{40}K ; 0.90-3.45 for ^{238}U ; 1.00-7.21 ($\mu\text{Sv}/\text{yr}$) for ^{232}Th and 11.24-46.00 ($\mu\text{Sv}/\text{yr}$) for ^{226}Ra [1-3]. The obtained values are below the World Health Organization (WHO) and United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) recommended reference levels.

The mineral waters contain natural radionuclides and the rules or directives made and maintained by national and international authorities become more and more important. UNSCEAR and European Commission demand that natural mineral waters consumption is very important regarding the exposure to naturally occurring emitting radionuclides. When waters present high natural radionuclide content, these must be monitored.

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Carbonated mineral water baths in chronic obliterating arteriopathy – effect on free radical release and antioxidant status

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Introduction. Carbon dioxide baths have an old history and are considered effective in the treatment of peripheral vascular diseases. Recently, the relationship between oxidative stress and cardiovascular disease progression has re-attracted attention due to the possibility to measure free radicals. Oxidative stress triggers an inflammatory response that is directly implicated in the pathogenesis of atherosclerosis, being currently considered the most important initiator and promoter of endothelial cell damage.

Material and method. Clinical and experimental studies were searched in international databases.

Results. Carbon dioxide induces peripheral vasodilation following immersion in carbon dioxide baths. Changes in skin microcirculation and arterial macrocirculation also occur. Controlled experiments in animals have demonstrated that both cutaneous and muscular blood flow and oxygen pressure increase during immersion in carbon dioxide baths. Successive carbon dioxide applications can be clinically effective in patients with lower limb arterial obstruction, by stopping free radical production. A recent study demonstrated a reduction of oxidative stress after two weeks of balneotherapy with carbonated mineral water in patients with chronic obliterating arteriopathy. Based on this study's data, it is believed that an increase in free radical neutralization activity is beneficial in obstructive arterial diseases and that this activity can reduce systemic and local inflammatory response following ischemia-reperfusion lesions. The neutralizing agent could be carbonated mineral water baths.

Conclusions. Carbon dioxide baths led to an improvement of oxygen use at peripheral level in patients with cardiovascular diseases, and determined a long-term amelioration of blood flow characteristics through a reduction of the hematocrit and blood viscosity. The increase of cutaneous blood flow that persists throughout the duration of carbonated mineral water baths is interpreted as an increase of microcirculation. However, the inhibitory effect on oxygen-derived free radicals can partly explain the efficiency of this treatment.

A trial about the evaluation of the effort capacity for the students of "Stefan cel Mare" University of Suceava

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The movement is very important for the human body and that is why a systematic programme of physical exercises helps with the improvement of the health condition. The purpose of this work is to point out the importance of the physical exercises in order to raise awareness about health, the social and professional integration and the optimal motor development.

Objectives The trial aims at evaluating the somatic and functional potential for the age group 18-26 years that is represented by students in universities.

Material and method The trial was carried out during a period of 3 months for two groups: the trial group made up of students who regularly did physical exercises five times a week (according to a study program and to a competition one) and the control group that perform physical activities occasionally once or three times a week. The first year students attended this trial. At first they filled in a questionnaire about their health condition and mentioned the risk factors of their life style. Then the somatic parameters were measured: waist, weight, body weight index, the perimeter of the thorax, the adiposity index but also the cardiovascular functional indexes, the pulse and the blood pressure.

Results Both groups showed improvement after the evaluation of the somatic indicators whereas the trial group showed statistically significant results. Thus, the body weight index and the adiposity index were improved. After the evaluation of the functional indexes, both groups recorded better final results that were more obvious for the trial group.

Conclusions After interpreting the statistical data, it is found out that both monitored groups recorded improvement for all the parameters whereas the results were statistically significant for the body weight index, the adiposity index for the trial group and the elasticity index for the control group. The obtained values for the somatic indicators can provide with important information about the health condition and they help the student become aware about the effects of the physical exercises for the improvement and the continuity of the good health. The students succeeded in improving their physical condition. The obtained results after the evaluation of the cardiovascular functional indexes suggest that the physical exercises are efficient and can improve the physical condition. Therefore, the physical exercises that are done regularly by individually controlled can bring beneficial effects for the human body.

Key words: effort capacity, somatic and functional indexes, physical exercise.

Hidrokinetoterapia combinată cu tehnici de facilitare în recuperarea coxatrozei

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Abstract - Recuperarea motorie prin tehnici de facilitare are indicaţii practice în afecţiuni locomotorii, reumatologice, ortopedico-traumatologice şi neurologice.

Deoarece în recuperarea coxartrozei nu este indicată, de obicei, folosirea exerciţiilor ce presupun încărcarea articulaţiei, am încercat combinarea a doua metode, hidrokinetoterapie împreună cu tehnicile de facilitare pentru a putea scurta procesul de recuperare. Pentru realizarea acestei lucrări au fost implicaţi 4 subiecţi cărora li s-au aplicat sesiuni de tratament, au fost monitorizaţi şi au fost înregistrate datele.

Introducere - Aceste tehnici sunt folosite din ce în ce mai mult în tratamentul afecţiunilor neurologice, fiind neglijate în celelate afecţiuni (reumatologice şi ortopedico-traumatice).

Material metodă – Ipoteză : Presupunem că dacă vom folosi hidrokinetoterapie, combinată cu utilizarea tehnicilor de facilitare în tratarea coxatrozei, vom avea o îmbunătăţire a forţei musculare, o creştere a mobilităţii şi stabilităţii articulare, dar cel mai important o diminuare a durerii şi a refacerii funcţionalităţii articulaţiei coxo-femorale.

Rezultatele studiului – După efectuarea testării finale am constatat o îmbunătățire a amplitudinei de mișcare și o creștere a forței musculare în toate planurile de mișcare, dar și o scădere a durerii resimțită în articulație.

Concluzii - Combinarea celor două metode, hidrokinetoterapie și tehnicile de facilitare, duc la o recuperare rapidă a forței musculare, amplitudinii de mișcare, dar mai important, o ameliorare a durerii resimțită în articulație a pacienților diagnosticați cu coxartroză.

Hidrokinetoterapia a contribuit substanțial la succesului planului de recuperare prin multiplele beneficii pe care această tehnică le are și anume: relaxare musculară și diminuarea durerilor, creșterea vasomotricității, reducerea presiunii din interiorul articulației coxo-femorale exercitată de către greutatea corpului, apariția rezistenței opusă de apă și efectele antalgice.

Cuvinte cheie: Coxartroză, tehnici de facilitare, amplitudine de mișcare, forță musculară, durere, hidrokinetoterapie

Can the physical exercise decrease the backaches?

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The backache occurs most frequently because of an incorrect position during the daily activities while standing, sitting or lying. In addition, when people pick up and carry heavy objects, wear inadequate shoes and carry out intense physical activities, they worsen the paravertebral structures (muscles, ligaments and tendons) and less the disk between the vertebrae.

For some persons who have backaches, it is recommended to follow a program of physical exercises whereas for other persons it is forbidden. It is recommended to them to walk, to swim, to cycle, to make kinetic therapy and to go jogging cautiously; it is not recommended to play tennis, football and aerobics.

The fast walk for 30 minutes 3 or 4 times a week improves the muscular tonus and to regulate the cardiovascular activity. The swimming reduces the pressure exerted upon the backbone whereas the optimal immersion level is above the lumbar area. The cyclism improves the physical condition and the cardiovascular activity; also, it tonifies the abdominal musculature and the lower limbs. The kinetic therapy enables the mobility of the painful areas and it tonifies the musculature in order to obtain the correct posture and to decompress the intervertebral disks. It is important to use static exercises (postures and isometrics) as well as dynamic exercises (passive, active or resistant active mobilization).

The backache is a health issue with economic costs related to the physical and psychical dysfunctions, medicine consumption and absence phenomenon. In case there are persons who by their activities are often prone to feel these aches, they should attend recovery programs at regular intervals. Also, by learning correctly the usual behaviour techniques, it is possible to prevent the aches from recurring and then the person is able to integrate more easily into the social and professional activity.

Key words: backache, physical exercise, recovery program, physical activities

Utilizarea de tehnici combinate: dușuri scoțiene, baie caldă și tehnici manuale în tratamentul migrenelor

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Abstract - Migrenele sunt determinate atât de factori interni cât și de factori externi de mediu și astfel se pot folosi dușuri scoțiene, baie caldă (37°) urmate de aplicarea de tehnici manuale de drenaj a sinusurilor venoase. Pentru realizarea acestei lucrări au fost implicați 3 subiecți cărora li s-au aplicat sedințe de tratament, au fost monitorizați și au fost înregistrate datele.

Introducere - Migrena are caracter cronic și se caracterizează prin cefalee recurentă, de o intensitate moderată spre severă, asociată de cele mai multe ori cu o serie de simptome ale sistemului nervos autonom.

Material metodă – Ipoteza: dacă vom folosi conceptul de alternanță a vaso-constricție cu vaso-dilatație urmat de vaso-dilatație vor accentua rezultatul obținut de către tehnicile de drenare a sinusurilor venoase în cazurile de migrene astfel ameliorând simptomatologia generată de această afecțiune.

Rezultatele studiului - După efectuarea testării finale am putut constata că subiectul 1 F, ca și cu subiectul 3 F au avut o ameliorare semnificativă a tuturor parametrilor, reacționând pozitiv, iar subiectul 2M nu a aratat nici o ameliorare..

Concluzii - Analizând comparativ rezultatele obținute prin combinarea celor trei metode de tratament și anume dușuri scoțiene, băi calde (37°) și tehnici de drenaj a sinusurilor venoase am constatat ca pacienții au acceptat și colaborat mai bine cu kinetoterapeutul după dușurile scoțiene și baia caldă, fiind mai relaxați și implicit am constatat scăderea/ reducerea simptomatologiei sindroamelor algice cefalice mai rapidă datorită obținerii unei stări de relaxare musculară și psihice mai bune.

Tehnicile de drenaj al sinusurilor venoase împreună cu dușurile scoțiene și băile calde (37°) au un efect benefic în ameliorarea simptomelor provocate de sindroamele algice cefalice.

Drenarea trebuie să fie făcută urmând regulile drenărilor (întotdeauna de la proximal spre distal).

Cuvinte cheie: sinusuri venoase, migrene, dura-mater, dușuri scoțiene, baie caldă.

Masajul modern aplicat la seniori

Dr. Jurcut Camelia-Angela

Obiective

1. Optimizarea procesului de recuperare desfășurat cu persoanele vârstnice și cu handicap (persoane vârstnice instituționalizate).
2. Creșterea calității vieții beneficiarilor și dezvoltarea sistemului de servicii specializate pentru vârstnici și pentru persoanele cu handicap.

Obiectivele specifice-

- Informarea persoanelor vârstnice instituționalizate în ceea ce privește posibilitățile de recuperare prin mișcare, prin kinetoterapie ;
- Identificarea deficiențelor psihomotrice caracteristice persoanelor în vârstă care pot fi ameliorate;
- Evaluarea nevoii de mișcare la persoanele cu handicap și persoanelor vârstnice

instituționalizate;

▪ Evaluarea efectelor terapeutice ale mișcării în procesul de recuperare a persoanelor cu handicap și persoanelor vârstnice instituționalizate;

Ipotezele cercetării:

1. Dacă persoanele cu handicap (persoane vârstnice instituționalizate) sunt angajate într-un procent mic într-o formă de activitate motrică (fizică), atunci starea de sănătate (fizică și psihică) redusă se datorează și sedentarismului.
2. Dacă exercițiile fizice sunt practicate sistematic, atunci se vor ameliora unele aspecte psihologice ale stării de sănătate.

Metode: metoda transversală.

Lotul de subiecți a fost alcătuit din cele 13 persoane vârstnice instituționalizate cu vârsta cuprinsă între 60-80 de ani, din cadrul Asociației CENTRUL DE ÎNGRIJIRE ȘI ASISTENȚĂ PENTRU VÂRSTNICI. Participanții au fost selectați pentru a lua parte la desfășurarea programului de intervenție prin mișcare, în funcție de diagnosticul medico-social și profilul psihologic al acestora.

Cercetarea a fost efectuată în anul 2017 pe o perioadă de 3 luni, cu prezentarea rezultatelor cercetării concretizate în produsul final: „*Efecte terapeutice ale exercițiului fizic la persoanele vârstnice instituționalizate*”!

Mofettes therapy in cardiovascular rehabilitation - the covasna model

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Introduction. The mofette represents a phenomenon that is unique in the entire world. The moffetic gas is a natural emanation specific to the southern extremity of the Oriental Carpathians which contains 90-98% CO₂. According to the “Covasna Model”, the carbon dioxide is used for the primary prevention, secondary prevention as well as in rehabilitation of cardiovascular diseases in the form of mofettes and carbogaseous baths.
Aim. The aim of this study is to evidence the role of mofette therapy as part of residential rehabilitation programs carried out at the Hospital of Rehabilitation in Cardiovascular Diseases Covasna.

Material and methods. The study included 92 patients admitted to the Hospital of Rehabilitation in Cardiovascular Diseases Covasna, Romania. All patients were evaluated for the presence of the main cardiovascular risk factors. The mean age was 66.31±9.00 years, with age limits between 42-85 years. All patients attended complex cardiovascular rehabilitation programs. Of these, 49 patients also underwent mofette therapy.

Results. By analyzing the profile of patients undergoing mofette therapy, the following were found: 36.7% of the patients were overweight, 40.8% obese, 83.7% hypertensive, 69.4% dyslipidemic and 24.5% diabetic. There were differences between the group treated with mofette therapy and the group without mofette therapy regarding total cholesterol and LDL-cholesterol values, which were significantly higher in the group undergoing mofette therapy. Significantly fewer patients with old myocardial infarction and atrial fibrillation, respectively, were subjected to mofette rehabilitation procedures: 4.1% vs. 16.3%, p=0.05 and 2% vs. 20.9%, p=0.004, respectively. 6.1% of the patients had peripheral arterial disease.

In conclusion, mofette therapy combined with other classical procedures can play an important role in the rehabilitation of cardiovascular patients.

Effects of cardiovascular rehabilitation in patients admitted to the “Dr.Benedek Geza” hospital of rehabilitation in cardiovascular diseases, Covasna

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Background. Cardiovascular rehabilitation is an important objective of the treatment of cardiovascular patients in general, and ischemic heart disease patients in particular.

The aim of the study is to monitor the effects of long-term cardiovascular rehabilitation in patients readmitted to the “Dr.Benedek Geza” Hospital of Rehabilitation in Cardiovascular Diseases Covasna.

Material and methods. The study included 92 patients with a mean age of 66.31 ± 9 years, of which 63% women, who had two successive admissions to the “Dr Benedek Geza” Hospital of Rehabilitation in Cardiovascular Diseases, Covasna. At both admissions, all patients were evaluated for the presence of the main cardiovascular risk factor. All patients attended cardiovascular rehabilitation programs, including physical training, climatotherapy, CO₂ baths, mofette therapy, aerotherapy, electrotherapy.. We mention that cardioprotective therapy (aspirin, angiotensin enzyme converting inhibitors, beta-blokers and statins) did not undergo major changes from one admission to the other.

Results. More than half of the patients had the following risk factors: hypertension- 79.35%, dyslipidemia – 64.13%, overweight and obesity – 74.4%. The complex rehabilitation programs attended by the patients consisted of physical training-33.7%, CO₂ baths- 85.9%, mofette therapy-53.3%, aerotherapy-96.7%, electrotherapy-88%. A comparison of the main cardiovascular risk factors during both admissions showed no significant differences between these, except for LDL-cholesterol (3.15 ± 1.26 vs 2.58 ± 1.65 mmol/dl, $p=0.004$) and HDL-cholesterol (1.06 ± 0.61 vs 1.194 ± 0.41 mmol/dl, $p=0.075$)

In conclusion, in cardiovascular patients, obtaining improvements of cardiovascular risk factors requires long-term cardiovascular rehabilitation programs, in parallel to the application of measures for lifestyle change secondary drug prevention.

Keywords: rehabilitation, cardiovascular diseases, gender

Effects of carbonated mineral water treatment in chronic obliterative arterial disease-a case report

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Introduction. Băile Tușnad Spa Resort is recognized for its role in the prophylaxis and rehabilitation treatment of cardiovascular diseases, including chronic obliterative arterial disease, due to the presence of natural therapeutic factors: carbonated mineral waters through their peripheral and central vasodilator effects, mofettes, a stimulating bioclimate.

Aim. This study aimed to assess the clinical effectiveness of natural therapeutic factors in Băile Tușnad with the purpose of continuing rehabilitation treatment in a patient with chronic

obliterative arterial disease, in order to encourage walking, reduce cardiovascular risk and improve the quality of life.

Material and method. Patient N.M., aged 75, with cardiovascular risk factors, was operated in 2012 for L4-L5 lumbar canal stenosis. In 2013, he was diagnosed with peripheral lower limb ischemia syndrome stage IIB Fontaine, predominantly left claudication at about 100 m, for which balloon angioplasty was performed. The patient attended rehabilitation treatment, which consisted of carbonated mineral water baths for 15 minutes, aerotherapy for 30 minutes daily for stimulation of walking, massotherapy, kinesiotherapy, performed daily for 16 days over 3 years in Băile Tuşnad, and in 2016 at the Rehabilitation Hospital in Cluj-Napoca. He was clinically assessed before and after treatment based on the Visual Analogue Scale for pain, the 10-meter walking test, adverse reactions, Doppler ultrasound.

Results. At the end of treatment, there was an improvement of the walking distance and speed, a significant improvement of walking, claudication occurred at more than 300 m, and pain in the lower limbs decreased.

Conclusions. Rehabilitation treatment with natural therapeutic factors influenced the clinical and functional picture, causing a significant improvement of the quality of walking and of the quality of life.

Analyzing the existing situation regarding licensed medical spas in Romania from a tourism perspective

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This paper aims to present some results coming from a research carried out by the National Institute of Research Development in Tourism in the period December 2016 – January 2017. The research was initially based on an inventory data regarding medical spas (rom. baze de tratament) licensed by the Ministry of Health in Romania. Further, an exhaustive number of 130 of medical spas were contacted and for each medical spa the following data were obtained: ownership, natural cure factors, applied procedures and medical and/or speciality personnel. These data have been analysed together with the data provided by the National Authority for Tourism (ANT) regarding the localities certified as tourist resorts and the accommodation capacity related to medical spas whose accommodation establishments are licensed by ANT. Thus, it has been established that 95% of the total number of medical spas are found in localities having the status of tourist resort while 9 tourist resorts have more than a half of the total number of licensed medical spas in Romania. The 130 medical spas are related to over 30 thousands bed-places located in the ANT licensed accommodation establishments, which represent 7.5% from the total licensed accommodation capacity of Romania (in terms of bed-places). Also the data showed that almost half of the accommodation capacity related to medical spas has a low comfort (one and two stars) in contrast to the general situation in Romania where only more than one third of the accommodation capacity has a low comfort. All these results prove a close connection existent between tourism as a domain responsible with the licensing the accommodation establishments and health as a domain responsible with licensing medical spas. Therefore, joint efforts are needed for developing tourism related to medical spas.

Legislative aspects concerning providing the treatment bases with the natural therapy resources. Turda Salt Baths balneal-climatic resort: A Case Study

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Key words: natural therapy resources, balneary cure, balneal-climatic resort

The balneary resorts were created and developed in areas where the presence of enough natural cure resources – such as mineral waters, sapropelic muds, mofetta and mofetta gases, mineralized lakes etc. – was identified. Because of the therapeutic qualities of the natural factors used in the balneary treatment, each balneary resort is unique in its own way.

At least one natural factor for the treatment must be used in the therapeutic procedures so as a treatment base from a resort to function as it should. Thus, the research activity is of highly importance in order to identify new natural resources with therapeutic purpose/nature.

The establishment of the perimeters of exploration/exploitation of the therapeutic mineral resources complies with the legislative rules which regulate the research/exploitation activity of the mineral resources. The lack of harmony between the legal stipulations of the mineral resources and the stipulations concerning the environment protection and/or the ones that refer to the agricultural land regime are observable in the practical activity.

A fact used more often is the extension of biodiversity protected area, sometimes without scientific arguments in the area where are approved reserve of mineral water and therapeutic muds and where this have been exploited or used for treatment purposes as balneary treatment. In this case we consider the activity of treatment bases from the balneary resorts obstructed by blocking the access to this natural resources.

For example, we present you the Baile Turda (Turda Bath) balneary-climatic resort situation.

Correlations between cervical spine posture and low back pain rehabilitation

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Working hypothesis. This study started from the assumption that the improvement of the cervical spine biomechanics and posture will improve the lumbar spine biomechanics and also will decrease the low back symptoms. The study assesses the posture modifications due to the experimental physical therapy protocol versus the classic Williams one.

Materials and methods. The study took place at the Recovery Clinical Hospital from Cluj-Napoca, Romania. The study includes 81 patients, 41 in the research group and 40 in the control group. All patients suffered from low back pain and sciatic pain. Each patient was

prescribed 10 days of treatment which consisted of: physical therapy, pool physical therapy, sedative spine massage and physiotherapy.

The study group received the experimental exercises protocol designed for cervical spine posture rehabilitation. The reference group received the Williams exercises protocol. The assessment tests were: the wall-tragus test, the menton-stern test, the modified Schober test and the Visual Analogue Scale.

Results. The evolution of the assessment tests was statistically significant: the wall-tragus test $p=0,015$, the menton-stern test $p=0,007$, the modified Schober test $p=0,114$ and VAS test $p=0$. The efficiency of the two exercise protocols was the same regarding the four aspects taken into the consideration: cervical spine posture rehabilitation $p=0,171$, cervical spine mobility improvement $p=0,584$, lumbar spine mobility had a very little improvement, thus the evolution wasn't statistically significant and the pain improvement (VAS) $p=0$.

Conclusions. A healthy posture is essential for a good biomechanics and physiology of the spine; that will prevent the early onset of sciatic pain and faulty posture. A very early rehabilitation of the bad posture habits is mandatory for prevention of premature degeneration of the spine active and passive structures; This study demonstrated that the nowadays habits will lead to alteration of the head and the cervical spine posture. This faulty posture will determine the onset of the low back pain and sciatic pain, associated with lumbar spine stiffness. The correction of the head and cervical spine will rapidly decrease the lumbar spine pain, and will restore the functional mobility of the lumbar spine.

Virtual reality in upper extremity therapy rehabilitation

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Introduction: Recent technological advances in the computer and games industries have transformed our homes and workplaces and are now making an impact in clinical settings. Computer-assisted rehabilitation programmes that make use of Virtual Reality (VR) are poised to revolutionize how therapy is delivered, but we still know relatively little about the potential benefits of this form of intervention.

Materials and methods: Our rehabilitation system is constituting in a standard paradigm comprising all the key elements of any VR based cognitive neurorehabilitation system. Motion capture is achieved through a video based system. The user wears color patches that are tracked by motion capture system and that are mapped in to a virtual character through a biomechanical model. Data gloves provide finger flexion data. The screen displays a first-person view of the procedure scenario in the virtual environment. In addition, data gloves capture finger gesture allowing for a realistic representation of the movements of the arm.

Results: The study resulted in the following findings corresponding to the questions raised: identification of purposeful activities in two categories: motor or cognitive training; identification of values for therapeutic work; and design guidelines particular for rehabilitation equipment. The patient (age < 60 years) should suffer a first event stroke; display a severe deficit of the paretic arm. After five weeks of training (20 sessions) we found an improvement of 25% in the functional independence measure, 30 % in the motricity index and a largely increased independence in the performance of activities of daily living.

Conclusions: By protocols, questionnaires and focus group interviews we collect data regarding which activities they considered useful, why these are useful and what might improve usefulness of such activities, based on the therapists' professional judgment and

experiences. This resulted in a set of purposeful activities, identified values for therapeutic work, and design guidelines. The conclusion is that such equipment has benefits beyond real life training, that variation in content and difficulty levels is a key quality for wide suitability and that the combination of challenging cognitive activities which encourage motor training was considered particularly useful.

Diffuse systemic sclerosis is a diagnostic puzzle. A Case report

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Introduction: Systemic sclerosis is a rare, autoimmune disorder, characterized by connective tissue alterations and vascular abnormalities. Given the significant morbidity and mortality associated with dynamic skin fibrosis and visceral organ involvement, it is important to formulate an accurate diagnosis from the early stages of the disease. However, either as a result of the inefficiencies and gaps in the health care system or due to cognitive errors, the correct diagnosis of this condition is frequently missed or delayed, with detrimental consequences to the patient's quality of life.

Case presentation: A 38 years old woman was admitted in the Rheumatology Clinic (Cluj-Napoca) because she accused: arthralgia of the knees, metacarpophalangeal joint, stiffness of the right hand, puffy hands, severe fatigue, significant weight loss.

For the last 3 years was previously treated (in a local hospital) with hydroxychloroquine, sulphasalazine, antibiotics and anti-inflammatory drugs, on the grounds that her symptoms were a manifestation either of rheumatoid arthritis, seronegative spondyloarthritis or reactive arthritis. Unfortunately, her state worsened significantly under therapy. She was then referred to the Rheumatology Clinic where, after de clinical examination of the patient, the sclerodactyly, Raynaud phenomenon and thickened skin on the face and forearms was observed and the suspicion of Diffuse Systemic Sclerosis was raised. Capillaroscopy demonstrated giant capillaries and microhemorrhages and, in addition, anti-SCL-70 antibodies were highly positive, thus certifying the diagnosis.

Conclusion: One of the essential steps to improving patient care is establishing the correct diagnosis. In this case, all necessary criteria (according to American College of Rheumatology classification criteria) were present upon her first admission in the local hospital. However, due to inadequate clinical reasoning and because several investigations (capillaroscopy/HR-CT) were not available there, her diagnosis was delayed.

Particularities: The patient presented polyarticular synovitis of the metacarpophalangeal and proximal interphalangeal joints in a rheumatoid arthritis-like pattern, thus leading to the misdiagnosis of Diffuse Systemic Sclerosis.

Keywords: systemic sclerosis, medical errors, scleroderma lung disease

The therapeutic effects of mineral waters in renal diseases

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Mineral water therapy is recommended in digestive, chronic liver diseases, metabolic, renal disorders. Drinking treatment is a major component of hydromineral diuresis therapy and consists of mineral water ingestion in the spa pump room. Renal lithiasis is an important problem of contemporary pathology. It has a high incidence among the active population, with many recurrences, complications, and a long duration of temporary work incapacity. Administered as an internal treatment, mineral waters first influence digestive system functions; after absorption, they influence water and electrolyte metabolism and the renal system by acting on the renal parenchyma, urinary tract, urine composition. Mineral water treatment in renal diseases can be indicated for prophylactic purposes in patients with conditions favoring renal lithiasis or urinary infections, patients with a history of 1-2 renal colic episodes or urinary infections, or for therapeutic purposes in patients with renal or urethral lithiasis with a permeable urinary tract, chronic urinary infections, chronic glomerulonephritis, gout, hyperuricemia. The dose must be adapted to urinary excretion possibilities, in order to obtain an optimal diuretic efficiency, compatible with absorption, circulation, urinary excretion conditions. Unlike drug therapy, which is sometimes accompanied by side effects, crenotherapy, if administered correctly, only very rarely causes side effects. Mineral waters administered as an internal treatment are not active in single doses; their effect becomes apparent after administration for 20-30 days. In Romania, there are 15 spa resorts for the treatment of renal diseases. The natural therapeutic factors used for internal spa treatment in renal diseases are: hypotonic oligomineral waters, hypotonic sulfur, calcium, magnesium, chloride oligomineral waters, hypotonic carbonated mineral waters, hypotonic alkaline mineral waters, and sedative bioclimate. The recommended spa resorts are: Olănești, Călimănești, Căciulata, Slănic Moldova, Băile Tușnad, Sângeorz Băi, Vatra Dornei, Herculane, Tinca, Borsec.

Hypertension – effects of a spa resort in therapeutic approach – a case report

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Introduction. Essential arterial hypertension (AHT) is one of the most frequent diseases associated with an increased incidence of cardiovascular mortality. Changes in lifestyle, along with drug treatment, are recommended for prevention, treatment and control of arterial hypertension. Spa resorts represent a favorable organized environment creating the conditions required for learning the main elements of a primary and secondary prevention program.

Material and method. Patient G.T., male, aged 56, with a diagnosis of essential AHT stage II, type 2 diabetes mellitus, mixed dyslipidemia, was included in the “Covasna Model” residential cardiovascular rehabilitation program, at the Cardiovascular Rehabilitation Hospital in Covasna. The patient was clinically and paraclinically assessed by BP measurement, ECG, exercise test, Holter ECG, blood pressure monitoring/24 hours,

determination of the ankle-arm index, echocardiography, pulse wave evaluation, central BP at admission and discharge. The cardiovascular rehabilitation program consisted of air therapy, climate therapy, CO₂ baths, mofettes, supervised and dosed physical training, drug treatment, counseling regarding lifestyle changes, electrotherapy.

Results. An improvement of clinical and biological parameters, as well as an increased adherence to drug treatment and lifestyle changes was observed.

Conclusion. Through its specific natural factors, the spa resort plays a determining role in the therapeutic approach of patients with hypertension.

The role of physical activity and sport in oncology

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A data report was published on the combined action of physical activity and sport in cancer patients, on the one hand, and the improvement of physiological parameters, survival and biological mechanisms underlying these effects, on the other hand. The practice of physical activity and sport during cancer disease alters fatigue and quality of life parameters, and reduces the symptoms of depression. Also, there is an association between the practice of physical activity and sport and general and cancer-specific survival, particularly after breast cancer, colon cancer and prostate cancer. These benefits seem to be mediated through an alteration of circulating estrogen, insulin and IGF-1 levels and a decrease of insulin resistance, through changes in adipokine secretion and a reduction of chronic inflammation by low cytokine levels. There are some obstacles to the practice of physical activity. These obstacles are mainly related to the fear of pain induced by physical activity and excess of weight. These physical activity and sport programs cannot be offered to all patients, because many contraindications exist, of which some are present at the initial visit and others occur during disease management, being either caused by disease progression or related to iatrogenic effects. While the benefits of physical activity and sport among cancer patients are obvious, many problems related to clinical and biological aspects are still under observation.

Home-based cardiac rehabilitation versus center-based cardiac rehabilitation

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Cardiovascular diseases represent the most common global cause of mortality. Traditional rehabilitation centers provide individual programs after cardiac events for prevention of future cardiac diseases and recovery. Home-based cardiac rehabilitation programs have been introduced in the attempt to widen access and participation. This updated review supports the conclusions of the version prior to this analysis, which shows that home-based cardiac rehabilitation and center-based cardiac rehabilitation seem to be equally effective clinically and in terms of quality of life improvement in patients at low risk after myocardial infarction, revascularization or cardiac failure. This finding, along with the lack of evidence of significant differences in health care costs between the two approaches, supports the continuous expansion of evidence-based home-based cardiac rehabilitation programs. The

choice to participate in a traditional center-based supervised program or in a home-based rehabilitation program should reflect the patient's preference. Additional data are required to see whether the short-term effects of home and center-based cardiac rehabilitation reported by these studies can be confirmed in the longer term. A number of studies have failed to provide sufficient details to assess the risk of subjectivity.

Pain patches for self-treatment in musculoskeletal conditions: an overview

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The management of musculoskeletal disorders expects both pharmacological and nonpharmacological approaches. A variety of health products are available for associated pain condition, including systemic and topical analgesics and antiinflammatory drugs as well as some alternative products (medical devices). The topical preparation in various dosage forms (gels, creams, lotions, ointments, patches) are often used in order to minimise the incidence of systemic adverse effects. Particularly, musculoskeletal pain often is self-treated using various nonprescription drug therapies or medical devices. Present paper discusses the available patches or „plasters” formulation (OTC and medical devices) as options for self-treatment of pain from musculoskeletal disorders. The most commune medicated adhesive patches are non-steroidal anti-inflammatory drugs (NSAIDs) and counterirritant patch. Over the last decade, an increasing number of patch delivery system for herbal drugs have become also available for treatment of pain in various musculoskeletal conditions of rheumatic or non-rheumatic origin. On the base of the use of heat and cold therapy as a non-pharmacological strategy, to provide pain relief and promote soft tissue healing, a number of “heat and/or cold products” have been available on the market, without a prescription. A typical air-activated patch is designed to provide continuous low-level therapeutic heat. Other devices are available for cold-therapy, including disposable and reusable cold packs, wraps and compresses. For each of these health products was evaluated not only the action mechanisms, but also the physiological effects and the therapeutic benefits. The clinical and pharmacokinetic data for medicated patches support the topical effect of this formulation, without a systemic effect. The used of heat and cold products are generally based on empirical experience, with limited evidence to support their efficacy in clinical practice. But all of them are often use as self- treatment due for their temporary relief pain symptoms, good safety profile and better patient compliance.

Side effects of biological therapies in rheumatic inflammatory diseases

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Introduction: The main sources of cytokines in chronic inflammatory rheumatic disease are the macrophages, fibroblasts, endothelial cells and chondrocytes; cytokines synthesized by lymphocytes are present in trace amounts or are completely missing.

The most important proinflammatory cytokines are IL-1, TNF α , IL-6.

Methods: We investigated the side effects of biological therapy on patients admitted to our service in the period 2013 - 2015, diagnosed with ankylosing spondylitis and rheumatoid

arthritis. Biological therapy has included inhibitors of TNF α (Humira, Enbrel, Remikade) in patients in different stages of evolution of the disease.

Results: The main side effects of biological therapy were the respiratory tract infection, cystitis, fever, septic arthritis, uveitis, bleeding at the injection site, reactivation of hepatitis B.

Conclusions: Despite the side effects that may occur biological therapy, it remains the first option in rheumatic inflammatory diseases accompanied by severe osteocartilagenous destruction and unresponsive to DMARDS.

Keywords: Cytokine, biological therapy, arthritis, DMARDS.

Percutaneous osteosynthesis with a Herbert screw – a therapeutic alternative in scaphoid carpal bone fracture

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Introduction: The aim of this study is to present a minimally invasive surgical approach for the treatment of scaphoid carpal bone fracture (osteosynthesis with a Herbert screw), compared to classical conservative treatment used in Romania (immobilization in an ABP plaster splint with the thumb in abduction and a collar on the proximal phalanx of the thumb) for 12 weeks.

Methods: A young patient (aged 21) with moderate pain in the radiocarpal joint of the right hand, below the base of the first metacarpal bone, aggravated by movements of the thumb and supination of the arm against resistance. Radiography of the joint in 4 planes established the diagnosis of unstable horizontal oblique fracture of the scaphoid bone, in the right hand. Operative technique: A minimally invasive technique was used. The patient's right hand is in hyperextension with the RC joint leaning on a support (dressing roll). The operator maintains hyperextension with the left hand and with the right hand places the thin 1-mm diameter K-wire, under Rtg-TV control. The wire fitted to the motor is introduced from distal to proximal direction, under an angle of 30 degrees, and its advancement into the first fracture fragment is visualized on the monitor screen. Gradually, the wire entrance angle is changed, being increased to 45 degrees if necessary, in order to bring the displaced fragment back to the correct position. If anatomical reduction has been performed, the tip of the second fragment is also fixed, then the correct placement of the wire in all planes is checked on the screen, by slowly rotating the hand from supination to pronation and back. If the wire is correctly placed, it will traverse the scaphoid bone up to the intra-articular space. A small incision of about 1 cm is cut at the wire entrance site, and through the wire, a screwdriver is introduced and a Herbert screw is fitted, which should traverse the scaphoid bone from one end to another, and its head should be buried in the bone. The positioning of the screw in all planes is rechecked, then the wire is extracted. Compressive dressing. A recent, well-reduced and osteosynthesized fracture does not require postoperative immobilization; however, since the majority of interventions are performed in several days-old, usually complicated fractures, as an additional safety measure, an ATG-ABP splint can be placed, with the thumb in extension and a collar up to the second phalanx of the thumb, for a short period of 2-3 weeks.

Results: Postoperative radiography evidences an anatomical reduction in the fracture focus and a good compression of fragments using the Herbert screw. The patient will be able to perform flexion-extension of the phalanges of the 4 fingers, except for the thumb, starting

with the second postoperative day. At 2-3 weeks from removal of ATG-ABP, kinesiotherapy and occupational therapy will be initiated for hand function recovery.

Conclusions: 1. Any suspected scaphoid bone fracture should be investigated radiologically in at least 3 planes. A negative result does not completely exclude a fracture, which is why radiological examination should be repeated at 7-10 days.

2. In case of a fracture with a surgical indication, anatomical reduction of fragments and good compression with a Herbert screw ensure a high rate of consolidation for this type of fracture.

3. Percutaneous osteosynthesis with a Herbert screw significantly shortens the postoperative immobilization period, as well as the recovery period.

Romanians at the Dead Sea

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Introduction. The Dead Sea has a unique geo-climate and water characteristics. Nothing you read and heard about it prepares you for the real experience.

Aim. 1. To present and analyse the effect of one visit at the Dead Sea of a group of Romanian pilgrims (1 month ago) and a friend's family (6 years ago). 2. To recommend instruction for tourist bathers!

Material and Method. Retrospective analysis of:

- a spontaneous experiment of our group of 22 pilgrim bathers (9 males and 13 women),
- the story of a friend's family (her with leg pain and her husband with psoriasis), and
- a tragic death (of an important public personality) published in newspapers just at the end of writing this abstract (these days).

Results. The pleasure and the curiosity to experience a bath and the mud of Dead Sea were specific and amazing (we did not want to take a shower after). Our feelings accompanied by medical knowledge lead to significant information.

Conclusions.

1. The experience was unique. Completely unexpected effects of the water and mud on the skin: oily, exudative, silky, not salted, not dry skin. Persistent adherence of mud around the nails. Oil on clothes, without discoloration.
2. In the friend's family: five years without re-emergence of psoriatic lesions, and the bathing calmed the leg pain.
3. Three persons in our group felt ocular discomfort because of the water. One woman suffered the aggression of water in the nose and mouth too, and she needed help.
4. Two floating persons needed help to get upright. I had high buoyancy in fresh water, but I anticipated the risk; I am happy because I did not try floating in the Dead Sea.
5. Only one clever 50-year-old man swam on face and back, and found it easy to switch.
6. Even the active research on internet did not advise us about the possible fatal risk of salt-water induced laryngeal-spasm that I anticipated, confirmed by a recent death in Dead Sea of an important Romanian personality. I regret that even now the available information ignores the reality, and I think the medical authorities may inform the people about the potential risk of bathing in the Dead Sea.

A balneary course proposal

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Introduction. The balneary course is an optimal period of time to include a new technique such as the Reconnective Healing of Dr. Eric Pearl.

Aim. To argue why this procedure may be very useful in a balneary course. To describe the process and to estimate the results.

Material and Method. The patient and the practitioner need a simple and comfortable room with a massage-table and some space around it.

“Your healing will come in a form you’ve not even dreamed of - one which the Universe specifically has in mind for you” promised Dr. Eric Pearl. The practitioner may be a doctor, a chiropractor, a kinesiotherapist, a nurse, etc. trained in the Reconnective Healing procedure. Duration is adapted to each case (more than 1 minute). One to three sessions may be necessary. Both the patient and the therapist feel the energy modulated by diseases and the healing process in very different ways (sensations especially in the hands).

Results. It would be wonderful for all of us to be healthy forever. But the results depend on many unknown factors, and some anticipated: intention, relaxation, feeling of energy, the patient’s open attitude to the rehabilitation, absence of attachment to the results (sterile obsession to healing), etc. Love and humility, prayer, faith, unity with the Divine Energy of creation are the main instruments. We can realise the healing process from a distance, like Dr. Eric Pearl, Dr. Richard Gerber, Richard Gordon, and the others.

Conclusions.

1. There are different possibilities to achieve the necessary states for recovery, but the Reconnective Healing of Dr. Eric Pearl is very easy and very accessible for a balneary course with only 1 – 3 short sessions. These techniques are often “revelations” or observations of facts and the authors cannot explain all the mechanisms of healing.
2. The published results may be validated by our experience, and we must verify the effect of this procedure, first, and create our own expertise.
3. There are therapeutic interventions that offer more than we expect, with qualitative results like in General Remodelling that I previously described. We live in the infinite energy of the Universe, and we must learn to use it. Similarly, the Saints and sacred places determine miracles, by a sort of Reconnection. Even the sleep – I think – is a natural and vital way to access and to reconnect to the energy of life.

The role of balneotherapy in patients with type 2 diabetes mellitus and hypomagnesemia

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Introduction. Since 1940, studies have shown a significant association of hypomagnesemia (serum magnesium <0.7 mmol/L) with type 2 diabetes mellitus. Insulin resistance is a key element in triggering the pathogenesis of diabetes mellitus. Magnesium plays an essential role in the body, in different molecular mechanisms; thus, it contributes to energy homeostasis, a cofactor of more than 300 enzymatic reactions activating biochemical reactions, protein synthesis, the degree of stability of the DNA molecule, neuromuscular excitability and membrane conductivity, the vasoregulation effect, important implications in carbohydrate metabolism.

Our **aim** is to demonstrate that mineral water therapy, in association with diet and antidiabetics, can be recommended in the treatment of mild diabetes mellitus forms.

Material and method. Studies show that the prevalence of hypomagnesemia in type 2 diabetes mellitus ranges between 14-48%. Early signs of magnesium deficiency are non-specific and include inappetence, nausea, vomiting, fatigue, lethargy. More pronounced signs of insufficient magnesium intake manifest by neuromuscular hyperexcitability, such as tremor, carpopedal spasms, muscular cramps, tetany and generalized seizures or cardiac arrhythmia. The most frequent method to assess magnesium deficiency in medical practice is to measure serum magnesium concentration, although serum values are not correlated with magnesium concentration in the body. The distribution of magnesium in tissues and biological fluids differs depending on age, sex, physiological status, etc. The body contains about 24-28 g magnesium. Bone is the most important magnesium store. Only 1% of all magnesium content in the body is present in extracellular fluid and only 0.3% is found in the serum. There is a vicious circle which explains the contribution of hypomagnesemia to insulin resistance, and insulin resistance in its turn leads to hypomagnesemia. Literature studies evidence a number of factors that can trigger hypomagnesemia in type 2 diabetes mellitus. The molecular mechanisms of magnesium ions on carbohydrate metabolism are extremely complex, and the target organs and tissues of molecular signaling pathways are muscles, liver cells and adipocytes (magnesium on insulin sensitivity), beta pancreatic cells (magnesium on insulin secretion), and the renal distal convoluted tubule (insulin resistance decreases magnesium reabsorption). Guidelines recommend daily magnesium supplementation values between 240-480 mg (10-20 mmol). Exogenous magnesium intake in about 10% of cases is represented by water ingestion. Important dietary magnesium sources are green vegetables, walnuts, seeds, integral cereals, fruit, fish, meat. The hypoglycemic effect of alkaline water treatment has been known for a long time. The mechanism of action consists of an increase in hepatic glycogenogenesis and a potentiation of insulin action. Calcium-rich sulfurous mineral waters induce a decrease in glucose tolerance. Magnesium-rich sulfurous mineral waters reduce glycemia in almost 2/3 of patients, through reflex stimulation of insulin secretion.

Results. Balneotherapy is recommended for therapeutic and prophylactic purposes in diabetes mellitus, in association with a balanced diet, oral antidiabetics/insulin. Spa resorts with calcium and magnesium-rich sulfurous alkaline mineral waters such as Calimanesti, Caciulata, Olanesti, Slanic Moldova, Sangeorz Bai, Borsec, Bodoc, along with therapeutic factors (climate, hydrokinesiotherapy, physiotherapy), play an important role in magnesium homeostasis.

New indications on extracorporeal shock wave therapy – scoliosis

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Introduction

Extracorporeal Shock Wave Therapy (ESWT) is a mechanical treatment based on high-intensity soundpressure waves characterized by high positive pressure moments indicated in myoskeletal pathologies like: painful shoulder, tennis elbow, heel spur, insertional pain, chronic tendinopathy, calcifications, jumper's knee, hip pain, medial tibial stress syndrome, and according some researches, spasticity. Scoliosis, especially those with high degree, with retractions of the muscles in their convexity, who received surgeries (including metal) or not, could benefit of ESWT.

Material and Methods:

In this study were retrospectively analyzed 16 patients, hospitalized between February 2015 – February 2017, in the Neuro-muscular Clinic Division from Emergency Hospital BagdasarArseni, 6 male and 10 female, age between 31 and 78 years old, diagnosed with mild, moderate and severe scoliosis; they received ESWT one session/ week, two sessions totally - those with mild scoliosis, 2-3 sessions/ week, 4-6 sessions totally in moderate scoliosis, and 4-5 sessions/week, 8-10 session totally, in severe scoliosis. The formula we used is: 2000 shocks, 20 MPa, 10 Hz frequency, BURST mode (to exclude endothermic effect, eventually). We evaluated pain on visual analogical scale (VAS), we used Oswestry Low Back Pain Disability Questionnaire, and also SF-36 Questionnaire.

Results:

The pain decreased with an average of 6.37 points on VAS scale: mean at admission 7.18, mean at discharge 0.81, $p=0.00$; functionality, measured by using Oswestry Questionnaire, was statistically significant improved: mean at admission 35 points, mean at discharge 7 points, $p=0.001$. Scoliosis affects general health of studied patients (mean 50.37), physical functioning (mean 54.37), generates pain (mean 38.9), affects well-being (mean 62.81), but doesn't decrease patient's energy or induces fatigue (mean 74.06)

Discussion

Antalgic effects were noted even after first session of ESWT, but significant analgesia was established after 2-3 days secondly first ESWT application or, in some cases, at the end of entirely therapy. No significant adverse reactions were observed.

Conclusions

ESWT generates significant statistical results regarding the decrease of pain and functionality. Scoliosis - which implies contractures or painful and old retractions of some muscles - represents a new indication for ESWT.

Key words: shockwave, scoliosis

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The efficacy of balneokinetic rehabilitation treatment in the post-traumatic hip

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Introduction. Post-traumatic lower limb and particularly hip sequelae represent one of the many causes of temporary or permanent work incapacity, because this joint plays an important role for statics and locomotion. The methodological approach to rehabilitation of these disorders is the topic of this paper, the main objective of complex rehabilitation therapy being the patient's socio-professional integration.

Aim. To determine the efficacy of balneokinetic therapy in post-traumatic hip disorders.

Material and method. The case study of a young male patient aged 23 with post-traumatic hip sequelae following an airplane accident, present in our clinic in the period April-October 2014, who attended a complex rehabilitation program consisting of drug therapy, massage, kinesiotherapy and hydrokinesiotherapy. Functional evaluation was performed at admission, at 4 months, and at discharge.

Results. An obvious improvement of joint mobility and muscle recovery was obtained.

Conclusions. The time required for recovery and socio-professional reintegration depends on collaboration between the patient and the rehabilitation team, as well as on the prompt and correct referral of the patient by the orthopedist to rehabilitation services.

The role of kinesiotherapy in the prophylaxis/treatment of vertebral static disorders in children aged 11-14 years

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Introduction. Vertebral static disorders represent a current health problem for children, particularly for the prepubertal age group ranging between 11-14 years. The aim of this paper is to draw attention to the prevalence of vertebral static disorders in this age group and their potential consequences in adolescence and adulthood.

Material and method. The study was conducted in 120 children, over a 6-month period. Anthropometric measurements (height, weight, chest circumference) were performed. Functional status was assessed based on questionnaires at 3 months. The study group included 58 children who attended a kinesiotherapy program every day, and the control group included 62 children who attended a kinesiotherapy program 1-2 times a week.

Results. In children of the study group, an improvement in general and segmental alignment, as well as toning of paravertebral and abdominal muscles was observed. Also, children in this group showed an improved concentration and adaptation capacity during school activities.

Conclusions. Attending a continuous, step-by-step, individualized kinesiotherapy program can improve the functional status of children, preventing/treating vertebral static disorders.

Measurements of radon concentration in salt mines for speleo-therapeutic treatment and balneo turism

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Keywords: Speleo-therapy, Balneo tourism, Salt mines, Radon concentration, Radiometric measurements.

Measurement of radon is of interest both for the health risk assessment and development of radon therapy in enclosed spaces like as caves, mines and spas. In Romania, radon therapy is not in use, yet. The development of this treatment method in mines from our country involves primarily, the evaluation of radon levels in the salt mines. In this paper, the results of radon gas measurement that were performed at Ocna Dej, Turda and Cacica salt mines (Romania) are presented. The radon measurements were performed using system radon monitor Pylon AB-5. The average radon concentration was found to be between 9.14 ± 5.10 Bq/m³ and 31.70 ± 2.76 Bq/m³. These radon levels are lower in comparison to those reported for mines, caves or spas in other countries where radon therapy and speleotherapy is frequently in use. Radon concentration and environmental conditions from salt mines specified are suitable for therapeutic applications.

Turda, Cacica and Ocna Dej salt mines' microclimate and low radon concentration levels offers optimal conditions for the implementation of various treatments and prophylaxis therapies of respiratory diseases through gradual and increasing exposure in physiotherapy sessions combined with physical exercises. Exposure to salt mine microclimate has beneficial effects on adult people with occupational risk factors, as well as for children, youth and adolescents for improving the respiratory function. Future development of speleo-therapy and possibly radon therapy in Romania must consider the results of this paper as a potential solution to optimize health services and raising quality of life in Romania.

The analyzed environmental conditions and recorded low levels of indoor mean radon concentration: 12.6 ± 0.79 Bq/m³ (Ocna Dej salt mine), 6.9 ± 0.39 Bq/m³ (Turda salt mine), and 66.5 ± 4.76 Bq/m³ (Cacica salt mine), demonstrated the best suitability of the investigated three salt mines in Romania for speleotherapeutic treatment, balneo turism and applications.

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Speleotherapy and balneary tourism in Salina Turda

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Key words: salt mine, salt extraction, tourism, speleo-therapy, respiratory rehab

The presence of a large salt deposit in the north of Turda had influence the geomorphology and the biodiversity of the area, but in the same time had generated a multitude of natural resources used today in balneal-therapy.

Turda Salt Mine is the result of salt extraction in the period 1690 – 1932 and represents an ensemble of galleries and underground chambers of big dimensions.

The salt mine had become a touristic attraction in 1992.

Between the ensemble of mining works are conserved and can be visited conical and parallelepipedic shape exploitation chambers beside the technical works used for miners circulation and salt transportation.

Beside the spectacle offered by visiting the old exploitation chambers, Turda Salt Mine shows interest also as a balneary destination.

The therapeutic properties of the underground environment differ from one saline to another and it has been found that there are even differences between the different areas of the same mine.

Research on the healing effects of the microclimate of salt for the treatment of respiratory diseases were carried out in several stages. Studies that aimed at assessing the physical-chemical and microbiological parameters of the underground environment. It followed the experimental studies made on batch of laboratory animals with induced asthma and in the end the study was made on human patients. The results have been statistical interpreted and was the basis for the conclusions looking at the possibility of using Turda Salt Mine in therapeutic purposes.

The latest studies aimed at assessing the changes induced in the Turda Salt Mine underground from the intense tourist traffic. The research was extended to the Joseph mine environment and aimed at determining the physical-chemical and microbiological parameters of this. Purpose: opening a new department of speleotherapy.

Salina Turda is a modern balneal-touristic destination, with specific characteristics which completes this type of European network.

Speleotherapy, "speleotherapeutic tourism" and halotherapy in different countries and in romania; multidisciplinary scientific research, status and perspectives.

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The International Speleotherapy Commission, founded in 1965, through multidisciplinary scientific research and the 15 international symposia in different countries, laid the foundations for speleotherapy - a new field of research, use for medical purposes (as complementary therapy) and "speleotherapeutic" tourism, as well as discussing scientific principles for approaching halotherapy.

The purpose of the paper is to present some elements of the status of speleotherapy and halotherapy and the results of some scientific researches, including the following:

1. Speleotherapy and halotherapy, origin and historical development data.
2. Speleotherapy and halotherapy - recognized complementary methods of therapy of patients with chronic respiratory and skin allergic and inflammatory diseases.
3. Speleotherapy centers with underground sections in salt (NaCl) mines and karst caves or other origin (list, table); The appearance and development of speleotherapy centers with or without surface treatment bases (hospitals, therapeutic sections, day care units - within national or private associations or societies).
4. The appearance of the so-called "speleotherapy centers" in salt mines or caves without scientific studies and justifications of the curative effect and also without specific indications and contraindications.
5. The appearance and development of halotherapy in surface spaces with "modeled" salt mine environment - with the purpose of using this complementary method of therapy in the localities that do not benefit from speleotherapeutic centers in salt mines or caves, as well as for implementation in hospitals, polyclinics and other medical centers.
6. Procedures and cure of speleotherapy and halotherapy. Benefits of speleotherapy and halotherapy, as well as "speleotherapeutic or halotherapy" tourism. The "risky" therapeutic effect of speleotherapy and halotherapy.
7. Indications and contraindications for speleotherapy and halotherapy.
8. The appearance of the so-called halotherapy centers / rooms of halotherapy in hotels with or without treatment facilities and used for relaxation, fitness, etc.
9. Perspectives of speleotherapy and halotherapy.

Hydration and health in balneary and non balneary conditions

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Water constitutes approx 55–65% of body weight, varying somewhat with age, sex, and amount of body fat, and, therefore, constitutes the largest single constituent of the body. Total body water is distributed between the intracellular fluid and the extracellular fluid compartments. Estimates of the relative sizes of these two important pools differ significantly depending on the tracer used to measure the extracellular fluid volume, but most studies in

animals and man have suggested that 55–65% (or just under two-thirds) of total body water resides in the intracellular fluid, and 35–45% (or slightly more than one-third) is in the extracellular fluid. Approximately three fourths of the extracellular fluid compartment is interstitial fluid, and one-fourth is intravascular fluid (blood volume). Water metabolism represents a balance between the intake and excretion of water. Each side of this balance equation can be considered to consist of a “regulated” and an “unregulated” component, the magnitudes of which can vary quite markedly under different physiological and pathophysiological conditions. The unregulated component of water intake consists of the intrinsic water content of ingested foods and the consumption of beverages, whereas the regulated component of water intake consists of fluids consumed in response to a perceived sensation of thirst. Similarly, the unregulated component of water excretion occurs via insensible water losses from a variety of sources (cutaneous losses from sweating, evaporative losses in exhaled air, gastrointestinal losses), as well as the obligate amount necessary to excrete metabolic solutes. In effect, the regulated components are those that act to maintain water balance by compensating for whatever perturbations result from unregulated water losses or gains. amount of water that the kidneys must excrete to eliminate solutes generated by body metabolism.

Maintenance of sodium homeostasis requires a simple balance between intake and excretion of Na⁺. As in the case of water metabolism, it is possible to define regulated and unregulated components of both Na⁺ intake and Na⁺ excretion. Unlike water intake, however, there is little evidence in humans to support a significant role for regulated Na⁺ intake, with the possible exception of some pathological conditions. Consequently, there is an even greater dependence on mechanisms for regulated renal excretion of sodium than is the case for excretion of water.

In this study we show some experimental data of water and sodium balance in rat water immersion as experimental model for mineral water bathing for therapeutic purposes.

Effects of the thermal factor in balneotherapy

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Therapeutic response in thermotherapy is difficult to quantify, varies from one patient to another, and depends on the dosage of the thermal factor and the reactivity of each patient. One of the main effects of the application of the thermal factor to the entire body is the analgesic effect, by a direct mechanism, through a decrease in the sensitivity and excitability of neuromuscular spindles, as well as by an indirect mechanism, through an improvement of circulation, through a decontracturant and antispastic effect. The body reaction following application of the thermal factor is assessed by: dermovascular reaction, heart rate, respiratory rate, the intensity of the patient's subjective reaction, which is pain in the case of cold application and burn in the case of hot application. It is considered that hot applications increase respiratory rate, probably through central dysregulation, while cold applications, below 18-28°C, cause extensive breathing, which increases the duration of inspiration and expiration. The thermal effect of heat application consists of an increase in heart rate, cardiac work, and a decrease in both systolic and diastolic blood pressure. Hot baths can lead, according to some studies, to hemoconcentration and minimal coagulation activation, to a decrease in the activity of plasminogen activator inhibitor type 1. Water immersion up to shoulder level at various temperatures (25°C, 34°C, 40°C) showed no

significant effect on cardiac output at 25°C compared to 34°C, but at a temperature of 40°C, a significant increase of cardiac output was observed. According to a study, carbonated water immersion reduced the level of plasma free radicals, with an increase in antioxidant levels, and induced vasodilation. Water immersion up to shoulder level at different temperatures (25°C, 34°C, 40°C) led to an increase in metabolic rate and oxygen consumption only at 25°C. Also, it was found that immersion in the bathtub for 10 minutes induced an increase in pulse and finger temperature, improving the sensation of well-being and decreasing anxiety. Immersion in carbonated water is followed by an activation of the human parasympathetic system. A thermal effect on muscles, metabolism, skin and the endocrine system is also present.

Peloid chemistry and aquatic pollution

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Peloid is natural or artificial mud obtained by mixing water (thermal, sea or lake/river) with inorganic, organic or mixed materials, derived from geological or biological processes. Such mud is used for packs or baths. Peloids include muds, silt, peat or moulds. The biological and therapeutic effects are fundamental and are obtained due to: anti-inflammatory, analgesic, myorelaxant and trophic effects; also by increased resistance to exogenous and endogenous pathogens and stimulating effect on many metabolic processes. Peloid treatment is especially good for primary and secondary osteoarthritis or problems related to osteoporosis, herniated discs, ankylosing spondylitis, common lumbar pain, periarthritis, extra-articular rheumatism, tendonitis and fibrositis. Mud therapy is suitable for peripheral vessel disease, such as phlebopathy, for some skin conditions (ulcers and skin dystrophy) and gynaecological issues.

The organic fraction of mud is represented mainly by natural humic substances, a heterogeneous mixture, which result from a variety of organic compounds that have been introduced into the environment and undergone humification by microorganisms and physicochemical factors. The effect of the process of humification depends on the chemical composition of organic residues, the number and diversity of microorganisms, temperature and pH, as well as other factors. Humic substances are defined on the basis of differences in solubility. Fulvic acids dissolve in water, acid, and alkali. Humic acids, soluble only in alkaline solutions, are precipitated in the form of gels in an acidic reagent. Humin remains as the residuum.

The chemistry of humic substances is influenced by functional group heterogeneity and variations in molecular size. Among environmental pollutants which interact with humic substances, endocrine-disrupting chemicals deserve specific attention. They are able to penetrate into exposed biota and alter their endocrine system by mimicking or counteracting natural hormones. Their effects range from sterility to mental deficiencies and to a variety of development defects. They may be metabolically active at extremely low concentrations, sometimes at the nanomolar range. A wide range of chemical substances may act as endocrine disruptors, including synthetic and natural hormones, plant metabolites, pesticides and herbicides, polychlorinated biphenyl and some of their derivatives, and many aromatic compounds like alkylphenols, phthalates, polychlorinated organic compounds and polybrominated organic compounds.

An experimental study on the hepatoprotective effect of carbonated mineral water in Băile Tuşnad on alcoholic liver disease

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Introduction. The frequency of hepatobiliary disorders is currently increasing, being favored by increasing environmental pollution, by consumption of alcohol and synthesis drugs. Mineral water from spring 3 in Băile Tuşnad, with a total mineralization of 3351.0 mg/l, is recommended in chronic liver diseases.

Aim. The study was aimed at monitoring possible changes in the liver following ethyl alcohol administration in rats, as well as differences in the anatomopathological picture between animals drinking tap water and those drinking Tuşnad mineral water, after cessation of alcohol administration.

Material and method. The study was conducted in 25 white Wistar rats and lasted for 100 days. The animals were divided into 3 groups: a negative control group I – 5 animals; a positive control group II – 6 animals; an experimental group III – 14 animals. Group I animals were administered tap water (50-75 ml/day/animal) throughout the experiment, while groups II and III received 12% ethyl alcohol (12-15 ml/day/animal) during the first 70 days. During the last 30 days of the experiment, group II animals received tap water (50-75 ml/day/animal), and group III animals received Tuşnad mineral water (50-75 ml/day/animal). On day 70 of the experiment, 5 animals were euthanized (2 in group I, 1 in group II and 2 in group III), and on day 100, the remaining 20 animals were euthanized. From the euthanized animals, liver fragments in the form of 4 mm thick slices were collected for electron microscopic histological examination. This experimental study was conducted with the approval of the Ethics Committee of the University of Medicine and Pharmacy Cluj-Napoca, number 533/23.12.2015, as well as the approval of the Veterinary Health Authority no. 17/13.12.2016.

Results. In group I, a negative control, liver structure was normal. After alcohol administration, a stimulation of lipid synthesis and a decrease of protein synthesis capacity were observed. In some areas, small necroses were present. In group II, a positive control, the diminution of the action of alcohol in time and consumption of tap water allowed the maintenance of reversible alcohol-induced changes. The group treated with ethyl alcohol and Tuşnad mineral water showed a normal hepatocyte ultrastructure, an increased number of lysosomes, supporting a mobilization of the defense capacity of hepatocytes against alcohol intoxication.

Conclusions. These data suggest the fact that mineral water from spring 3 in Băile Tuşnad has hepatoprotective properties, through its capacity to diminish the toxic action of alcohol in hepatocytes.

De 'Quervain tenosynovitis- ultrasound guided corticoid injection is efficacious and cheap

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Background. De Quervain's tenosynovitis is a condition that causes wrist pain, can lead to dysfunction of the affected hand, low quality of life and implies sometimes important management healthcare costs. It is caused by impaired gliding of the tendons of the abductor pollicis longus and extensor pollicis brevis muscles

Objective. The study was designed to evaluate the efficacy of ultrasound (US) guided intra- tendon sheath injection in De' Quervain tenosynovitis in terms of health care costs at the outpatient clinic.

Patients and methods. Twentyfive consecutive patients clinically diagnosed with unilateral De' Quervain tenosynovitis attending the rheumatology outpatient clinic were selected according to previous clinical and therapy attempts history. Ten patients were naïve for any therapy at the moment of presentation in the rheumatology department and 15 patients were exposed to several conservative treatment protocols (NSAIDs, pain killers, splints, rehabilitation program for 10 consecutive days) and underwent already several specialists visits (emergency department, general practitioner, orthopedic surgeon and rehabilitation MD). Clinical and bilateral ultrasound evaluation of both hands was performed in all patients. Total time up to symptoms remission and management cost were calculated for each patient. Ultrasound guided intra-sheath corticosteroid, injection was performed in each patient after US diagnosis confirmation. Total health care costs and US guided injection efficacy (Pain VAS) / patient were calculated. Clinical evaluation after 3 month was performed in each patient.

Results. Out of 25 patients, 20 patients were diagnosed by ultrasound with De'Quervain tenosynovitis. Five patients did not show any inflammatory or structural damage at the level of the 1st extensor compartment and were excluded from the study. They underwent supplementary radiologic examination of the hands and cervical spine for differential diagnosis. Ten patients with de' Quervain tenosynovitis were naïve to any therapy (naïve group) with a history of symptoms lasting 18 ±10 days. Other 10 with US confirmation of de'Quervain tenosynovitis patients (refractory group) were exposed in the last 40-90 days to different NSAIDs and pain killers (exposure 30 ± 12 days, therapeutic dosage), 4 of them (40%) visiting both the orthopedic surgeon and rehabilitation MDs, and all (100%) finalizing a rehabilitation program of 10 consecutive days consisting of 2 or 3 specific procedures. US tendon compartment evaluation confirmed the clinical diagnosis only in 80% of the cases showing the higher US examination accuracy in inflammatory tendon pathology diagnosis in comparison to clinical examination. Out of 10 naïve patients, 7 patients responded after one single injection (clinical symptoms total remission) and 3 of them underwent a second injection after a 3 weeks interval achieving the same result. Apart from the splint application, no other supplementary treatment was needed for a total symptom remission confirmation. At 3 months clinical evaluation, the naïve group remained asymptomatic. In the refractory group, all 10 patients (100%) needed 2 CS injection attempts along with continuous splint application. After 3 months 50 % of the patients presented a clinical relapse of the symptoms. A comparative analysis between the health care costs for both groups showed a 6 fold higher treatment costs in favor of the naïve group. The time spent with the rheumatologist MD in the naïve group was 15 minutes / each visit and was significantly less ($p < 0.00001$.) in comparison to the refractory group

Conclusion. US tendon pathology is depicted with more accuracy by ultrasound evaluation; some authors consider US evaluation as the gold standard .US guided CS intra- tendon sheath injections may be more effective in terms of efficacy and health care costs in patients with acute and subacute inflammatory tendon pathology.

Speleotherapy in Romania, scientific research rol in Promotion of Romanian Salt Mines

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Abstract: Main therapeutic indications of salt mines and caves are represented by respiratory diseases, especially asthma. Asthma is a disease characterized by chronic inflammation of the airways which make them hyperresponsive and change in their architecture, a process called remodeling. To solve the existing problems in allergy, pulmonology and medical recovery field and for use of natural therapeutic factors in patient treatment with different pathologies, international scientific community reviewed the therapeutic properties of caves and salt mines. Our objective was to explore the effects of speleotherapy on cellular morphology and physiology of pulmonary and dermal fibroblasts obtained from tissues of Wistar rats, in normal and Ovalbumin challenged, "asthmatic" conditions. 60 Wistar rats of 75-100 g weight were divided in two lots: control and ovalbumin challenged animals. Ten animals of each lot were send to Cacica, Turda and Dej Salt Mine for 14 days and maintained in the salt mine medium, as in speleotherapy treatment. Pulmonary and dermal fibroblasts cultures were prepared from Wistar rat lung and respectively dermal tissue. The complex picture of results was analysed and explained through biological mechanisms comparing to the control cell cultures obtained from healthy, untreated Wistar rats. In this article, we describe the supposed biological mechanisms that explain the protective effects of speleotherapy. Speleotherapy induces changes on the morphology and protein expression of pulmonary and dermal fibroblasts *in vitro*, and these changes - by comparing with ovalbumin sensitised animals, supports the beneficial effects of speleotherapy.

Medical use of mud in balneotherapy

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Abstract: According to the definition of "International Society of Medical Hydrology", muds (peloids) are "substances formed under natural conditions under the influence of geological processes and which in finely divided and mixed with water are used in medical practice in the form of baths or local procedures.

Through its geographical location and the complex geological structure of the earth's crust, Romania has a valuable and varied pool of mineral waters, lakes, therapeutic mud and climatic zones, differentiated as a type from the mountain to the sea, which provides the premises for an effective spa treatment in various chronic conditions as well as objective possibilities for the individualization of the therapeutic forms at the clinical profile of each individual.

The mud is of soil or pasty consistency rocks, used as ancient remedies. Some beneficial effects of mud are known empirically from antiquity, others have been described and studied relatively recently, some are still in the state of summary explanation. Mud therapy is also called peloid therapy. Peloid therapy should be used only at the indication and under the control of the physician.

The most widespread therapeutic mud is the deposition of mud from salt ponds - sulphurous black mud, which forms at the bottom of the estuaries, bays and continental salty lakes.

Technical rules refer to exclusively natural substances of the soil and subsoil of Romania, geologically certified as useful minerals and recognized by the competent authority of the state as natural therapeutic substances by their quality, safety and therapeutic efficiency, in accordance with the requirements and the criteria of application Definition and classification.

Qualitative assessment of the resources of natural therapeutic substances begins by sampling at source and finalizes through their complex interdisciplinary characterization, elaboration of the indications and contraindications for valorisation by carrying out a complete pharmacodynamic study.

The complex interdisciplinary characterization of the natural therapeutic factors necessarily involves the interpretation of physico-chemical analyzes and microbiological examinations.

In the category of natural therapeutic substances, any substances belonging to the natural therapeutic factors of origin and occurrence exclusively natural, geologically certified as useful mineral substances and which, by their recognized properties, composition or scientific effects, are used in the treatment, amelioration and prevention of certain diseases or symptoms, as well as in restoring, correcting or modifying the functions of the human body.

Characteristics to define the qualities of natural therapeutic substances that can confer prophylactic and curative beneficial properties on balneary profiling should be assessed in accordance with international standards on the basis of scientific methods approved by the competent authority from the following points View: physical; chemical; Physico-chemical; microbiological; pharmacological; physiological; clinical; Geological and hydrogeological.

Samples under analysis must be true to the prospective, explored and exploited natural resource. The necessary analyzes and determinations are carried out in specialized laboratories, through the appropriate methodology of natural therapeutic substances and in close correlation with the requirements of pharmacodynamic experiments.

The analyzes made must make mandatory references to the components that give natural substances the efficacy of the therapeutic action as well as to the undesirable and toxic components.

Physical, chemical, and chemical quality assurance indicators should remain stable within the limits of natural fluctuations of geochemical genesis and not be affected by possible insignificant flow variations.

The stability of the mud quality both at the source and in the packaged state must be attested by a stability study carried out in accordance with the requirements of the legal rules. The quality-of-time stability study is mandatory for bottled / ground water bottled and in the case of peloids packaged or stored in mud households of treatment bases.

The scientific research on the therapeutic efficiency of the use of the mud from various spa resorts, especially Techirghiol, Sovata, Mangalia, Amara, Sarat Lake, Vatra Dornei, Turda, Govora, Geoagiu Bai, highlighted the main diseases that can be treated with mud, parameters which should be used for therapeutic efficacy and modalities of application of mud therapy (peloid therapy).

An optimal level of scientific research to current standards, then reflected in the promotion and marketing of tourism-centered tourist destinations, requires adequate funding, which is lacking in the last period.