FEMTEC

Nongovernmental Organization
In official Relations with World Health Organization (WHO)
Founded in 1937

THE 72° GENERAL ASSEMBLY
AND
INTERNATIONAL SCIENTIFIC CONGRESS
OF THE WORLD FEDERATION
OF HYDROTHERAPY AND CLIMATOTHERAPY
(FEMTEC)

THALASSA, THALASSA!

Xenophon (430-354 b.C.), Anabasis

Thalassotherapy and Thermal Medicine: a strategic association for health care, well-being, and local economic development

KHALKIDHIKI (Greece), October 16-20, 2019
Miraggio Thermal Spa Resort - www.miraggio.gr

THE 72° GENERAL ASSEMBLY
AND
INTERNATIONAL SCIENTIFIC CONGRESS
OF THE WORLD FEDERATION
OF HYDROTHERAPY AND CLIMATOTHERAPY
(FEMTEC)

THALASSA, THALASSA!

Xenophon (430-354 b.C.), Anabasis

Thalassotherapy and Thermal Medicine: a strategic association for health care, well-being, and local economic development

KHALKIDHIKI (Greece)

October 16-20, 2019

WORLD FEDERATION OF HYDROTHERAPY AND CLIMATOTHERAPY

F E M T E C

Website: www.femteconline.org

Founded in 1937, FEMTEC (the World Federation of Hydrotherapy and Climatotherapy) gathers the public and private institutions that represent Thermal Establishments in the respective Countries. At present it has more than 30 member Countries (either statutory or affiliated).
FEMTEC, based in Italy, is the **only** non-governmental organization (NGO) in the sector entertaining official relations (accreditation) with the **World Health Organization (WHO**).

The main purposes of the Federation include:

- representing and promoting world hydrotherapy before the different national and international institutions;
- promoting international cooperation;
- promoting shared studies, research, training, and experience in the sector.

FEMTEC has several Commissions (Medical, Tourism & Health, Technical, Economy & Technological Innovation, SPA Management, International Business Office) and a number of sub-commissions (Integrated Thermal Medicine, Complementary Medicine, Scientific Research) operating in the medical, economic, technical, and social sectors.

Institutional relations are also in place between the Federation and the European SPA Association **(ESPA),** the World Tourism Organization **(WTO),** the International Society of Medical Hydrology **(ISMH),** and the Global Wellness Institute **(GWI),** as well as other outstanding international organizations.

Its President is Professor Umberto Solimene (Italy) from the Milan University, one of the highest representatives of World Hydrotherapy.

FEMTEC has 4 permanent Training Centres: Italy (www.thermaecampus.it); Russia (in cooperation with the International Russian Academy of Tourism, www.rmat.ru); China (in cooperation with CHTA, http://www.femteconline.org); Tunisia (in cooperation with the Ministry of Health http://www.thermalisme.nat.tn/).

For information:
Ms. Natalia Chaurskaya, email: natmo@mail.ru (russian, french)
Ms. Simona Busato, email: simona.busato@libero.it (english, italian)

CONTENTS

PREFACE

"Thalassa! Thalassa!" "The sea, the sea!" A "loud cry" upon seeing the sea, so much dreamed of and longed for by the surviving veterans of the "retreat" (itinerary: Iraq – Trebizond, Turkey), known as Anabasis, after two years (401-400 B.C) of adventures, braving hostile populations, hunger, strain, snow, and frost. Written in the style of a modern news report by Xenophon, who fought himself alongside the ten-thousand Greek mercenaries.

Identify the possible synergies between two major therapeutic traditions (thalassotherapy and thermal medicine); propose a shared and scientifically, economically, and socially integrated action plan for health care, wellbeing, and local development; review the new, actual scenarios resulting from climate and environmental changes connected with health tourism: these are some of the main goals, themes, and objectives addressed during the 72nd Annual Congress of FEMTEC.

Thermal medicine, whose origins are at the very basis of human civilization, and the use of the marine environment for therapeutic purposes (thalassotherapy) developed in different ways. The former derived from the Greek-Roman culture as an organized approach, the latter from the 18th-century Anglo-Saxon one, even if Euripides (The Trojan Women) was the first to claim that "the sea washes away all men's illnesses."

However, in time and until this day several socioeconomic and cultural events have brought to confrontations, competition, and sometimes, misunderstandings between them.

This era of social networks and over-digitalization (smart watches, cyber-economy, health algorithms, etc.) has produced the so-called **"Metric Society"**, according to German sociologist **Steffen Mau**, where everything is measured and assessed. Life has been reduced to a checkbox, and people are assessed according to data, rather than as individuals.

The Economist (https://www.economist.com/books-and-arts/2019/02/23/life-and- society-are-increasingly-governed-by-numbers?sc_visitor=6990013637209690393249820042354907317) nicely describes this situation (*Life and Society are increasingly governed by numbers*).

The States themselves use such methods to present their performance to major international organizations in the best possible way.

If our Society is actually what it looks like, is there a role for therapies based on the scientific use of natural treatments?

And, if so, what are the proposed interventions and the possible solutions?

Facing these spreading phenomena, what can we expect for their future, also within national Health Systems, and with respect to their need for technological updates, human resources, research methodologies, data collection and analysis, the organization of hospitality, etc.?

The challenge will call for a reconciliation of new global socioeconomic and environmental conditions with the unique specificity of the thermal and thalassotherapic tradition defined by the therapeutic and environmental characteristics of the "genius loci" and **by the concept of the patient at the heart of care and "of recovery of the lost body.**" And, moreover, how can the growing demand for health be integrated with infrastructures allowing sustainable development and tourism?

Like for Society, skills and capabilities will have to change for Thermal Medicine and Thalassotherapy as well: while problem-solving will still be the most sought-after soft skill in 2020, critical thinking and creativity will also be important. The present challenges of modern and advanced societies can be summarized as **development, environmental, human, and personal sustainability.**

Ever since its foundation, 81 years ago, FEMTEC (www.femteconline.org) has been introducing innovative topics

for discussion and practical solutions. We believe that only a strategic alliance − competitive, yet not hostile − can lead to a successful outcome.

This year the **72nd Congress of FEMTEC will take place in Khalkidhiki,** in **Greece**, a Country of ancient cultural and historical traditions, where hydrotherapy is deeply rooted. Also known as **Khalkidhiki Peninsula**, Khalkidhiki is located in the North-East of **Greece**, in the region of Central Macedonia. Its 550 kilometers of **white beaches**, bordered by crystal-clear waters, and its ancient history make Khalkidhiki a true treasury of the **Mediterranean** sea.

Choosing the location and venue for the Congress is not just a logistic matter, but is also an opportunity to introduce a one-of-its-kind region, rich of unrivalled environmental, cultural, and thermal resources integrated into a unique geographic context. The **Miraggio Thermal Spa Resort - www.miraggio.gr - is an advanced model of integration among thalassotherapy, hydrotherapy, and medical wellness.**

The Congress offers a busy cultural agenda, including visits and professional meetings.

One session, in particular, will be dedicated to relations between climate change and tourism economics on occasion of the celebrations for the 50th anniversary of the foundation of the Centre for Research on Medical Bioclimatology of the Milan State University.

The main topics of the Congress:

- Structure and organization of national and international thermal systems
- Economic and social strategies and policies for hydrotherapy
- Environment, climate, thermae, and health: the new potentials of information technology
- Training and research as tools for knowledge and information

- Approaches to care, health, and wellbeing: traditional vs. complementary
- Integrated methodologies for thermal rehabilitation
- Climate change and health tourism economics: the role of the thermal patient-user
- Telemedicine
- Traditional and IT communication and marketing
- New technologies and health safety
- Health tourism
- Hospitality organization
- Culinary arts and thermal regions.

Welcome in Khalkidhiki (Greece)!

Pr. Umberto Solimene
FEMTEC President

SCIENTIFIC COMMITTEE

President:

Kouskoukis Konstantinos, Professor of Dermatology - Lawyer, President of the Hellenic Thermal Medicine Academy, President of the World Academy of Chinese and Complementary Medicine.

Members (Greece):

Patoulis Georgios (Regional Governor of Attiki, President of Medical Association of Athens, ELITOUR, IHTC, World Institute of Greek Doctors), **Exadaktylos Athanasios** (MD Plastic Surgeon, President of Panhellenic Medical Association), **Pantos Konstantinos** (MD Obstetrician – Gynecologist, IVF, President "Genesis" Clinic, Athens), **Kreatsas Georgios** (Professor of Obstetrics and Gynecology, V. Rector of University of Athens), **Bouros Dimosthenis** (Professor of Pulmonology, Medical School, University of Athens), **Mavragani Kleio** (Associate Professor of Rheumatology, Medical School, University of Athens), **Politou Marianna** (Associate Professor of Hematology, Medical School, University of Athens), **Polydorou Antonios** (Cardiologist, Department of Hemodynamic-Invasive Cardiology)

Members (other Countries):

Belaitar A. (Algeria), **Bulekbaeva S.** (Kazakhstan), **Cantista P.** (Spain), **Chojnowsky J.** (Poland), **Costigliola V.** (Belgio), **D'Alessandro G.** (Switzerland), **Fluck I.** (Hungary), **Gigineishvili G.** (Russia), **Gurnari G.** (San Marino), **Kouskoukis K.** (Greece), **Ledesma Rosa R.** (Cuba), **Maraver Eyzaguirri F.** (Spain), **Menendez F.** (Cuba), **Oueslati R.** (Tunisia), **Ponikowska I.** (Poland), **Razumov A.** (Russia), **Solimene U.** (Italy), **Surdu O.** (Romania), **Vitale M.** (Italy), **Zhang Y.** (China)

ORGANIZING COMMITTEE:

Dimitris Kolesnikov Chairman of the Board at Cronwell Hotels & Resorts; Member of the Board of Russian Tourist Union

Ksenia Andreeva, Director of Marketing at Cronwell Hotels & Resorts

SECRETARIAT OF FEMTEC

Chaurskaya N. (Chief Intern. Dept. FEMTEC)

Busato S. (Focal point of FEMTEC for the World Health Organization - WHO)

IN COLLABORATION AND WITH UNCONDITIONAL SUPPORT BY

HELLENIC REPUBLIC
MINISTRY OF TOURISM

ΠΑΝΕΛΛΗΝΙΟΣ ΙΑΤΡΙΚΟΣ ΣΥΛΛΟΓΟΣ
ΩΦΕΛΕΙΝ Η ΜΗ ΒΛΑΠΤΕΙΝ

ΙΑΤΡΙΚΟΣ ΣΥΛΛΟΓΟΣ ΑΘΗΝΩΝ

IATRIKOS

MIRAGGIO
THERMAL SPA RESORT
OPERATED BY CRONWELL
*****

Cronwell
Hotels & Resorts

GMTP
Global Med Top Partners
MEDICAL GROUP

eaptc
EUROPEAN ASSOCIATION
OF PATIENTS AND USERS
OF THERMAL CENTRES

FoRST
Fondazione per la Ricerca Scientifica Termale

afreth
Association Française
pour la Recherche Thermale

EMA
European
Medical
Association


2018
G3T
GLOBAL THERMAL THINK TANK


UNBESCHEIDEN
Baden-Baden
HYDRO THERAPIE


SOLYMED EVENTS


WELLNESS DESTINY MAGAZINE


TERMAS
WORLD


WATER IS HEALTH
WORLD
THERMAEDAY
21st APRIL

CONGRESS PROGRAM

16th October Wednesday

08:00-18:00 Arrival, pick-up at the airport, coach transfer to the "Miraggio Thermal Spa Resort" Hotel, and accommodation.

20:00-23:00 Pre-dinner drink, welcome dinner and traditional music.

17th October Thursday

07:00-08:30 Breakfast in hotel

08:00-09:00 Registration of the Congress participants

09:00-10:15

- Official opening of 72nd International Scientific Congress of FEMTEC: Greeting by István Fluck (Honorary President of FEMTEC) and Authorities
- ***Official performance of the " FEMTEC Suite " hymn*** (video)
- Speech by the President of FEMTEC

10:15-11:30 *1st S C I E N T I F I C S E S S I O N - Introduction to thalassotherapy*

Chairs: P. Cantista, K. Kouskoukis, A. Razumov, O. Surdu

1. **K. Kouskoukis (Greece),** *The combination of Thalassotherapy and Balneotherapy in Greece as a strategic development tool*
2. **M.Z. Karagülle (Turkey),** *How effective is Mediterranean thalassotherapy in the management of rheumatic diseases: a narrative review*
3. **F. Bonsignori (Italy),** *The Thalassotherapy between tradition and innovation*
4. **R. Oueslati (Tunisia),** *Hydrotherapy in Tunisia*
5. **F. Maraver, C. Morer, A. Muela (Spain),** *Evolution of Thalassotherapy in Spain*

6. **C. Munteanu, G. Dogaru, D. Munteanu, M. Hoteteu (Romania),** *Thalassotherapy and thermal medicine in Romanian black sea balneary resorts*

11:30-11:45 Coffee break and Group photo

11:45-13:30 ***2nd S C I E N T I F I C S E S S I O N - Balneology and Thalassotherapy: two different worlds?***

Chairs: M.Z. Karagülle, R. Ledesma Rosa, R. Oueslati, C-F. Roques-Latrille

1. **C-F. Roques-Latrille, C-E. Bouvier (France),** *Spa resorts medicine and non-communicable chronic diseases (NCD), a major and novel public health issue*
2. **C. Morer, F. Maraver (Spain),** *Stroke treatment in a thalassotherapy center*
3. **O. Surdu, R.E. Almasan, T-V Surdu, M. Surdu, S. Demirgian (Romania),** *The tegument - the turning plate between energy, entropy, information of environment and human body – new approach of thalassotherapy*
4. **T. Khalfallah, W. Ksomtini, R. Oueslati, U. Solimene (Tunisia),** *Training of Physicians in Medical Hydrotherapy new strategic directions for skills development. The Tunisian experience.*
5. **S. Masiero, G. Magro (Italy),** *Physical medicine and rehabilitation in the thermal environment for health promotion*
6. **S. Demirgian, O. Surdu, T. V. Surdu, M. Surdu, L. E. Stanciu, V. Marin (Romania),** *The profile of patients from Techirghiol Resort undergoing cold peloidotherapy and thalassotherapy*
7. **E.A. Ivanova, V.S. Sevryukova, E.V. Dobryakov (Russia),** *Mud therapy in Anapa - the history of evidence-based medicine*
8. **G. Baraskov, G. Dremova, G. Gigineishvily (Russia),** *Chronic Back and Neck pain – effectiveness of the complex seaweeds*

application and underwater traction with the control of the DIERS 4D Motion system

9. **O. Gozhenko (Ukraine),** *Thalassotherapy and algotherapy at Ukrainian resorts*

13:30-14:30 Lunch

14:30-16:00 ***S P E C I A L S E S S I O N dedicated to "One belt one road. Balneology between China and Europe"***

Two Delegations from China will present the Chinese world of Hot springs:

1. **Liu Qi, Ma Bin (Chongqing Municipality),** *Chongqing Global Capital of Hot springs: Environment and Culture. The collaboration with FEMTEC*
2. **Zhang Yue (Chinese Hot Springs Tourism Association - CHTA),** *The current condition and its developing trend of China hot Springs*
3. **Wang Xuxia (Chinese Hot Springs Tourism Association - CHTA),** *Introduction of Weihai Tianmu Hot Spring Resort*

16:00-16:15 Coffee break

16:15-18:00 3rd *S C I E N T I F I C S E S S I O N - Complementary and integrative methods for health care*

Chairs: G. Barashkov, S. Masiero, F. Maraver, F. Menendez

1. **M. Aliverti (Italy),** *Hydrotherapy in the early twentieth century asylums*
2. **G. Gigineishvili (Russia),** *Art-therapy as complementary methodology in health rehabilitation centers*
3. **S. Bulekbayeva (Kazakhstan),** About the resort "Sary-Agash" in Kazakhstan

4. **J. Chojnowsky, I. Ponikowska (Poland),** *Didactic potential of Polish thermal medicine for the international balneologic training*
5. **S. Ospanova (Kazakhstan),** *Continuous improvement of quality and safety culture*
6. **E.A. Bularkieva (Kyrgyzstan),** *Scientific substantiation of the organization of the health stage of rehabilitation of patients with priority diseases of the population of Kyrgyzstan*
7. **K. Babov, I. Babova, I. Bykov, S. Buchinskiy (Ukraine),** *HEALTH-Resorts in rehabilitation within the health care system reform in Ukraine*

18:00-20:00 Free time
20:00-22:00 Dinner

18th October Friday

07:30-08:30 Breakfast in hotel

08:30-10:45 4th *S C I E N T I F I C S E S S I O N - Environment, Climate Changes and Economy: new challenges for Balneology and Thalassotherapy (celebrating 50° years of the Foundation of the Center of Bioclimatology in Italy*

Chairs: S. Bulekbayeva, G. D'Alessandro, T. Dubois, A. Matzarakis, I. Ponikowska

1. **A. Matzarakis (Germany),** *Communicating weather, climate and climate change information for the health sector*
2. **T. Dubois, C.E. Bouvier (France),** *Assessing the economic impact of spa therapy*
3. **T. Bezverkhniuk, K. Babov, I. Babova (Ukraine),** *Investment potential of the resort territory: essence, components, development strategies*
4. **D. Alili (Algeria),** *Algerian marketing of thermalism*

5. **R. Ledesma Rosa (Cuba),** *Effects of weather and climate variability on the therapeutic procedures of the "San Diego de los Baños" and Ciego Montero Thermal Centers in the 2018-2020 period*
6. **G. Gurnari (Republic of San Marino),** Environmental and social changes: which strategies for balneology?
7. **C. Crotti, M. Maccalli (Italy),** *A short-version Climatotherapy program in Italy: a pilot study for quality of life*
8. **F. Menendez (Cuba),** *Health and Wellness Tourism In rural areas to boost the territory*
9. **G. D'Alessandro (Switzerland),** *Sea Climate and Thalassotherapy for the physical rehabilitation of the sportsmen*

10:45-11:00 Coffee break

11:00-12:15 5th *S C I E N T I F I C S E S S I O N - Research & Development*

Chairs: F. Bonsignori, J. Choinowsky, G. Gozhenko, S. Inokuma

1. **I. Ponikowska, P. Adamczyk (Poland),** *Transdermal absorption of mineral components in the therapeutic baths*
2. **S. Inokuma, Y. Gotoh, M. Uchida, H. Katsuyama (Japan),** *Possible recovery by CO_2 bathing from a vasculature disease involving both peripheries and internal organs*
3. **I. Sysoenko (Ukraine),** *The potential and investment attractiveness of the sanatorium-resort sphere of Ukraine*
4. **N. Veryo, M. Ziółkowski, D. Czarniecki, M. Kłopocka, J. Budzyński, A. Liebert, K. Szot, I. Ponikowska (Poland),** *Clinical evaluation of the use of drinking cure of humic water in patients with alcoholic liver dysfunction*
5. **N.P. Lavrik, T.V. Strelkova, S.A. Safonova, L.A. Vorobyova, Yu.A. Punanov (Russia),** *Modern approach to rehabilitation of oncological patients*

6. **H. Unbescheiden (Germany),** *Hygiene in Hydrothermal Spa Areas – How to identify and avoid critical issues*
7. **V. Khokhlov, I. Bezmen (Russia),** *Basic principles of laboratory quality control of medical cosmetic products on mineral basis.*
8. **F. Antonaci (Italy), Social aspect of thermal medicine**
9. **V.L. Israel, V. Jarek, SYM Takeda, B. Yamaguchi (Brazil),** *Physical therapy and hydrothermalism: practical experiences as a learning methodology in physiotherapeutic training in Brazil*

12:15-13:00 6th *S C I E N T I F I C S E S S I O N - Balneotherapy & Thalassotherapy in the world*

Chairs: A. Belaitar, C. Crotti, G. Gurnari, C. Munteanu

1. **A. Belaitar (Algeria),** *Algerian referential of thermal Medicine*
2. **E.A. Bularkieva (Kyrgyzstan),** *Resort resource of Kyrgyzstan*
3. **L. Varzaityte, R. Kubilius, A. Balcius, E. Milinaviciene, K. Ramanauskas (Lithuania),** *Use of natural resources for rehabilitation and health promotion in Lithuanian*
4. **U. Solimene (Italy),** *50 years of activity by the Center of Bioclimatology at Milan State University. An heritage for FEMTEC*

13:00-13:30 Planting of FRIENDSHIP TREE (olive)
13:30-15:00 Lunch

15:00-16:00 FEMTEC EXECUTIVE COMMITTEE (for Members)
15:00-18:00 Free time
18:30-20:00 FEMTEC GENERAL ASSEMBLY and Awarding Ceremony
20:00-23:00 Gala dinner with traditional music
19th October Saturday
07:30-08:30 Breakfast in hotel
09:00-13:00 Introduction and visit to the SPA

13:30-14:30 Lunch
14:30-17:30 Visit to authentic local village Athitos
17:30-20.00 Free time
20:30-22:30 Dinner

20th October Sunday
08:00-12:00
- Breakfast at the hotel
- Delegates departure

SPEAKERS

ADAMCZYK P., Thermal Metabolic Hospital, Poland

ALILI D., Director of hydrotherapy and thermal activities at the Algerian Ministry of Tourism, Algeria

ALIVERTI M., History of medicine (State University of Milan - State University of Insubria), Italy

ALMASAN R.E., Balneal and Rehabilitation Sanatorium Techirghiol, Romania

ANTONACI F., Expert MD sociologist of FEMTEC, Italy

BABOV K.D., State Institution "Research Institute of Medical Rehabilitation and Resort Therapy of Ministry of Health of Ukraine", Ukraine

BABOVA I.K., Odessa Regional Institute for Public Administration of the National Academy for Public Administration under the President of Ukraine

BALCIUS A., Limited company Medical SPA EglėsSanatorija, Lithuania

BARASHKOV G., FBGU "National medical scientific Center Rehabilitation and Health Resorts" Moscow. Ministry of the Health, Russia

BELAITAR A., Medical Chief Thermal Center "Hammam Chellala, Guelma, Algeria

BEZMEN I., Crimean Hydrogeological Regime-Operational Station, Saki, Russia

BEZVERKHNIUK T., Odessa Regional Institute for Public Administration of the National Academy for Public Administration under the President of Ukraine

BYKOV I., Odessa Regional Institute for Public Administration of the National Academy for Public Administration under the President of Ukraine

BONSIGNORI F., Vice President of European Association of Patients ad Users of Thermal Centers (EAPTC), Italy

BOUVIER C.E., Conseil National des Etablissements Thermaux, France

BUCHINSKIY S.N., Department of Medical Care of Kiev City State Administration, Ukraine

BUDZYOSKI J., Department of Vascular Diseases and Internal Diseases CM UMK, Poland

BULARKIEVA E.A., Scientific Secretary, Candidate of Medical Sciences, cardioreumatologist of the Kyrgyzstan Scientific Research Institute of Balneology and Rehabilitation, Kyrgyzstan

BULEKBAYEVA S., National center for children's rehabilitation of corporate fund "University Medical Center", Nur-Sultan city, Republic of Kazakhstan

CANTISTA P., President of International Society of Medical Hydrology - ISMH; University of Porto, Portugal

CHOJNOWSKY J., Nicolaus Copernicus Medical University Torun. Department of Balneology and Physical Medicine Ciechocinek, Poland

CROTTI C., Adjunct Professor Department of Health Sciences University of Milan, Medical Doctor in rehabilitation Fondazione Benefattori Cremaschi Onlus, Italy

CZARNIECKI D., Department of Psychiatric Nursing Chair of Conservative Patient Nursing CM UMK, Addition treatment Unit Psychiatry Clinic Anthony Jurasz, Bydgoszcz, Poland **D'ALESSANDRO G.,** Centre of Rehabilitation, Zurich, Switzerland **DEMIRGIAN S.,** Balneal and Rehabilitation Sanatorium Techirghiol, Romania

DOBRYAKOV E.V., JSC "DiLUCH" - Sanatorium-Resort Complex, the Resort Town of Anapa, Russia

DOGARU G., Romanian Association of Balneology, Romania

DREMOVA G., FBGU "National medical scientific Center Rehabilitation and Health Resorts" Moscow. Ministry of the Health, Russia

DUBOIS T., Conseil National des Etablissements Thermaux, France

FLUCK I., Honorary President of FEMTEC, Hungary

GIGINEISHVILI G., Arte-therapy Center, FBGU "National medical scientific Center Rehabilitation and Health Resorts" Moscow. Ministry of the Health, Russia

GOTOH Y., Chiba Central Medical Center; Kohnodai Hospital, National Center for Global Health and Medicine, Japan

GOZHENKO O., Ukrainian Research Institute of Transport Medicine of the Ministry of Health of Ukraine

GURNARI G., V. President of FEMTEC, Pres. of FEMTEC Technical Commission, San Marino

HOTETEU M., Romanian Association of Balneology, Romania

INOKUMA S., Chiba Central Medical Center; Kohnodai Hospital, National Center for Global Health and Medicine, Japan

ISRAEL V.L., Physical Therapy Prevention and Rehabilitation Department, Physical Therapy Degree, Universidade Federal do Paraná, Brazil

IVANOVA E., JSC "DiLUCH" - Sanatorium-Resort Complex, the Resort Town of Anapa, Russia

JAREK V., Physical Therapy Prevention and Rehabilitation Department, Physical Therapy Degree, Universidade Federal do Paraná, Brazil

KARAGÜLLE M.Z., Department of Medical Ecology and Hydroclimatology Istanbul Medical Faculty, Istanbul University, Turkey

KATSUYAMA H., Chiba Central Medical Center; Kohnodai Hospital, National Center for Global Health and Medicine, Japan

KHALFALLAH T., Faculty of Medicine of Monastir, Tunisia

KHOKHLOV V., Crimean Hydrogeological Regime-Operational Station, Saki, Crimea

KŁOPOCKA M., Department of Gastroenterology and Eating Disorders Intervetional Endoscopy Center University Hospital, Bydgoszcz, Poland

KOUSKOUKIS K., Professor of Dermatology - Lawyer, President of the Hellenic Thermal Medicine Academy, President of the World Academy of Chinese and Complementary Medicine, Greece

KSOMTINI W., Faculty of Medicine of Monastir, Tunisia

KUBILIUS R., Lithuanian University of Health Sciences, Department of Rehabilitation, Lithuania

LAVRIK N., Pediatric Health Resort "Solnechnoe", Saint-Petersburg Russia

LEDESMA ROSA R., President of the Cuban Society of Medical Hydrology, Cuba

LIEBERT A., Department of Gastroenterology and Eating Disorders Intervetional Endoscopy Center University Hospital, Bydgoszcz, Poland

LIU QI, Director of Chongqing Municipal Commission of Culture & Tourism Development

MA BIN, Senior engineer; Director of the Hot Spring Industry Office Chongqing Municipal Commission of Culture & Tourism Development

MACCALLI M., Psychologist Fondazione Benefattori Cremaschi Onlus, Italy

MAGRO G., Resident at Physical Medicine and Rehabilitation School, University of Padua, Italy

MARAVER F., Professional School of Medical Hydrology, Faculty of Medicine, Complutense University of Madrid, Spain

MARIN V., Balneal and Rehabilitation Sanatorium Techirghiol, Romania

MASIERO S., Rehabilitation Unit; Department of Neurosciences; University of Padua, Italy

MATZARAKIS A., Research Center Human Biometeorology, German Meteorological Service, Freiburg, Germany

MENENDEZ F., Vice president FEMTEC, CEO Solymed Travel, Congress, Fairs, International Events, Health and Wellness Tourism, Cuba

MILINAVICIENE E., Lithuanian University of Health Sciences, Department of Rehabilitation - Limited company Medical SPA EglėsSanatorija, Lithuania

MORER C., Professional School of Medical Hydrology, Faculty of Medicine, Complutense University of Madrid - Institut Català de la Salut, Barcelona, Spain

MUELA A., Thalasso Hotel El Palasiet, Benicassim-Castellón, Spain

MUNTEANU C., Romanian Association of Balneology, Romania

MUNTEANU D., Romanian Association of Balneology, Romania

OSPANOVA S., Deputy Director for quality management and patient's safety of NCRC KF "UMC", candidate of medical sciences, MBA, Kazakhstan

OUESLATI R., The Tunisian National Office of Thermalism and Hydrotherapy, Tunisia

PONIKOWSKA I., Nicolaus Copernicus Medical University Torun. Department of Balneology and Physical Medicine Ciechocinek, Poland

PUNANOV Y.A., Pediatric Health Resort Center "Solnechnoe", St. Petersburg, Russia

RAMANAUSKAS K., Druskininkai Recreation and Health Centre, Lithuania

ROQUES-LATRILLE C-F., Association française pour la recherche thermale (AFRETH), Paris, France

SAFONOVA S., Pediatric Health Resort Center "Solnechnoe", St. Petersburg, Russia

SEVRYUKOVA V., JSC "DiLUCH" - Sanatorium-Resort Complex, the Resort Town of Anapa, Russia

SOLIMENE U., President FEMTEC, State University of Milan, Italy

STANCIU L.E., Balneal and Rehabilitation Sanatorium Techirghiol, Romania

STRELKOVA T.V., Pediatric Health Resort Center "Solnechnoe", St. Petersburg, Russia

SURDU M., Sf. Andrei" Constanta Emergency Hospital, Romania

SURDU O., 1st Vice-President FEMTEC, Balneal and Rehabilitation Sanatorium of Techirghiol, Romania

SURDU T-V., Balneal and Rehabilitation Sanatorium of Techirghiol, Faculty of Medicine, Ovidius University, Romania

SYSOENKO I., All-Ukrainian Association of Physiotherapists and Health Resort Therapists

SZOT K., Department of Pathophysiology CM UMK, Poland

TAKEDA SYM., Physical Therapy Prevention and Rehabilitation Department, Physical Therapy Degree, Universidade Federal do Paraná, Brazil

UCHIDA M., Chiba Central Medical Center; Kohnodai Hospital, National Center for Global Health and Medicine, Japan

UNBESCHEIDEN H., CEO Unbescheiden GmbH, Baden-Baden, Germany - Expert Technical Commission FEMTEC

VARZAITYTE L., Lithuanian University of Health Sciences, Department of Rehabilitation, Lithuania

VOROBYOVA L.A., Pediatric health resort "Solnechnoe", Saint-Petersburg, Russia

VERYO N., Department of Balneology and Physical Medicine in Ciechocinek, Collegium Medicum in Bydgoszcz, Nicolaus Copernicus University in Toruo (CM UMK), Poland

WANG XUXIA, Chinese Hot Springs Tourism Association - CHTA, China

YAMAGUCHI B., Physical Therapy Prevention and Rehabilitation Department, Physical Therapy Degree, Universidade Federal do Paraná, Brazil

ZHANG YUE, General Secretary of Chinese Hot Springs Tourism Association - CHTA, China

ZIÓŁKOWSKI M., Department of Psychiatric Nursing Chair of Conservative Patient Nursing CM UMK, Addition treatment Unit Psychiatry Clinic, Bydgoszcz, Poland

ABSTRACTS

ALGERIAN MARKETING OF THERMALISM

ALILI D.
Director of hydrotherapy and thermal activities at the Algerian Ministry of Tourism, Algeria

The offer of hydrotherapy in Algeria

- The spas studied in East (Guelma) and West (Bouhenifia and Boughrara) offer identical products and services: medical treatments, wellness treatments and traditional baths.
- 2 levels of standing are noted:
  - institutions of the social vocation type
  - establishments of the high comfort type
- The offer is complemented by some thalassotherapy centers (Complex Sidi Fredj, high-end)
- Internationally, competition from Tunisia, Morocco, Turkey.

The demand for hydrotherapy

- The local market is dominating more than 95% of attendance: families, individuals, sportspeople. Elderly, young adults
- National residents
- Residents living in Algeria
- From abroad, especially Algerians living abroad.

Marketing Action Plan Phase 1: short term

- Sensitize current operators to the benefits of the marketing approach (seminar)
- Initiate Public Relations operations around the cultural heritage of the territory
- Launch by Open Doors the National Day of Thermalism.

Action Plan Phase 2: Medium and Long Term

- Continue to pool the efforts made to promote hydrotherapy in trade shows.
- Participate actively in national economic forums and present investment incentive files.
- Build inter-regional and international partnerships (NGOs, universities, UN bodies) for the development of Algerian Tourism and better visibility abroad

HYDROTHERAPY IN THE EARLY TWENTIETH CENTURY ASYLUMS

ALIVERTI M.
History of medicine, Università degli Studi di Milano − Università degli Studi della Insubria, Italy

The report aims to treat the use of hydrotherapy as a method of treating madness in European psychiatric hospitals of the early 20th century. It takes its cue from a scientific article that appeared in three episodes in 1913 in an Italian medical journal (the "Gazzetta Medica Lombarda"): << The warm lukewarm bath as a sedative >> by Dr. Carlo Pontiggia, psychiatrist in the Mombello mental hospital near Milan .
The report also mentions the role of the lukewarm bath and hydrotherapy in general in the treatment of mental disorders of the time through the analysis of some treatises by illustrious Italian and foreign psychiatrists.

SOCIAL ASPECT OF THERMAL MEDICINE

ANTONACI F.
Expert MD sociologist of FEMTEC, Italy

An old song by Pink Floyd, *Wish you were here* (1973) says: "We are just two lost souls swimming in a fish bowl, year after year ..."
Nowadays in our contemporary life the soul of all seems to be lost in that bowl of fish, running trying to find an escape route. An escape from that water polluted by our daily problems, our fears, our anxieties, our conflicts, our defeats, our disappointments, our anguishes. These sensations and situations produce, we know, serious physical and mental damage. It is the new pathology of the WHO: *the burn-out syndrome*. For this reason, at the Thermae SPA only a holistic and at 360 degree treatment can give the patient a complete well-being. We can reach the goal by offering a psychological therapy during the stay at the Thermae SPA. By taking care of the soul, the spirit, I say, and the human substance in the same time, we can guarantee an absolute and total rebirth to the person. Washing and polishing the external surface of the glass is not enough, we must also change the dark water inside and feed the fish.....
... at next 72nd Femtec Congress.

HEALTH-RESORTS IN REHABILITATION WITHIN THE HEALTH CARE SYSTEM REFORM IN UKRAINE

BABOV K.D.
State Institution "Research Institute of Medical Rehabilitation and Resort Therapy of Ministry of Health of Ukraine"
BABOVA I.K., BYKOV I.G.
Odessa Regional Institute for Public Administration of the National Academy for Public Administration under the President of Ukraine
BUCHINSKIY S.N.
Department of Medical Care of Kiev City State Administration, Ukraine

Within the ongoing reform of health care system in Ukraine the guaranteed package of medical services is being implemented. The guaranteed package of medical services is the services of primary, specialized outpatient, inpatient medical care, as well as emergency, palliative assistance and rehabilitation care. This is a basic set of vital medical services.

At present the rehabilitation care in Ukraine is considerably diversified and not fully accessible for all of population.

For example, early rehabilitation after certain acute conditions (traumas, myocardial infarction, stroke, burns; orthopedic, cardiovascular, urologic and gynecologic surgical operations, etc.) for patients, who work and are insured in the Social Insurance Fund (SIF) of Ukraine, is provided in health-resorts (sanatoriums) and financed by this Fund. In 2018 the mechanism for direction of insured patients to the stage of early health-resort rehabilitation was simplified: patients are given the opportunity to freely choose the health-resorts according to the pathology profile. Early rehabilitation care is provided in health-resorts irrespective of the form of ownership and departmental subordination, which significantly increases their number and distribution on the territory of the country, embodies the principle of "money goes after the

patient" and the free choice of the place of medical services. It corresponds to the patient-oriented approach.

The availability of natural treatment resources, location of health-resorts in the recreational areas, presence of appropriate medical treatment base and infrastructure are the benefits for provision of rehabilitation care.

The advantages for health-resorts that provide early rehabilitation services are: all-year-round functioning of the resorts, which is the key to their sustainable development; participation in the reform of the health care system of Ukraine; implementation of the principles of public-private cooperation in the provision of medical services.

CHRONIC BACK AND NECK PAIN – EFFECTIVENESS OF THE COMPLEX SEAWEEDS APPLICATION AND UNDERWATER TRACTION WITH THE CONTROL OF THE DIERS 4D MOTION SYSTEM

BARASHKOV G., DREMOVA G., GIGIENISHVILY G.
FBGU "National medical scientific Center Rehabilitation and Health Resorts" Moscow. Ministry of the Health, Russia.

Methods of horizontal underwater spine traction have proven themselves in the treatment of various forms of dorsopathies of both the lumbosacral and cervical spine. Over the past 20 years, methods have actively used by us and have been implemented in a number of clinical institutions and resort centers. Our previous data on the effectiveness of the seaweed applications (a complex gel composed of Laminaria, Fucus and Spirulina) showed good results in the treatment of pain in patients with chronic cervicalgia and dorsopathies. In the present work, we used the complex use of the Nolla Naturelle "Three Seaweed" seaweed gel application and underwater spine traction by the sagging method in our modification (Barashkov-Silaev). To make an objective assessment of the baseline status of patient, we decided to evaluate the capabilities of the DIERS method - an optical scanning method based on video-raster stereography (VRS) and surface topography. This method is dynamic and multi-parameter one. It is non-invasive and easily reproducible, allowing you to evaluate the main neurological symptoms in diseases of the supporting organs.
Patients with chronic dorsopathy were selected in the study group. All patients had a medical history of at least 3 years and at least 3 acute episodes with characteristic neurological symptoms. In total, treatment methods using the DIERS system were applied for 38 patients (22 men and 16 women), with an average age of 42 years. DIERS method assessment was carried out before the start of

treatment, in the middle of the course and after 5-7 days at the end of the treatment. All patients underwent a standard course of complex treatment where the method of local (along the spine) application of seaweed gel (20 min, room temperature) was combined with the method of underwater traction, consisting of 7-9 procedures that were released every other day. The general course lasted from 3 to 4 weeks.

Based on the data obtained, we have made the following conclusions:

1. The DIERS method allows you to obtain a significant array of objective data on the state of the locomotor system, which makes it easier to decide on the choice of the underwater spine traction.
2. The methodology of compact analysis of movement allows the doctor not only to effectively evaluate and select the types of traction effects, but also to build and maintain a procedural plan, including such necessary elements as the seaweed applications, as well as electro physiotherapy (using low-frequency currents) in baths to restore muscle tone and reduce the algic component, a set of special exercises in the water when required, aimed at increasing the volume of free movements and improving the mobility.
3. Our method of complex use of local application of Nolla Naturelle seaweed gel in combination with underwater traction in water by the sagging method objectively confirmed a faster elimination of the algic component in patients than using traction as a mono-method.
4. The DIERS method possibilities and its attractive visualization include the patient's psychoemotional factors aimed at self-repair, and motivate him on the principles of positive biofeedback in the directions of creating new stereotypes of movement and maintaining an active healthy lifestyle.

THERMAL MEDICINE IN ALGERIA

BELAITAR A.
Hammam Chellala Thermal Center, Guelma, Algeria

INTRODUCTION

The proper functioning of a thermal establishment involves a wide range of activities covering a wider range of skills as the establishment offers varied and medical services.
Thus, these skills are found in the form of different trades.
For greater clarity, the trades were classified according to their posting service are three assignment services with job descriptions for each job were developed and recommended :

1. Care service: Other associated thermal jobs
2. Administrative and commercial service
3. Technical and hygiene service

The number of nursing staff will depend on the accommodation capacity and the variety of spa services provided by the establishment concerned.
Our objcve for development of our themalism are:

- Securing springs in thermal waters
- Establish a Guide to Good Thermal Practices
- Strengthen the sanitary control of the thermal pools
- Strengthen the existing regulatory and normative arsenal

RECOMMENDATIONS

- Organize with professionals the provision of job descriptions.
- The necessary expansion of the skills of the hydrotherapy and physiotherapy; the fact that hydrotherapy and thalassotherapy in Algeria are confronted with necessary evolution of this sector of activity which must diversify,

which must adapt to the expectations more and more demanding customers who are going international

- Determine a training repository for the acquisition of the required skills.
- This Standard will be established jointly by:
  - An academic authority:
  - Ministry of Vocational Training
  - The Ministry of Guardianship MTA (Ministry of Tourism and Handicrafts).
- To envisage the creation of an Algerian Institute of Thermalism (I.A.T)

INVESTMENT POTENTIAL OF THE RESORT TERRITORY: ESSENCE, COMPONENTS, DEVELOPMENT STRATEGIES

BEZVERKHNIUK T., BABOVA I.K.
Odessa Regional Institute for Public Administration of the National Academy for Public Administration under the President of Ukraine
BABOV K.D.
State Institution "Research Institute of Medical Rehabilitation and Resort Therapy of Ministry of Health of Ukraine"

The investment potential (IP) of the resort territory (RT) − the sum of objective conditions and prerequisites for investment, which depend on both the recreational potential of the resort (the presence of consumer demand) and the variety of investment objects (the relevance of investment proposals and projects), and their economic level of development (availability necessary resources for the implementation of the planned / factors of production / technology) and are essential for formation in the area of investment activity.

It is important to emphasize that the analysis of IP is able to provide the investor with valuable information about potential investment opportunities. Natural-geographical potential has a decisive influence on the assessment of the IP of the resort territory, including natural treatment resources (mineral and thermal waters, muds, bishofit, ozocerit, which are widespread in Ukraine). The IP of the RT can be viewed from two points of view, based on its components: formation and use. The formation and development of the IP of the RT occurs within certain limits or taking into account the principles that determine its use: 1) taking into account the strategic goals of the development of the region; 2) ensuring flexibility of IP; 3) ensuring diversified use of IP; 4) taking into account the stage of life cycle of the RT.

In the conditions of globalization of economic processes against the background of market environment dynamism, the basis of stable development of the RT and its effective functioning becomes the choice of the strategy of investment development taking into account the phase of the RT life cycle. Based on the analysis of international experience, we can identify the following effective strategies for investing in the development of the RT: 1) an innovative strategy focused on the development of the territory as a tourist destination; 2) a motivational strategy aimed at forming a portfolio of investment projects for the development of new types of recreational product for the area; 3) supportive strategy, priority type of investment in clusters; 4) evolutionary strategy (creation of infrastructure for use of priority kind of recreational resource with connection to tourist routes network); 5) an explanatory strategy for long-term development.

In order to evaluate the IP of the resort area, the following factors must be considered: the ability to attract investors' attention; availability of up-to-date proposals for investing in the project. It should also be borne in mind that the IP for one zone has a very close relationship with the potential of another zone. Interconnected, they form the investment potential of the region.

THE THALASSOTHERAPY BETWEEN TRADITION AND INNOVATION

BONSIGNORI F.
Vice President of European Association of Patients ad Users of Thermal Centers (EAPTC), Italy

Thalassotherapy has solid and important traditions wich are the basis for opening up to innovation .
For the modern and future thalassotherapy it's necessary to rework a correct definition, the role in thermal medicine and the basic characteristics and quality criteria of thalassotherapic centers.
In medical practice thalassotherapy is an import branch of thermal medicine, in fact we have the therapeutic use of thermal water (sea water is the most complete mineral water in nature) and are used the same techiniques. In addition there is the possibility of using other therapeutic means such as send , algae , sea mud and the climate.
Thalassotherapy acts in the three sector of medical activity : prevention, cure and rehabilitation.
Tradition and innovation are necessary for the development of thalassotherapy. The demand for healt is rapidly changing in our society , The aging of the population with the increase in chronic diseases imposes a cooling of traditional indication . Prevention and new needs must open to innovative indications such as sports medicine, wellness medicine and aesthetic medicine .
These traditional and new frontiers of thalassotherapy must be accompanied by a renewed scientific research.

RESORT RESOURCE OF KYRGYZSTAN

BULARKIEVA E.A.
Scientific Secretary, Candidate of Medical Sciences, cardioreumatologist of the Kyrgyzstan Scientific Research Institute of Balneology and Rehabilitation

The Kyrgyz Republic is rich in natural healing resources. Beautiful landscapes, a wealth of mineral springs and healing mud, the healing properties of the water of the lakes, magnificent beaches, wide opportunities for tourism and mountaineering, a favorable climate, convenient transport routes create the conditions for recreational activities - the construction of resorts, sanatoriums, rest houses. The creation of resorts began mainly after the Great October Socialist Revolution, since in Kyrgyzstan mineral springs and healing mud became known by the end of the 18th century.

Mountains in Kyrgyzstan are distinguished by a peculiarity of altitudinal zonation. Each altitudinal zonality has its own specific climate features, which are expressed in a peculiar mode of local weather, a decrease in atmospheric air pressure and oxygen partial pressure, day-to-day variability of the main meteorological elements, and change in solar radiation.

In 2018, the territory of the republic operates: 142 sanatorium-resort institutions, 81 of them are for adults, 61 are children's, 10 sanatoriums, 32 boarding houses, 12 rest houses, 7 tourist camps, 3 climbing camps.

Resort resources. The republic has extremely favorable resort and climatic resources. On its territory there are 250 deposits of mineral waters, varying in temperature, mineralization, chemical and gas composition, natural and artificial, discovered by drilling wells.

"Blue Issyk-Kul" - a large balneological and sanatorium. Located in Cholpon-Ata resort area, at an altitude of 1600 m above sea level.

Opened in 1965ye. It operates year-round. It is designed in the summer - for 1000 beds, in the winter - for 400.

"Kyrgyz seaside" - a sanatorium, a medical institution of the state concern "Kyrgyzaltyn" of the Kyrgyz Republic. Located in the southeast. The outskirts of the village of Bosteri. Opened in 1984. It operates year-round (for 500 seats). The treatment of patients with diseases of the respiratory system, cardiovascular system, musculoskeletal system, nervous system, gynecological diseases.

"Aurora" is a balneoclimatic sanatorium of the presidential apparatus and the financial and economic department of the government of the Kyrgyz Republic. It is located in the village of Bulan-Sögötyu, 18 km east of the city of Cholpon-Ata, 270 km from Bishkek. Located at an altitude of 1609 m above sea level. Opened in 1979. It operates year-round. Designed for 208 seats. Indications for treatment: diseases of the respiratory system, cardiovascular and nervous systems, musculoskeletal system, digestive system, gynecological and some skin diseases.

«Zheti-Oguz» is a balneoclimatic resort. Located on the northern slope of Teskey Ala-Too, in the Jeti-Oguz gorge, at an altitude of 2200 m above sea level, near the Jeti-Oguz cliffs in the valley of the Jeti-Oguz river, in one of the most picturesque places with coniferous forests, 28 km from the city Karakol and 392 km from Bishkek.

The construction of the resort began in 1931. Since 1965, the resort has been open all year. The presence of unique thermal waters of various salinity, with a high content of radon was the basis for the recognition of the resort "Jeti-Oguz" balneological. For medicinal purposes, the mud of the Zhyrgalan field is used. Mineral waters of the resort, their own imaginative in chemical composition and valuable in medicinal properties, are the main healing factor of the resort.

Ak-Suu - a balneoclimatic resort. Located on the northern slope of the Teskey Ala-Too ridge, in a narrow gorge, in the valley of the Ak-

Suu river, at an altitude of 1950 m above sea level, 16 km from the city of Karakol. Since 1957, the sanatorium functions as a child. The climate of the resort is mountainous. Clean air, ultraviolet rays create favorable conditions for climatotherapy.

"Jalal-Abad" is a mud resort, located in the Jalal-Abad region, 5 km from Jalal-Abad. Located at an altitude of 975 m above sea level. Jalal-Abad mineral waters are composed of thermal nitrogen, slightly mineralized, chloride-hydrocarbonate-sulphate, magnesium-calcium-sodium, slightly alkaline with a high content of silicic acid (30−35 mg / l), and also contain many types of trace elements. Local peat silt mud is also used for treatment. Indications for the treatment of diseases: digestive organs, gynecological, genitourinary, nervous and musculoskeletal systems.

"Chon - Tuz" - a speleological sanatorium. The speleotherapeutic clinic is located in the south-west of the Kochkor district of the Naryn region in the Chon-Tuz mine. An underground hospital occupies one of the parts of the Chon-Tuz mine. It is a horizontal gallery in the thickness of Mount Kek-Too, 500 m long, 5 m wide, 3 m high. Located at an altitude of 2100 m above sea level, the climate is temperate continental. It is equipped with chambers for patients with asthma, chronic bronchitis and some allergic diseases.

"Arstanbap" is a holiday home. It is located in the south of Kyrgyzstan, in the Bazar-Korgon district, 60 km from Jalal-Abad, near the village of Arstanbap, near the foothills of the Babash-Ata ridge at an altitude of 1700 m above sea level. It is located in one of the most beautiful places of the republic - in the Arstanbap valley, among walnut-fruit forests. Walnuts, wild apple, cherry plum, pears, apricots, peaches, pistachios, almonds, currants, apricots, and other types of trees and shrubs (poplar, maple, ash, willow, rose hip, honeysuckle, snow leopard, etc.) grow there. Opened in 1980y. Summer is sunny, warm and dry.

KYRGYZ SCIENTIFIC RESEARCH INSTITUTE OF BALNEOLOGY AND REHABILITATION TREATMENT

BULARKIEVA E.A.
Scientific Secretary, Candidate of Medical Sciences, cardioreumatologist of the Kyrgyzstan Scientific Research Institute of Balneology and Rehabilitation

The Kyrgyz Research Institute of Balneology and Rehabilitation (KNIIKiVL) under the Ministry of Health of the Kyrgyz Republic (hereinafter referred to as the Institute) is a state organization created by the authorized body of the Kyrgyz Republic in the field of health care on the issues of balneology, physiotherapy and medical rehabilitation. By type of organization, KNIIK and VL is a research, rehabilitation, educational, medical and preventive institution of a specialized profile, tertiary level. The Kyrgyz Research Institute of Balneology and Physiotherapy was organized in October 1957 on the basis Republican Hospital of Physical Treatment Methods.
Institute goal: The development of priority areas of fundamental and applied research, the practical implementation of research results, the training of highly qualified scientific and professional personnel in the field of balneology and rehabilitation treatment.
At present, KNIIKiVL is the main research, diagnostic and educational institution of public health in the field of balneology, physiotherapy and rehabilitation treatment in the Kyrgyz Republic.

The main activities of the institute:
· the implementation of fundamental and applied scientific research in the field of balneology, physiotherapy, medical rehabilitation, physiotherapy and related fields of medicine, the study of resort resources of the republic and the mountain climate for use in therapeutic, rehabilitation and preventive purposes.

· identification and development of new directions for the development of medical science in the field of balneology, physiotherapy, medical rehabilitation, physiotherapy, coordination and forecasting of research in accordance with the priority objectives of the Kyrgyz Republic;
· provision of specialized physiotherapeutic and rehabilitation assistance to the population of the republic;
· propaganda, accounting and rational use of natural resources of Kyrgyzstan;
· training and retraining of personnel in balneology, physiotherapy, medical rehabilitation, including abroad;
· participation in the examination of scientific, social, economic projects and the development of programs in the field of health tourism;
· development of international cooperation in the field of scientific research on the issues of balneology and rehabilitation treatment;
· educational and methodical work to improve the skills of researchers, doctors, nurses and other specialists in spa and rehabilitation medicine, methodological assistance to sanatorium-resort institutions.

The institute carries out diagnostic procedures:
· Determination of biochemical, cellular composition of blood and urine
· Electrocardiography
· Ultrasound examination of internal organs
· Study of the function of external respiration
·Endoscopic examination of the gastrointestinal tract (esophagogastroduodenoscopy) and bladder (cystoscopy).
·X-ray examination of the respiratory system, genitourinary system, musculoskeletal system

Healing procedures:

- Electrotherapy (sinusoidally modulated, diadynamic currents, UHF, UHF, EHF, UHF, ultra tone therapy, darsonvalization, magnetotherapy, and electrical stimulation).
- Ultrasound Therapy
- Phototherapy (Infraruz, Sollux, light baths, laser therapy, UV, KUF)
- Inhalation
- Hydrotherapy
- Underwater traction
- Hydromassage
- Paraffin treatment
- Ozokeritotherapy
- Mud cure
- Laser therapy
- Therapeutic exercises in the halls of exercise therapy and in the pool
- Mechanotherapy, Occupational therapy
- Massage (classic), massage with the Arman apparatus, vacuum massage)
- Manual therapy
- Hardware dry traction
- Psychotherapy
- Acupuncture
- Dosed walking (health path)
- Stone therapy
- Dosed exercise daily in the morning (in the fresh air)
- Educational programs (group classes)
- Herbal medicine

SCIENTIFIC SUBSTANTIATION OF THE ORGANIZATION OF THE HEALTH STAGE OF REHABILITATION OF PATIENTS WITH PRIORITY DISEASES OF THE POPULATION OF KYRGYZSTAN

BULARKIEVA E.A.
Scientific Secretary, Candidate of Medical Sciences, cardioreumatologist of the Kyrgyzstan Scientific Research Institute of Balneology and Rehabilitation

Improving the effectiveness of rehabilitation of patients with acute myocardial infarction in medical institutions on the basis of analysis of the quality and effectiveness of its delivery. Keywords: acute myocardial infarction, rehabilitation, efficiency, sanatorium stage. Introduction: Diseases of the circulatory system, nowadays, are one of the most important public health problems in the world and in our country, among which an important place is occupied by acute myocardial infarction (AMI).

According to the State Statistics Committee of Russia, only for 4 years the mortality rate from AMI increased by 12.5% (Bokeria L.A. 2005). The age-standardized mortality rates for men of working age from AMI are more than 8 times higher than for a similar contingent of the female population of Russia (Bokeria L.A. and others, 2005). In Kyrgyzstan, CVD occupies the 1 st place in the structure of total mortality. The standardized death rate from CVD is 53.7 per 100,000 population. The increase in mortality for the years from 1990 till 2004 in working age was an average of 16.2%. The maximum increase in mortality was observed at the age of 30−39 years and amounted to 19.6% of the CAD (Mirrahimov V.M.,2012). At the same time, the total economic losses from disability in 2008 amounted to more than 17 billion soms (Kydyralieva R.B., 2012).

The increase in the incidence of CAD in our country is more than 21% in the last 15 years. The average mortality rate from CAD in the

Central Asian region is 4.2 times higher than the death rate for the European Union. The most common cause of death from cardiovascular disease is acute myocardial infarction (AMI), the overall mortality rate is about 30% (WHO—World Health report., 2005). In this regard, the desire to organize the most effective medical care for patients with AMI is one of the urgent tasks of modern healthcare. In our country, a stage-by-stage rehabilitation of patients with MI was developed, and among the proposed stages an important role is assigned to the stage of medical rehabilitation, during which the process of physical rehabilitation of patients with miycardial infarction became widespread. There is a sufficient number of published works on the development and organization of rehabilitation of patients after AMI in the second half of the XX century (Kochorova L.V., 1981; Romanov A.I., 1985; Nikolaeva L.F., Aronov D.M., 1998; Chasov E.I., 2010; Gusev A.O., Kovalchuk V.V., 2011, Gusev A.O., 2014.), and foreign authors (Koch M., Blumenthal W., 1981; Cassak D., 1984). However, over the past 20−30 years, both diagnostic (coronaroaortography) and therapeutic (stenting, shunting) methods and possibilities for patients with AMI have changed markedly.

The organization of inpatient care for the population (differentiation of bed capacity according to the degree of intensity of treatment and care and the restructuring of the hospital bed facility) and the entire health care system in connection with the introduction of the CMI system have undergone considerable reform. Meanwhile, if clinical aspects of the rehabilitation of patients with AMI are covered in many studies (Barbarash R.L. и oth.., 2001; Povorinskiy A.L., Sokolova L.A., 2008; Aronov D.M. и др., 2009; Arutyunov G.P. and oth., 2003, 2009) and quite extensively are covered in the literature the issues of disability after the disease of the circulatory system (BSC) (Baskakova N.P., 2006; Marusheva L.G., German S.V., 2010; Domanyanko A.A., Nadel R.V., 2010; Samorodskaya I.V., Fufaev E.N., 2011), then the organizational issues of rehabilitation of

patients after AMI, with modern methods of diagnosis and intensive treatment of such patients, the need of the population in inpatient beds after AMI in the literature is not enough, which determines the relevance of the chosen research topic. The aim of the study is to substantiate the need for medical rehabilitation for patients after acute myocardial infarction and to develop proposals for optimizing the work of inpatient departments of medical rehabilitation of the cardiac profile.

Objectives of the study are:

1. To analyze the statistics of the morbidity of the population with cardiovascular diseases
2. To present the features of the medical and statistical characteristics of patients with acute myocardial infarction (AMI) hospitalized in the cardiology department of the Kyrgyzian Scientific Research Institute of Balneology and Rehabilitation.
3. Determine the need of the population in hospital beds for the rehabilitation of patients after AMI and develop proposals for improving the work of cardiac sections in a medium-altitude mountains hospital. Subject of the study: patients with myocardial infarction hospitalized for phased rehabilitation in the cardiology department of the Kyrgyzian Scientific Research Institute of Balneology and Rehabilitation. In the course of the study from 2012 to 2015, 1280 outpatient cards of patients who were on dispensary registration in the Centers of Family Medicine (CFM) Bishkek City, were studied, 148 medical history of patients who received rehabilitation treatment in the department of cardiology of the Kyrgyzian Scientific Research Institute of Balneology and Rehabilitation, as well as 142 questionnaires for doctors of Centers of Family

Medicine (CFM) and the Kyrgyzian Scientific Research Institute of Balneology and Rehabilitation.

The program of rehabilitation measures included:

1. Dietary food. Lipid-lowering diet
2. Basis maintenance medication was conducted in accordance with international recommendations and included: antihypertensive, lipid-lowering and antiplatelet therapy.
3. Physiotherapy in combination with climatotherapy:
   - Morning hygienic gymnastics from 5 to 15 minutes
   - Therapeutic gymnastics was prescribed during the day in the form of aerobic exercise at a free pace on the main muscle groups—the neck, back, abdomen, limbs starting at 5, then gradually adjusted to 10−12 repetitions per procedure. Breathing exercises and stretching exercises were necessarily included.
   - Special physical training was conducted on the cardiorespiratory complex, the company "Schiller" with computerized ECG and blood pressure monitoring.
   - Walking was also used as a means of physical training — walking on an even surface from 500 m gradually to 3 km a day, then later as mastering in the form of a terrenkur. Assignments were made in free regime on the territory of the sanatorium and sleep on the open veranda. Classes were conducted individually with a specialist in exercise therapy, taking into account the individual tolerability of physical exertion, the severity of the disease and concomitant pathology.
4. Psychological rehabilitation was carried out by a doctor-psychotherapist and was conducted both individually and in the form of group psychotherapy. If necessary, psychopharmacotherapy was prescribed.

Practical recommendations:

1. To use the stage of sanatorium rehabilitation of patients who underwent AMI, in the conditions of an medium-altitude mountains hospital.
2. Conduct regular monitoring of the quality and effectiveness of rehabilitation care for patients with AMI in regions and in the country.

References:

1. Макаридзе, А.О. Анализ некоторых показателей работы отделения восстановительного лечения кардиологического профиля / А.О. Макаридзе, А.О. Гусев // Проблемы городского здравоохранения: Сб. науч. тр. / Под ред. проф. Н.Н. Вишнякова.–Санкт-Петербург, 2011.–Вып. 16.–С. 174–177.

2. Макаридзе, А.О. Развитие восстановительного лечения пациентов после острого инфаркта миокарда в России и за рубежом / А.О. Макаридзе // Проблемы городского здравоохранения: Сб. науч. тр. / Под ред. проф. Н.Н. Вишнякова.–Санкт-Петербург, 2011.–Вып. 16.–С. 171–174.

3. Гусев, О.А. Анализ результатов лечения больных острым инфарктам миокарда в специализированных отделениях / О.А. Гусев, А.О. Макаридзе // Проблемы городского здравоохранения: Сб. науч. тр. /

Под ред. проф. Н.Н. Вишнякова.–Санкт-Петербург, 2012.-Вып. 17.– С. 68–71.
4. Гусев, О.А. О выборе больных острым инфарктом миокарда учреждения для восстановительного этапа после интенсивного лечения / О.А. Гусев, А.О. Макаридзе // Проблемы городского здравоохранения: Сб. науч. тр. / Под ред. проф. Н.Н. Вишнякова.– Санкт-Петербург, 2012.-Вып. 17.- С. 212–214.
5. Макаридзе, А.О. Сопутствующие заболевания у больных острым инфарктом миокарда в кардиологическом отделении с интенсивным лечением и в отделении медицинской реабилитации / А.О. Макаридзе // Проблемы городского здравоохранения: сб. научн. трудов / под ред.з.д.н. РФ, д.м.н., проф. Н.И. Вишнякова.-Вып. 19.–Санкт-Петербург: Изд-во «Любавич», 2014.-С. 103108.
6. Oldridge N.B., Guyatt G.N., Fischer M.E. et al. Cardiac rehabilitation after myocardial infarction. JAMA 1988; 260: 945–950.
7. Oldridge N.B., Guyatt G.N., Fischer M.E. et al. Cardiac rehabilitation after myocardial 2005; 111: 369–376.
9. Witt B.J., Jacobsen S.J., Weston S.A. Cardiac rehabilitation after myocardial infarction in the community. I Am Coll Cardiol 2004; 44: 988–996.

ABOUT THE RESORT “SARY-AGASH” IN KAZAKHSTAN

BULEKBAYEVA SH.
National center for children’s rehabilitation of corporate fund “University Medical Center”, Nur-Sultan city, Republic of Kazakhstan

Introduction. Kazakhstan takes the 9th place among the countries of the world by the area. It is the transcontinental state located on border of Europe and Asia. The territory - 2 million 724, 9 thousand km². Borders in the north and the west with Russia, in the east — with China, in the south — with Kyrgyzstan, Uzbekistan and Turkmenistan. At the same time, low population density is noted. Has no direct access to the sea. In the territory, there is a large reservoir the Caspian Sea, in fact, this is a lake. In the 20th century, there was environmental disaster − the drying of the Aral Sea, which entailed desertification of lands, deterioration in climate and negatively affected the state of health of the population of the whole region. There are large lake Balkhash and Alakol which became famous for the water and healing mud. In addition, there are lots of small lakes and rivers. The use of natural physical factors in improving the population brings a great economic effect.
According to the Kazakhstan scientists, the economic efficiency and payback from the implementation of measures when conducting resort treatment allows to reduce on average:
- hospitalized incidence for 25%,
- the number of visits to outpatient facilities due to disease for 10,8%,
- the average number of days of disability per case for 26% [1].

Goal of this work is to acquaint with a sanatorium zone Sary-Agash.
Balneological resorts of Kazakhstan that use mineral water for indoor and outdoor use are Alma-Arasan, Kapal-Arasan, Zharkent-

Arasan, Barlyk-Arasan, Rakhmanovsk springs, Zhosaly, Sosnoviy Bor, Merke, Sary-Agash, Ak-Bulak, Tau Turgen, Eraliyev [2].

Resort area "Saryagash" can be calledone of the oldest and most popular resorts of Kazakhstan. 70 years ago (in 1949), in the Turkestan region, when geophysicists drilled oil wells at a depth of 1,4 km, one of them gave the self-streaming hot mineral water. The discovery of powerful thermal springs in the desert attracted people to treat all kinds of diseases. The unique properties of this healing water turned the village Kokterek into a balneological resort area, and 22 sanatoriums in Saryagash, built near the spring, became a popular place.

Saryagash water contains sodium bicarbonate, silicic, naphthenic acid, slightly mineralized (0,7-0,9 g / l), high temperature (48-51 ° C), slightly alkaline (pH 8,3), produced from a depth of more than one kilometer. Contains bromine, fluorine, potassium, calcium, sodium [2]. According to the conclusion of the European Institute of Hydrology Henrijean (Belgium) mineral water "Saryagash contains iodine and a rare element of vanadium, which are unique and vital for humans and are a preventive measure against a disease such as diabetes. The conclusions of the research conducted by the institute prove that Saryagash water is as the same type as the famous French mineral water "Vichy Yorre". Saryagash water in its natural, pure form is used to treat 11 types of diseases.

The unique mineral water of the Sary-Agash thermal spring is a natural low-mineralized medicinal-table water and is a classic representative of the Saryagash "soda" mineral water. It belongs to a unique group of nitrogen acroterms widely used in balneological practice. The balneologists of Kazakhstan and Uzbekistan proved the balneological significance of the Saryagash waters in the 50th and 70th of the 20th century.

Types of treatment − drink, a gastric lavage, intestines, a mineral bathtub, an underwater shower, the circulating massage, a fan shower, microclysters, gynecologic irrigation, an enteroclysis.

The main natural medical factors:

The main medical factor − the high-thermal, nitric, low-mineralized, hydrocarbonate, sodium, self-streaming mineral water from an underground source which possesses anti-inflammatory diuretic, choleretic properties, regulates acidity of a stomach, promotes scarring of ulcers, restoration of immunity, normalizes a metabolism, favorably influences to the central nervous system, a psychoemotional background and work of hemadens [2]. It is necessary to use possibilities of sanatorius of Sary-Agash zone to improve the health of the general population, because the health level in Kazakhstan is not high. here is an increase in primary morbidity and cases of chronic pathology, especially among people of working age [3].

Thus, the balneological zone of Sary-Agash located in the landscape gardening massif near the river Keles, numbering 22 different resorts is medical, with the proved, high performance.

Thus, the balneological zone of Sary-Agash, located in a garden and park near the Keles river, numbering 22 different resorts, is a therapeutic, with proven, high efficiency.

References:

1. Dernovoy A.G. Conceptual foundations of management and future development of sanatorium services in the Republic of Kazakhstan. Author's abstract ... doctor of medical science. - 2006.- p.308.

2. Dernovoy A.G. Management of the effectiveness of sanatorium services in a market economy. - Almaty, D 36 "Iskander", 2002 - p.220.

3. Bulekbaeva Sh.A. The role of children's rehabilitation services in the healthcare system // Questions of rehabilitology. - 2012. - №5. – p.10-13

DIDACTIC POTENTIAL OF POLISH THERMAL MEDICINE FOR THE INTERNATIONAL BALNEOLOGIC TRAINING

CHOJNOWSKI J., PONIKOWSKA I.
Nicolaus Copernicus Medical University Torun. Department of Balneology and Physical Medicine Ciechocinek, Poland

The aim of the speech will be to present the didactic potential and training offer of Polish thermal medicine.
Balneological treatment can be carried out in any country that has natural healing materials or appropriate climatic conditions. It is very important that this treatment is carried out by a professional, very well-trained medical staff. In many countries, despite the very good natural conditions, there is a shortage of such professional medical staff to conduct spa treatment properly.
Balneological treatment in Poland is carried out as part of post-graduate training as a separate medical specialization and as courses for doctors of other specializations wishing to use our therapeutic methods. We have extensive experience in conducting training for doctors, nurses, physiotherapists and other medical staff. The staff running the courses and training is a group of a dozen or so professors and many researchers. We have modern textbooks on balneology and physical medicine as well as proven educational programs in this field. The training includes theoretical and practical classes.
Training proposals proposed during the presentation can become part of a broad international program under the auspices of Femtec, addressed to doctors from countries wishing to develop or restore spa treatment. It could contribute to improving the quality of spa treatment and to increasing the number of foreign commercial patients who are certain that the treatment provided meets international standards.

A SHORT-VERSION CLIMATOTHERAPY PROGRAMME IN ITALY: A PILOT STUDY FOR QUALITY OF LIFE

CROTTI C.
Adjunct Professor Department of Health Sciences University of Milan, Medical Doctor in rehabilitation Fondazione Benefattori Cremaschi Onlus, Italy
MACCALLI M.
Psychologist Fondazione Benefattori Cremaschi Onlus, Italy

This retrospective review assesses the objective and subjective physical and mental quality of life of our short prospective single intervention pilot program in patients aged 65 and over.
Twenty people were included, all volunteers (12F; 8M; mean age 74 +/- 5 years; range 65-83) who took part in a half-day climatotherapy program in the marine area of the Emilia-Romagna Region (Italy).
Demographic and operational data were collected retrospectively.
All participants had an MMSE equal to or greater than 23/30 (mean 27/30 +/- 3; range 23-30). The Barthel Index was greater than 90/100 (mean 96/100 +/- 3; range 92-100 / 100). Tinetti Scale 1990 was over 21/30 (mean 25/30 +/- 1; interval 21-27 / 30).
Comparisons have been made between people with similar pathologies (hypertension, heart rate, stress).
Blood pressure was significantly reduced during the walk in water (walking with water above the ankle for 100 meters) and returned to normal after resting in the open air, while there were no significant changes during the program on the beach.
Heart rate was significantly increased and decreased in both areas and more clearly changed in water.
The Psychological General Well-Being Index (PGWBI) were administered at baseline and after our half-day program.

The evaluation in the 22 questions included moods: anxiety, depression, anger, fatigue, confusion and were significantly lower after the day of Climatotherapy.

This short version climatotherapy program is designed for people who do not have enough time for a long stay at the spa. It has been discovered that our half-day climatotherapy program contributes to improving the mood.

Climatotherapy has a significant influence on improving the well-being and mood of patients (in terms of both psychological and somatic aspects) and consequently leads to an improvement in their quality of life.

We also expect that cardio-circulatory performance will improve as well, improving blood pressure and heart rate.

Therefore, one can expect health benefits from this repeated Climatotherapy program.

SEA CLIMATE AND THALASSOTHERAPY FOR THE PHYSICAL REHABILITATION OF THE SPORTSMEN

D'ALESSANDRO G.
Centre of Rehabilitation, Zurich, Switzerland

Some ideas about water, sea, sport , health and thalassotherapy.
Despite the long history we forgot the benefits of thermal and thalassotherapy for sportsmen,.
Lately there are different attempts to find new ways to benefit from water after training sessions and competitions.
Moreover there is a new approach about health and marine activities..

THE PROFILE OF PATIENTS FROM TECHIRGHIOL RESORT UNDERGOING COLD PELOIDOTHERAPY AND THALASSOTHERAPY

DEMIRGIAN S., SURDU O., STANCIU L.E., MARIN V.
Balneal And Rehabilitation Sanatorium Techirghiol, Romania
SURDU T.V.
Balneal And Rehabilitation Sanatorium Techirghiol - Ovidius University Constanta, Romania
SURDU M.
"Sf. Andrei" Constanta Emergency Hospital, Romania

Introduction: Lake Techirghiol is the biggest salty lake from Roumania and is located near Black Sea coast. In SBRT complex treatment consists in mud application, salty water from Techirghiol Lake, electrotherapy, masotherapy and kinetotherapy. At lakeshore, during summer, patients hospitalized in Balneal and Rehabilitation Sanatorium Techirghiol underwent mud treatment as cold mud ointment(antiq egyptienne method), lake immersion and exposure to the sun.

Aim of the study: To establish the profile of patients undergoing cold peloidotherapy and thalassotehrapy.

Material and method: This paper is a retrospective study upon patients admitted in our hospital during 3 summer month (June, July, August 2019) and their characteristics.

Results: In 2018 in Balneal and Rehabilitation Sanatorium Techirghiol were admitted 13093 patients. From these, 4132 were admitted during summer month (June, July, august). Statistical analysis using SPSS18 was applied. The following parameters were

analysed: age, sex, medium of provenience, co-morbidity, pathology, diet.

Conclusion: Even in the 21 century, the cold mud ointment combined with heliotherapy and bathing into salt water of the lake(thalassotherapy), despite its oldness(more than 3000 years) is still a valuable therapheutic option.

References:
- N. Teleki, Cura balneoclimaterica in Romania - Ed. Sport Turism 1984.
- O. Surdu, Comparative histological study of Techirghiol sapropelic mud action on skin 2007.

ASSESSING THE ECONOMIC IMPACT OF SPA THERAPY

DUBOIS T., BOUVIER C.E.
Conseil National Des Etablissements Thermaux, France

Whereas the evaluation of the actual medical benefit of spa therapy is well established and has produced convincing outcomes (AFRETh, FoRST,...), its economic impact is more assumed than documented. Although spa therapy is primarily a medical intervention that can not be endorsed through economic facts and figures, it is nonetheless valuable to try to get a better knowledge and understanding of what is going on in terms of created wealth, gross product, added value and jobs in connection with thermal activity. It's quite paradoxical to state that this impact has never been so well appreciated than under adverse conditions, such as the shutdown of the spa establishment due to bad weather or bacterial contamination. In such cases, not only the spa center endures severe losses but the spa town as a whole is in the doldrums. Economic impact surveys have so far come up against major hurdles (scope limited to the spa center, evaluation of direct jobs only, no diachronic perspective,...). The authors will present two methodologies to get the big economic picture. One proceeds with the aggregation of microeconomic data ("bottom-up" approach) whereas the other takes a macroeconomic view upfront. Based on a case-study, the first approach outlines the all importance of induced jobs. Alternatively, the macroeconomic survey addresses the raw internal production associated with the spa therapy industry and compares it to its use of collective financial resources. Both methods are complementary and equally useful when it comes to convince decision-makers and public authorities that spa therapy is not only precious to our health systems: it's an industry, sometimes vital to some areas. Finally, the authors emphasize the interest to

build a more structured and systematic approach to economic evaluation, not only at the national levels but through a coordinated cooperation at the European level and beyond.

ENVIRONMENTAL AND SOCIAL CHANGES: WHAT STRATEGIES FOR THE WORLD OF THALASSO AND THERMALISM

GURNARI G.
V. President of FEMTEC, Pres. of FEMTEC Technical Commission, San Marino

Every water on the planet has its own imprint, the "fingerprint" which depends mainly on its mineralization. The mineralization is conditioned by the hydrological cycle, by the long and troubled journey that every drop of water makes in the different natural states and in the different conditions in which it is.
Water is the most widespread liquid and the most important substance on Earth: we use it to drink, to wash, we swim in it and we complain when it rains...
Water affects our lives in many ways: first of all, it determines where we can live, the weather, if we can then grow the harvest and produce enough food. Large quantities of water are also used in industry, for example in the cooling processes of large power plants or as a solvent. There are immense amounts of water collected in the oceans and seas; only a small percentage is located on the continents, but it also comes ultimately from the ocean, which it is destined to return to by rivers.
Solar radiation causes water to evaporate from the rivers, lakes and oceans. This water vapor − rising up - cools and condenses, forming droplets of water collected in clouds.
When the drops are large enough, they fall to the ground in the form of rain. The raindrops originate by condensation of the water vapor that is in the clouds, normally around condensation clusters represented by hygroscopic particles of NaCl, $CaSO_4$, $MgCl_2$, mostly coming from the oceans. In part, this "precipitated" water evaporates again and returns to the air, in part it is used by plants;

but the most conspicuous quantity filters through the ground, or pours into the rivers eventually flowing into the sea. The entire cycle then starts all over again.
The differentiated heating of the Earth's surface by the Sun creates the conditions that are at the base of large air mass transfers between equator and poles: while the equatorial regions receive more heat than they lose, the areas closest to the poles lose more heat than they receive. Two fundamental high-altitude convection currents (symmetrical, from the equator to the two poles) distribute heat more evenly (the winds are the air transfers determined by pressure differences).
An important role in this transport of heat - and therefore of energy - is related to water, which evaporates in the equatorial areas, is transported as a result of air masses towards the poles in the form of steam, condensates in the clouds, precipitates in the form of rain or snow that brings it back to the earth's surface and therefore to the seas. Precipitation is the phenomenon that decreases the presence of water in the atmosphere.

In the water cycle, part of the rain and river water penetrates into the subsoil infiltrating, very slowly, between the rock and the sand or inside these materials, until it meets an impermeable layer against which a part of the water freezes forming an underground deposit, or an aquifer. The aquifers are divided into phreatic or free water - where there is need for pumping to let the water out - and artesian or aquifer under pressure.
When the water - penetrated into the ground − naturally re-emerges, we are dealing with a spring. If this source is at high altitude - then the water comes out after a limited path in the subsoil - it is very similar to rainwater, that is almost free of mineral salts, it is “oligomineral”. If instead it emerges after a long path, it brings salts dissolved along the path, that depend on the rocks it has passed through: salts of calcium, iron, manganese, magnesium and

sodium or other minerals. It thus becomes mineral water with various characteristics. Sometimes along his path he also encounters carbon dioxide from the subsoil: this gas is incorporated and the water becomes mineral and carbonated.
Therefore the greater or lesser mineralization of the water depends on the time of its residence in the subsoil and the types of rocks with which it comes into contact.
In everyday language fresh water is precisely that type of water that has penetrated into the subsoil, has undergone transport, mineralization and that differs substantially from the salt water that is present in the oceans and seas.
The water we use to take care of us, to swim, to tone up, to feel good, to relax, to have fun or simply to refresh our body, is not an inert molecule.
Everything mentioned is conditioned by the dynamics of the physics of the atmosphere and by human activity on Earth.
The summation of various causes has led to the situation of alteration of natural cycles that goes under the name of climate change. This is largely caused by man's pressure on natural resources. Water is the most affected in the general balance. The planning of interventions to mitigate human, social and economic actions has not yet become a reference in lifestyles, so the pressure exerted on the water cycle is considerable and will be higher if protection measures will not be adopted and if there will not be a change in the approach to the exploitation of strategic resources such as fresh water sources and thermal water sources.
In this context, the Thermalism can represent a virtual model of environmental protection.
In fact the wise actions to use these sources and the perimeter areas in which they are located can generate a sustainable economy simply by adopting a few, but essential protective measures.
Among the many we can cite savings processes on water catchments, using restrictive measures that lead to recirculation in

the balneotherapeutic tanks, recovering thermal energy through exchange of residual heat. Nowadays, the energy savings are possible with technological innovation.
Environmental education through awareness-raising actions for users: for example, you can take a shower with timers and avoid the use of totally chemical detergents, teaching personal and community hygiene.
Enhancing the surrounding natural environment, using only the necessary materials and avoiding energy waste by using renewable sources.
Limiting the overbuilding that causes a series of chain problems.
Creating culture and information.
This and much more represents a winning strategy for the Thermalism world and therefore for the whole society.
We must not forget that life depends on water and our health depends on water quality.
The natural waters - which are present on the surface and in the subsoil of the Earth - are practically all different, but all are to be considered "minerals". Depending on their genetic makeup (how, where and when they were formed), they are more or less mineralized and have characteristics such as to confer different reactions to the organism with which they come into contact, both in the form of food (soft drink, mineral water) and as a means therapeutic or leisure/recreational recreation (balneotherapy).
But if the focus is on shapes and not on contents, climate changes will also lead to largely lose this natural and preventive remedy for human health that we have all been studying for some time and that we know is "simple, humble and poor ". And therefore at risk of contamination or loss....

POSSIBLE RECOVERY BY CO_2 BATHING FROM A VASCULATURE DISEASE INVOLVING BOTH PERIPHERIES AND INTERNAL ORGANS

INOKUMA S., GOTOH Y, UCHIDA M., KATSUYAMA H.
Chiba Central Medical Center; Kohnodai Hospital, National Center for Global Health and Medicine, Japan

Background
Response of human body to a stimulus from nature is the principal physiological function. Some such diseases as rheumatic/connective tissue diseases involve vasculatures, resulting their abberant response to thermal stimuli. Aberrant response to a cold stimulus can be observed easily at peripheries in limbs, of which representatives might be Raynaud phenomenon. Whether aberrant response also comes in internal organs, and if so, whether balneological therapies could ameliorate it would be better evaluated.

Case presentations
In our clinical practices, we have treated connective tissue disease patients who have both Raynaud phenomenon and a gastrointestinal disease simultaneously; the latter included colic pain maybe caused by narrowing of mesenteric arteries, and pseudo-ileus by gastrointestinal ischemia. Other patients with Raynaud phenomenon had complicated pulmonary hypertension.

Finger temperatures measured by thermography
Patients with a peripheral vascular disease showed temperature disparity among fingers, in contrast to normal volunteers who showed almost the same temperature at any fingers. When the disparity was evaluated using coefficient of variation (CV=Standard

deviation/mean temperature of 10 fingers), CV was larger in patients.

Hands bathing in warm tap water vs. in warm CO_2 water

When hands were immersed into 42°C water for 10 mins, disparity was ameliorated. The amelioration was much more after immersion in CO_2 water than in tap water.

Suggestion

Small vasculature diseases sometimes involve both peripheries and internal organs. Balneological treatment such as CO_2 bathing might have a possibility to cure both involvements, if repeated during long-term.

PHYSICAL THERAPY AND HYDROTERMALISM: PRACTICAL EXPERIENCES AS A LEARNING METHODOLOGY IN PHYSIOTHERAPEUTIC TRAINING IN BRAZIL

ISRAEL, V.L., JAREK V., TAKEDA SYM, YAMAGUCHI B.
Physical Therapy Prevention and Rehabilitation Department, Physical Therapy Degree, Universidade Federal do Paraná, Brazil

INTRODUCTION. The training of the physical therapist in Brazil includes the integrative and complementary practices in health, which as National Policy for Integrative and Complementary Practices (NPICP) has made accessible to crenotherapy, spaterapia and hydrothermalism in the practices of the Brazilian public health system[1], since 2006. Many cities in Brazil have thermal aquifers and water sources of peculiar biochemical characteristics and relevant therapeutic potential. Knowing this physiotherapeutic resource of interdisciplinary use is a differential in the formation of future physiotherapists.

OBJECTIVE. To report the practical experience of thermalism as an innovative methodology in the training of physical therapists of the Physical Therapy Course of a Brazilian public university.

MATERIALS AND METHODS. The Physical Therapy course of the Federal University of Paraná, in the construction of its curriculum, proposed the inclusion of the discipline called Physiotherapy and Hydrothermalism. The innovative methodology is based on learning by projects with the construction of knowledge from practical experiences on health care in physiotherapy at different levels of complexity involving the concepts of thermalism. There are 30 students who, through theoretical classes and especially in the field in thermal places, exhibit pedagogical products in their final

evaluation. Theoretical studies and practical experiences are carried out that help the teaching-learning process.

RESULTS. The professional education of students at the Federal University of Paraná, in southern Brazil, provides in its undergraduate course in Physical Therapy practical experiences in different thermal cities such as Marcelino Ramos, Caxambu, São Lourenço, Piratuba, Santo Amaro da Imperatriz, among other places. The teaching process allows to reflect and learn to know and do through practices that involve the health care of the Brazilian population, with water sources, spaterapia and thermal waters. It is observed that the complex health systems provided for in NPICP in the Brazilian Public Unified Health System, and students also deepen knowledge about hydrotherapy and physiological and therapeutic effects of water types associated with physical therapy practice such as exercises, manual therapies and therapeutic equipment.

CONCLUSIONS. Students at the end of the course present a digital portfolio with insights from their theoretical-practical experience and the construction of educational materials in physiotherapy for the population using hydrothermal services. The future professional is encouraged to occupy these spaces and to seek scientific evidence to benefit human health in different life cycles and at all levels of complexity of health care.

References:

- BRASIL. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Política Nacional de Práticas Integrativas e Complementares no SUS. Brasília: Ministério da Saúde, 2006. 92 p.

- BONFADA, P. L.B; REZENDE, M.S; FOGAÇA, K.C. L; RADAELLI, P. B. Termalismo Social e Hidrologia Médica: as potencialidades brasileiras. 11º Encontro Científico Cultural Interinstitucional − 2013.

MUD THERAPY IN ANAPA - THE HISTORY OF EVIDENCE-BASED MEDICINE

IVANOVA E.A., SEVRYUKOVA V.S., DOBRYAKOV E.V.
JSC "DiLUCH" - Sanatorium-Resort Complex, the Resort Town of Anapa, Russia

Mud, as a therapeutic factor has been used by the local residents of Anapa for several millennia. The first studies of peloids on the Taman Peninsula were carried out in 1894 by Professor Kotovschikov. The mud has been used there for medicinal purposes since 1900 in Anapa, thanks to the study of its properties by V. Budzinsky and the opening of a mud bath. In 1926, N.I. Kupchik for the first time studied and described the methods of applying mud therapy, cited indications and contraindications for peloid therapy in the health resorts of Anapa. K.D. Vachnadze (1934) described the positive effects of the use of mud in the treatment of gynecological diseases. F.P. Mirzoev (1935) emphasized the particular effectiveness of treating patients with chronic diseases of the musculoskeletal system and peripheral nervous system with sulfide sludge. G.A. Khabashev (1955) noted the positive role of peloid therapy in the complex of spa treatment of children and adults in the environment of the Anapa resort. In 1967, a balneophysiotherapeutic association was introduced in Anapa, which caused an increase of research activities devoted to mud therapy for various diseases. In 1968, there were a number of scientists engaged in the study of peloid therapy. Among them N.E. Romanova, F.I. Golovin, Yu.V. Sidskaya, A.A. Buyuklyan, M.G. Fedorchenko, A.T. Bondarenko, Z.G. Boyko, E.K. Stepanova, O.I. Bandura, Z.N. Panyukova. In the years 1973-1974 V.I. Nosovskaya, P.V. Podobed, L.K. Semeykina, I.D. Abazina, L.A. Arakelova, Yu.S. Baklykova described the use of mud applications in the treatment of

children.. Peloid treatment of dermatological patients was proposed by M.A. Karagezyan, V.N. Avanesov, Yu.K. Tyunyaev, L.I. Baklykov, P.K. Ionov in 1975. The physicochemical, structural-mechanical, organoleptic, sanitary-microbiological properties of Anapa mud have been adequately studied (S.S. Nalbandov, 1934, A.A. Lozinsky, 1937, V.A. Aleksandrov, 1956, M.S. Belenky , 1963, V.T. Olefirenko, 1970). Kholopov A.P. (1997) substantiated the use of peloid therapy for periodontal diseases, for sports injuries, rheumatoid arthritis, diseases of the musculoskeletal system, and hepatobiliary pathology. In 1997, A.P Kholopov obtained a patent for the invention of the application of a cryopeloid therapy; in 2001 methodological recommendations on the use of thin-layer mud applications were issued. In 2013, V.S. Sevryukova, N.E. Kim-Dobryakova scientifically substantiated a modification of the methodology for applying thin-layer applications with Anapa mud on heated couches. However, most of the applied methods of mud therapy (mud applications, galvanic mud therapy, mud baths, electrophoresis of mud extraction) are currently based on the practical experience of doctors and patient reviews. Consequently a modern scientific substantiation of indications, methods, studying the effects of mud in combination with other methods, in particular with magnetotherapy, is relevant.

HOW EFFECTIVE IS MEDITERRANEAN THALASSOTHERAPY IN THE MANAGEMENT OF RHEUMATIC DISEASES: A NARRATIVE REVIEW

KARAGÜLLE M.Z.
Department of Medical Ecology and Hydroclimatology; Istanbul Medical Faculty, Istanbul University, Turkey

Thalassotherapy (from the Greek θάλασσα, meaning sea) is the balneoclimatological use of sea as a whole and can be defined as the therapeutic use of seawater, marine peloid, sun, sea sand, sea algae and marine climate. Thalassotherapy has been historically and geographically closely connected with Mediterranean countries including the Black Sea and Marmara Sea countries. This caused many features of thalassotherapy in common in these countries. They developed a "thalassotherapy tradition" which is still vivid and widely practiced in the management of chronic disorders, in particular of the musculoskeletal system.

With the aim to evaluate the evidence on the effectiveness of thalasso-treatment at Mediterranean seaside resorts for patients with major rheumatic diseases, a comprehensive search was carried out in main data bases combined with hand search of our own collection of papers for systematic reviews, meta-analyses and/or randomized controlled trials (RCTs) or controlled trials conducted in thalassic establishments in Mediterranean, Marmara and Black seas costal countries. We included trials published in English (full text or abstract) reporting the effectiveness of thalassotherapy programs for management of rheumatic diseases.

Review of the all trials indicated that thalassotherapy in these facilities might be effective in the treatment and rehabilitation of major musculoskeletal diseases. The level of evidence was relatively high as follows level 1A evidence for osteoarthritis; fibromyalgia

syndrome and chronic low back pain and level 1B evidence for ankylosing spondylitis and rheumatoid arthritis.

As a conclusion there is encouraging and compelling -level 1A and 1B- evidence that rehabilitation and treatment of main rheumatic diseases can be effectively carried out in Mediterranean thalassotherapy facilities. But it is noteworthy that there is still a need for more high-quality, randomized, controlled trials in Mediterranean countries to confirm this conclusion. Establishment of a Mediterranean Society of Thalassotherapy Research is very timely with the hope that it may play an promoting and supporting role in this regard.

TRAINING OF PHYSICIANS IN MEDICAL HYDROTHERAPY: NEW STRATEGIC DIRECTIONS FOR SKILLS DEVELOPMENT. THE TUNISIAN EXPERIENCE.

KHALFALLAH T., KSOMTINI W.
Faculty of Medicine of Monastir, Tunisia
OUESLATI R.
The Tunisian National Office of Thermalism and Hydrotherapy, Tunisia
SOLIMENE U.
World Federation of Hydrotherapy and Climatotherapy (FEMTEC), Italy

As part of the contribution to the development and promotion of medical tourism and well-being. The Faculty of Medicine of Monastir Tunisia is engaged in specialized training in thermal medicine which is now based on the training of future skills in Medical Hydrology and Climatology in order to promote the quality of care in spas and hospitals. Thalassotherapy centers.

In 2018, the Faculty of Medicine of Monastir contributed to the strengthening of the Training Center of the Tunisian National Office of Hydrotherapy and Hydrotherapy in collaboration with FEMTEC (World Federation of Hydrotherapy and Climatotherapy)) by a training cycle called Complementary Study Certificate which takes place over one year; Registration requirements require a doctorate in medicine whether you are a general practitioner or a specialist. It includes a theoretical training of 150 hours to which is added a practical internship in a spa or in a thalassotherapy center. The proposed training must meet the current challenges and needs of hydrotherapy and thalassotherapy, namely:

· to train a sufficient number of thermal doctors, that is to say to answer to quantitative needs,

· to train thermal doctors taking into account the evolution of the place of hydrotherapy and thalassotherapy in therapeutics, that is

to say to answer qualitative needs in accordance with international standards.

This training aims to:

- Acquire in-depth knowledge of water and electrolyte metabolism.
- Knowledge of the basics of thermal therapy, master the basics of crenotherapy and thalassotherapy indications, contraindications, evolution and results
- Acquire a skill to prescribe and monitor a spa and thalassotherapy care program.
- Mastery of the various hydrotherapy treatments
- Master the knowledge of organization and management of a hydrotherapy center
- Master the rules of hygiene, safety and technical control of equipment

Through this intervention, we will describe the Tunisian experience in training and development of skills in thermal medicine with an objective critique of other experiences on a global scale to develop a consensual universal pedagogical project of training in Hydrology and Climatisme Medicals, which responds to the new strategic orientations of the development of the thermal sector in the world.

BASIC PRINCIPLES OF LABORATORY QUALITY CONTROL OF MEDICAL COSMETIC PRODUCTS ON MINERAL BASIS.

KHOKHLOV V., BEZMEN I.
Crimean Hydrogeological Regime-Operational Station Saki, Russia

Crimean Hydrogeological Regime-Operational Station (HGROS), located on the shores of Lake Sakskoye, already for over 18 years produces the unique medical cosmetic products on the mineral basis which is known outside the Russia. Recipes of cosmetic products are developed on the basis of achievements in mud cure, supplemented and improved by the experience of modern balneology and cosmetology. The assortment of production totals more than 16 denominations and satisfies the most exacting requirements of consumers in the Russia, Byelorussia and other countries.

When producing preparations on the mineral basis it is necessary to pay special attention to quality control of raw material, production conditions and the finished product.

Quality control of mineral raw material and preparations is carried out on the base of the Central test laboratory, certificated by Gospotrebstandard of the Russia to perform measurements in the field of metrological supervision of hydromineral resources.

According to the standards of the Russia and technical specifications for the specific kinds of medical and cosmetic products, the specialists of the laboratory conduct strict regular quality control of preparations on conformity of their structure and properties to the normative requirements, their stability in time.

The list of controllable parameters is determined by the balneological properties and practical value for their application.

There are three components in mud: a mineral crystal skeleton, a colloidal fraction and mud solution (extraction).

Each of them is subjected to physical and chemical analysis.
The organic matter is found in mud solution (extraction) in solid and colloidal parts of peloid. For sulfide and volcanic mud their quantity is insignificant and makes from 1% to 3%. It is presented mostly by humic substances, bitumen, fatty acids, lignin, amino acids. Despite the low content of organic matters, they are of great importance in the therapeutic and cosmetic meaning. Bitumen, for example, has antibacterial properties.
The mineral part of peloid consists of insoluble in water minerals - clay, sand, and soluble salts, carbonates, sulfates, calcium forming a crystalline skeleton. Besides, in the mineral component the compounds of iron, sulfur, manganese, phosphorus, nitrogen and trace elements: copper, lead, zinc are determined.
Colloidal fraction, which connects the separate particles of the skeleton and fills all its spaces, determines the visco-plastic properties of the mud. Colloidal iron hydrosulfide causes the black colour of mud, has balneological effect on the human organism.
Mud solution (extraction), impregnating colloidal mass of mud on its chemical composition corresponds to the structure of lake brine and above all contains sodium chloride, magnesium and magnesium sulfate Mg SO_4. The salt content in the extraction can reach 250 g/dm^3. On the basis of mud extraction all liquid medical preparations and cosmetics means are made.
Such physical and chemical properties of mineral mud raw material and products based on its basis as density, stickiness, resistance to shear, heat, pH are of great practical interest.
According to the analysis the medicinal mud is more than 1,5 times heavier than water. Its density is 1.6 g/cm^3. This feature should be taken into consideration to estimate the gravity of mud, put on a body at large applique. This is especially important for patients with cardiovascular system disease.
Shear strength and stickiness give an idea of how well a mud application or a cosmetic mask will be kept on the human skin.

Knowing the meaning of pH in the mineral raw material is essential for making the optimum pH for skin in a cosmetic preparation.

The safety of medical and cosmetic products is confirmed by toxicological control on presence of heavy metals and residual of organochlorine pesticides. The heavy metal content is within the sanitary norms, and pesticides content is on 2 or 3 orders below the normative values.

On the conclusion of the SES the radiation factor of brine and mud of Saki deposit is within the limits of norms of radiation safety of the Ukraine and the given raw resources can be used without restrictions.

The Laboratory of HGROS uses in its work only authorized (approved) and allowed to use in the Russia methods - State Standards, technical specifications, methodical instructions and managing documents. The list of methods is very wide and includes more than 100 items (names). The laboratory is equipped with the necessary for performance of these tasks equipment and competent highly qualified personnel. It has a certificate of its participation in international inter-laboratory comparisons of test results of natural waters.

Detailed analysis of the mineral mud proves that mud is a complicated multicomponent system, which has a powerful beneficial effect on the human organism. Its effect is caused by a variety of its constituent salts, ions, organic matters, micro-organisms. Conducted in accordance with normative documents regular control of key indicators of raw materials and products based on minerals allows to maintain standard properties of raw materials, efficiency and safety of balneo-mud preparations.

THE COMBINATION OF THALASSOTHERAPY AND BALNEOTHERAPY IN GREECE AS A STRATEGIC DEVELOPMENT TOOL

KOUSKOUKIS K.
Professor of Dermatology - Lawyer, President of the Hellenic Thermal Medicine Academy, President of the World Academy of Chinese and Complementary Medicine, Greece

Thálatta! Thálatta! (Attic form, meaning "Sea! Sea!") was the joy shouting when the roaming 10,000 Greek mercenaries saw the Black Sea, after participating in Cyrus the Younger's failed march against the Persian Emperor Artaxerxes in the year 401 BC, as Xenophon wrote in his book "Cyrus Anabasis". Stranded deep in Persia and leaded by Xenophon, they had to march in deserts and mountain passes, towards the Black Sea. Abandoned in northern Mesopotamia, without supplies they had to fight their way northwards, while Artaxerxes army and hostile natives barred their way and attacked their flanks.

Greece is a high culture of health care since Hippocrates (460 – 370 BC) the most famous physician of antiquity and "father of the (modern) medicine", who recognized the healing properties of the sea.

Health Tourism is a dynamically developing economic sector worldwide that refers to the prevention, treatment and health recovery with modern medical methods or natural methods combining rest and relaxation for well-being and longevity. The basic idea is the mental, emotional and spiritual regeneration of the individual in a natural environment.

Thalassotherapy and balneology are basic segments of Health Tourism and consist of a wide range of preventive, therapeutic and cosmetic application using natural resources or sea water (thalassotherapy) for physical health, anti-aging and wellness for

patients and non-patients in facilities, called MediSpas. The vision of MediSpas is devoted to enhance overall wellbeing, body and spirit, under medical supervision in the unique Greek bioclimate, providing longevity.

In 2025 health tourism will be the world's 2nd largest health care industry and it is the type of thermal tourism that creates forced repeaters. It is Greece's greatest challenge to play a leading role in the rapidly rising international market of spa and wellness tourists, teaching the original Greek experience of wellness to the global audience.

In Greece thermalism and thalassotherapy are dominant levers in the National Health Tourism Strategic Plan, while the hundreds of Greek natural thermal springs as well as the thousand kilometers of seaside and bioclimate, remain a dominant advantage for the promotion of Greece's health tourists worldwide.

Several years ago, thermal hydrotherapy was empirical, but today has become a complementary method of classical medicine by the documentation of the chemical and biological action of natural healing resources, as well as the thermal and chemical mechanism by evidence-based medicine.

Today, balneotherapy and thalassotherapy are targeted to millions of wellness tourists of the international market, who enjoy the healing benefits of hot springs around the world for a wide range of illnesses, a form of Health tourism that is covered by the health insurance of the health travelers.

The challenge for our country remains high and it is important not to waste a moment on promoting Greece for its thermal and natural healing resources. The Hellenic Academy of Thermal Medicine was founded in 2015 and it is a nonprofit health organization dedicated to the development of thermal culture in Greece among professionals of medicine and consumers.

Thalassotherapy is an integrated concept for therapy, prevention and health promotion is carried out for defined indications under

medical supervision and participation of suit qualified specialist staff. Thalassotherapy should only be carried out in the direct influence of the marine climate and locally obtained and suitable seawater is used for inhalation and/or bathing, with different applications, using silt or algae.

The air quality must be able to be used as relief factor for extended open-air stays. For Heliotherapy, primarily natural solar radiation is used, especially in Greece where we have around 3000 hours per year of sunshine which is extremely effective in psoriasis treatment having in mind that more than 100 million people all over the world are suffering from psoriasis. Climate exposure and exercise therapy are accompanying health interventions that are focused on relaxation, nutritional change (Greek diet) and physical activity to improve physical performance.

Thalassotherapy and balneology apply from early ages to elder ages (3^{rd}, 4^{th} and 5^{th} age). World population is ageing, life-expectancy is increasing and senior citizens have better health and therefore more opportunities to travel after their retirement.

Silver tourism has been rapidly growing in Europe, with the percentage of travelers over the age of 65 expected to increase from 15% in 2010 to 25% in 2020 and 35% in 2050.

Senior travelers are divided into two categories: those who go on short holidays and those who rent or buy a secondary residence in their preferred destination and therefore travelling for longer periods. Today 7,3% of adults in Europe are thinking of moving into a destination in Southern Europe after retiring, which means that demand of vacation residences will reach 2,7 million in the next 20 years.

Greece does in fact have the potential of becoming a leading destination for silver tourists as it doesn't need to make costly investments in order to develop silver tourism. It has the infrastructure, the human resources and the hotel capacities to move forward.

In addition, the country could tap into the vast potential of spa tourism through its thermal springs and seaside infrastructures, improve its medical services and further develop wellness tourism and specific services that aim to improve health, such as meditation, sports and nutrition. The Greek Ministry of Tourism is working towards that direction, with the licensing of 68 thermal springs and 6 thalassotherapy centers in Greece and the development of synergies between the private and the public sector in the field of medical tourism.

Greece's beautiful remote island of Ikaria has been named one of the healthiest places on earth and is a spot of exceptional longevity. Here, there are more healthy people over 90 (and occasionally over 100) than any other place in the world.

Making it no surprise that the Ikarians' phenomenal longevity haw become a hot worldwide topic. In recent years, more and more people have become fascinated by the lifestyle of Ikarians and want to discover their secrets to good health. International scientists have turned their strong interest to learn what it is that manages to make Ikarians not only centenarians but also to have a very good physical condition and health.

Ikaria is a part of 'BlueZones' a name given to 5 places in the globe – Ikaria, Sardinia in Italy, Okinawa in Japan, Nicoya in Costa Rica and Loma Linda of California, USA, as centenarians.

Thermal Medicine has been recognized as complementary medicine by the Greek Central Board of Health, according to the Directive 2011/24/EU which is in force for all Member States, a fundamental principle applicable for thalassotherapy and balneotherapy as new emerging trends. The main effective rules in every State have to be uniform referring to various means and also, uniform proposals for characterization of indications and contraindications with certificates of ecological features. In Greece the legal framework is being upgraded, adopting to the EU countries

The criteria are to be designed within the framework of the respective national and regional legal provisions. This applies, among other things, to labor and professional law as well as especially to hygienic regulations and laws.
Preventive medicine, scientific research and youth mobility programs in the European thermal and thalassotherapy centers are proposed to be discussed to this Congress.

THE REHABILITATION OF ACUTE LYMPHOBLASTIC LEUKEMIA PATIENTS WITH POST-TREATMENT NEUROPATHY IN A HEALTH RESORT

LAVRIK N.P., STRELKOVA T.V., SAFONOVA S.A., VOROBIEVA L.A., PLISETSKAYA V.YU., PUNANOV YU.A.
Pediatric health resort “Solnechnoe”, Saint-Petersburg, Russia

It was traditionally believed that the use of spa treatment is absolutely contraindicated in cases of cancer. In recent years, there has been growing interest in the possibilities of spa treatment in patients with cancer. Oncologists took the first steps towards rapprochement, which explains their search to increase the effectiveness of treatment and reduce complications, extend the life of patients due to an increase in the incidence of disease. Annually, up to 180 primary cases of malignant neoplasms in children are recorded in St. Petersburg. Almost half are children with leukemia and CNS tumors. Up to 65-70% of patients can be cured of a tumor, with various complications that require special treatment.
The survival rate of patients with metabolic disease increased, and therefore long-term rehabilitation treatment. Rehabilitation activities should be as early and active as possible. Modern rehabilitation treatment of children in complete clinical remission, allows to prevent and correct the consequences of the disease and specific treatment, which significantly reduces the disability of children. In order to treat these complications, in 1998, oncology department "mother and child" was opened on the basis of the multidisciplinary children's sanatorium "Solnechnoe". Currently, the department has children of the following groups: 1) Children with leukemia receiving supportive chemotherapy; 2) Children who completed the combined treatment of tumors less than 24 months ago, the most frequent period of recurrence of the disease; 3)

Children in complete remission for more than 2 years; 4) Children who did not have cancer (brothers and sisters of children with tumors). Depending on the group, a rehabilitation program is used taking into account the individual characteristics of each child. But rehabilitation treatment of children is individual. Acute lymphoblastic leukemia (ALL) is the most common cancer disease in children around the world. The development of protocol treatment made it possible to achieve 90% survival in uncomplicated forms. Multicomponent chemotherapy causes a number of serious immediate and long-term complications. Vincristine polyneuropathy develops more often. After completion of induction therapy, vincristine peripheral neuropathy is detected in almost all patients. The drug therapy for polyneuropathy in children with ALL is significantly limited, the main components of rehabilitation therapy are medical massage and hydrokinesiotherapy, and if necessary, pain therapy. Upon completion of the full course of rehabilitation treatment, all patients noted the disappearance of pain and a significant improvement in gait. All children and relatives accompanying them, regardless of belonging to the rehabilitation group, receive qualified psychological assistance. Combining the main directions of rehabilitation treatment, the quality of life of children after treatment is significantly increased. It is advisable to refer cancer patients to local sanatoriums, since the patient does not change the climate, is with his family.

EFFECTS OF WEATHER AND CLIMATE VARIABILITY ON THE THERAPEUTIC PROCEDURES OF THE SAN DIEGO DE LOS BAÑOS AND CIEGO MONTERO THERMAL CENTERS IN THE 2018-2020 PERIOD.

LEDESMA ROSA R.
President of the Cuban Society of Medical Hydrology, Cuba

The Climate constitutes one of the therapeutic resources used in Balneotherapy and Functional Rehabilitation, as well as mineral and medicinal waters. In Cuba, as in other countries, there is very little information regarding the bioclimatic characteristics and therapeutic response of the seaside resorts and until now the climate resource remains without evaluating or characterizing according to its health potential despite its empirical exploitation. The main objective of this project between the Institute of Meteorology of Cuba, our Hospital and the mentioned Thermal Centers, is to identify the peculiarities of the climatic exhibition in two selected Centers (San Diego de los Baños and Ciego Montero). For this, a prospective descriptive epidemiological study of ecological exploratory type is being carried out. The main results to be obtained are: a Manual that allows the organization of climate treatment in the participating institutions, a climate database in the centers studied that allows the development of environmental epidemiological investigations, the development of a national workshop with a view to overcoming on the subject of medical staff in the centers studied and a final report containing a detailed bioclimatic characterization of the Spas under study and their therapeutic response in the different conditions, according to the main pathologies treated. As a result, we already have a 1-year cut, with very encouraging results that encourage us to do it later throughout the country.

CHONGQING GLOBAL CAPITAL OF HOT SPRINGS: ENVIRONMENT AND CULTURE. THE COLLABORATION WITH FEMTEC

LIU QI
Director of Chongqing Municipal Commission of Culture & Tourism Development

本次演讲将从两个方面展开
一是重庆与世温联的合作：①重点从2012年获颁“世界温泉之都”称号之前双方合作的重要成果，以及过去一段时间，尤其是世温联重庆代表处成立之后，双方在技术引进、项目合作、品牌营销方面的合作进展，如第一届中国温泉与气候养生国际研讨会、统景项目等；②未来的合作规划，重点还是依托世温联重庆代表处和亚太温泉与气候养生旅游研究院，从产学研一体化出发，加强双方在合作办学、产品研发、标准编制、项目打造、运营管理等全方位的务实合作。

The speech will focus on the following points:
A. Cooperation between the World Federation of Hydrotherapy & Climatotherapy (Femtec) and Chongqing, China:

- Focusing on the important achievements of cooperation between the two parties before the title of "World Capital of Hot Spring" in 2012, and especially after the establishment of the Femtec Chongqing Representative Office, the two parties have made progress in cooperation of technology import, project cooperation and brand marketing, such as the 1st International Symposium on Hot Spring and Climate in Beibei, Chongqing
- Cooperation in the future. Relying on the Femtec Representative Office and the Asia-Pacific Hot Spring, Climate Health and Tourism Institute, starting from the integration of Industry-Training-Research, we should

strengthen cooperation in all aspects, such as cooperation in universities cooperation, R & D on products, standard compilation, project creation and operation management.

二是重庆温泉牌的战略：①重点从“世界温泉谷”战略构想的角度介绍重庆温泉产业提档升级的想法，以及为实现“世界一流温泉旅游城市和温泉疗养胜地”所采取的举措，从项目、产品、品牌、人才等方面展开；②重点介绍北碚作为“世界温泉谷”的核心，推出的“世界温泉谷”康养产业园项目，从机制保障、土地保障、政策保障、服务保障等方面夯实基础，力求通过3-5年的打造，实现既定目标，欢迎世温联等国际机构深入参与项目的投资开发。

B. Strategy of Hot Spring Industry Development in Chongqing:

- From the perspective of the "World Hot Spring Valley" strategic vision, the speech introduces the idea of upgrading the hot spring industry, and the measures taken to achieve the "world-class hot spring tourist city and Spa Resort" from the aspects of projects, products, brands and talents.
- Focusing on the core of the "World Hot Spring Valley", the "World Hot Spring Valley" Health Industrial Park project is launched. It consolidates the foundation from the aspects of mechanism guarantee, land protection, policy guarantee, service guarantee and so on, and strives to achieve the established goal through 3-5 years' development.

EVOLUTION OF THALASSOTHERAPY IN SPAIN

MARAVER F.
Professional School of Medical Hydrology, Faculty of Medicine, Complutense University of Madrid, Spain
MORER C.
Institut Català de la Salut, Barcelona, Spain
MUELA A.
Thalasso Hotel El Palasiet, Benicassim-Castellón, Spain

Thalassotherapy (from the Greek word, θάλασσα, sea and therapy) besides referring to the medical use of seawaters based on their mineral properties, characterized by its high mineralization, high density and chemical composition rich in chlorides, sodium, magnesium, calcium, potassium, iodine..., also evokes the use of marine peloids, also known as lime muds (Mud Therapy), methodical exposure to the sun (Heliotherapy), partial or full-body warm sand baths (Ammotherapy or Psammotherapy) and marine climatotherapy (atmosphere, temperature, humidity, wind, barometric pressure, etc.).

In Spain, the "wave baths" as they were known were developed in the nineteenth century, driven by the royal family that summered every year in the Cantabrian Sea (Santander and San Sebastian), proliferating all over the coast the so-called "Balnearios Maritimos", that is, "houses and palaces on the sea" true floating architecture for healing and fun. However, these facilities should not be compared with the 'Maritime Sanatoriums' real health centers, intended exclusively for the cure and prevention of diseases and run by specialized medical professionals.

Currently, the continental Spain bathed, in part, by the Mediterranean Sea and the Atlantic Ocean, with more than 3000 km

of coastline, has thirteen Thalassotherapy Centers that offer treatments of cure and well-being.
This paper describes information about these centers, highlighting their particularities.

PHYSICAL MEDICINE AND REHABILITATION IN THE THERMAL ENVIRONMENT FOR HEALTH PROMOTION

MASIERO S.
Rehabilitation Unit, Department of Neuroscienze, School of Medicine, University - General Hospital of Padova, Italy
MAGRO G.
Resident at Physical Medicine and Rehabilitation School, University of Padua, Italy

Patients with musculoskeletal diseases used to visit the Spa centres (Salus per Aquam) both for traditional treatments, including mud therapy, or for holidays. Actually, Spas have increased their services, offering rehabilitation therapies for patients with neuro-musculoskeletal disabilities also combining them with traditional ones. The Thermal Centres can perform rehabilitation therapy for orthopedic-rheumatological diseases, including post-operative conditions (after hip or knee replacement), neurological diseases (post-stroke or progressive neurological disorders) and rehabilitation for lympho-vascular conditions. The rehabilitative approach generally included therapeutic exercises (land or aquatic therapies), instrumental physical therapies (ultrasounds, electrotherapy, LASER-therapy and others), health education and preventive measures.

COMMUNICATING WEATHER, CLIMATE AND CLIMATE CHANGE INFORMATION FOR THE HEALTH SECTOR

MATZARAKIS A.
Research Center Human Biometeorology, German Meteorological Service, Freiburg, Germany

As people do not have perception of air temperature but an overall sense of the thermal environment, adaptation and mitigation to climate change should also focus on the integral effect it has on humans (human thermal comfort). In order to analyse and describe human thermal comfort and other issues, several input and output parameters are required. For the quantification of thermal bioclimate, assessment methods based on the human energy balance are the most promising. They build the basis of thermal indices (e.g. physiologically equivalent temperature or perceived temperature). Studies on human thermal comfort and other environmental studies can be performed analysing and quantifying results from weather data and climate models. The results can be applied for the development of mitigation and adaptation strategies facing the local aspects of global climate change and for the protection of the health sector. This includes short and long term action like health-related warning systems, heat health action plans, construction of new health and quantification of activities of people in health resorts.

Finally, results and information have to be communicated and applied in order to minimize the negative effects for the health sector including tourism and recreation. The communication has to be specific and needs to give full particulars informing responsible persons or authorities. In addition the results and information have to be delivered and presented in an easy understandable way. This is required for most of the administrative staff responsible, as well

as the decision makers in general are mostly non-experts in the field of human biometeorology. People needs to be informed about the different facets of climate they are exposed and how they can avoid or adapt to stressful conditions.

HEALTH AND WELLNESS TOURISM IN RURAL AREAS TO BOOST THE TERRITORY

MENÉNDEZ F.
Vice president FEMTEC, CEO Solymed Travel, Congress, Fairs, International Events, Health and Wellness Tourism, Cuba

This presentation aims to become a space for reflection on the search for new formulas for innovation, training and cooperation in the important sector of "Health and Wellness Tourism" to increase the contribution of this important sector to the economies of small town halls or areas rural areas where the spa facilities are located with magnificent natural surroundings.

The social value of the sector will be highlighted, as well as to make visible the importance of the economic activity that it generates, by increasing the employment of the population in its territorial areas, rural spaces that, in many cases, present demographic imbalances to which new health facilities and well-being can help modify.

A "demographic challenge" derived from realities such as population dispersion, aging or low birth rates, aspects that could be considered among the criteria for future programming and financing where rural territories can benefit and develop.

It is an opportunity to make visible the role of spas and thermal facilities for many rural economies where they currently do not affect the socio-economic development of the region and offer the great opportunity to experience the encounter with the communities, raise awareness about respect for the environment , the value of cultural, gastronomic, artisanal identity as well as other customs and traditional events of the community

A reflection on today's contribution of Health Tourism in rural territories, the possible alternatives to increase in the future its socioeconomic role and the well-being of the population.

STROKE TRATMENT IN A THALASSOTHERAPY CENTER

MORER C.
Professional School of Medical Hydrology, Faculty of Medicine, Complutense University of Madrid; Institut Català de la Salut, Barcelona, Spain
MARAVER F.
Professional School of Medical Hydrology, Faculty of Medicine, Complutense University of Madrid, Spain

Introduction: Stroke is the main cause of acquired disability. Its planning and management (health and social) varies and although prevention is crucial, it's no less important to have better treatments and strategies to reduce disability.
Objective: To analyze the efficacy of an intensive thalassotherapy and aquatic therapy program in patients with stroke, assessing clinical parameters and validated functional scales. Patients and methods A prospective, quasi-experimental study was carried out with 26 post stroke patients with mild-moderate disability Patients were evaluated with the following scales: Berg equilibrium, dynamic equilibrium / Timed Up & Go, 10-meter walk, six minutes walking and visual analog scale of pain, before and after performing three weeks of treatment.
Results: After the programmed treatment, significant differences were obtained for all the variables studied.
Conclusion: An intensive program of thalassotherapy and aquatic therapy helps to improve balance, walking and perception of pain in these patients.

Reference:
Morer C, Boestad C, Zuluaga P, Álvarez-Badillo A, Maraver F. Efectos de un programa intensivo de talasoterapia y terapia acuática en pacientes con ictus. Estudio piloto. Rev Neurol 2017;65 (06):249-256

THALASSOTHERAPY AND THERMAL MEDICINE IN ROMANIAN BLACK SEA BALNEARY RESORTS

MUNTEANU C., DOGARU G., MUNTEANU D., HOTETEU M.
Romanian Association of Balneology, Romania

Introduction. Each Balneary Resort begins its story with the discovery of natural factors whose therapeutical value has been clinically and experimentally proven by scientific personalities of that time. Balneology has a long European and Asian tradition and Romania can be the cornerstone of international bridges in this area due to its geographical position, legendary tradition and extraordinary natural resources of all kind. The use of thermal and mineral springs on the territory of the country for health and treatment purposes is a tradition with a history of more than two thousand years. Unique spa resources, such as thermal and mineral springs, mud, moffetes, saline microclimate, bioclimate (spasmodic, exciting marine seafront or quay, stimulant tonic), are used successfully in the sphere of health care services, preventive medical action, rehabilitation and wellness. Legend of Hercule bathing in Cerna's waters is proof of the use of thermal waters long before the Roman conquest. Natural therapeutic factors cannot have an effective promotion on a globalized tourist market and with remarkable competitors without scientific research.

Material and method. This article is a systematic and summarizing review of all published articles by Balneo Research Journal in its ten years of existence, from November 2010 until September 2019 related with the thalassotherapy and thermal medicine subject. All the ten volumes and more than 250 articles were analyzed in order to understand the main thematic of the articles, the more useful

scientific concepts, the realistic benefits of the published articles for the development of Balneology.

Results and discussions. Analizing an article database of about 250 published articles in Balneo Research Journal can be of real impact on the development of the field of Balneology but also can drive the future of the journal to better understand its implications in the scientific arena.

Conclusions. In balneary tourism, the importance of researching natural resources is essential for the development of a balneary resort promotion plan, thus providing information on the therapeutic properties of natural factors, their contribution to our health and the biological mechanisms by which they act on our body.

CONTINUOUS IMPROVEMENT OF QUALITY AND SAFETY CULTURE

OSPANOVA SH.
Deputy Director for quality management and patient's safety of NCRC KF "UMC", candidate of medical sciences, MBA, Kazakhstan

T**he goal of the Patient Quality and Safety Management Program** - continuous improvement and maintain the high quality and safety of the services provided in the organization.

Program Objectives:

- Promote implementation of a mission and the strategic development plan. Promote interest in continuous improvement by means of strong leadership and strict focus on quality and safety of patients on all organization.
- Install in the organization the system of continuous and systematic improvement of quality through planning, realization, measurement, assessment and improvement of key actions and processes.
- Create projects on activity improvement.
- Organize systematic monitoring of clinical and organizational indicators (Key indicators of effectiveness).
- Construct culture through trust and honesty, which will consider medical mistakes opened, and by fair means.
- Create reporting system on adverse events, the system of training and the effective system of reaction.
- Encourage each employee to contribute in the form of knowledge and action to the continuous process of quality improvement.

Patient Safety Culture - is a culture where patient safety is on the first place for Center employees in the provision of services and reflects how safe patient care is.
A fundamental part of a safety culture is the provision of an open, fair and welcoming work environment.
It means that:

- Staff speaks openly about incidents in which they were involved;
- Staff can inform their colleagues and superiors of any incident;
- The patient is informed when something goes wrong, and they explain what lessons will be learned;
- The staff is treated fairly and supported when an incident occurs.

The main thing - is effective systems and teamwork aimed at achieving safe and high-quality results;
When something does not work out, the main thing is to determine what the problem is, and not in whom. The task is to highlight the process failures and system problems, as well as resolve them by acting impartially and without threats.
A safety culture involves recognizing the inevitability of errors and striving to proactively identify hidden threats.

HYDROTHERAPY IN TUNISIA

OUESLATI R.
General Manager of the National Office of Thermalism and Hydrotherapy, Vice-President of FEMTEC, Tunisia

Tunisia is reputed to be one of the best wellness destinations in the world. Hydrotherapy is the therapeutic use of water in all forms and ways.

Thermal care or cure is a time-honored tradition in Tunisia.

Our ancestors have already understood its health benefits and today's scientists and practitioners started working to confirm such convictions. Some studies have proved the beneficial effect of thermal water on knee arthritis, back pain, fibromyalgia or psoriasis....

Tunisia has an important thermal potential: More than 100 thermal manifestations well in the north and the south of Tunisia including 50 inventoried hot water springs with the required physico-chemical composition for thermal treatment in various therapies. There are more than 60 thalassotherapy centers with twenty years' experience, proudly bearing the International ISO 17680 standard, which certifies the quality of care, products and respect for the environment.

High-class recognition! ISO 17680 establishes the requirements for the provision of services in thalassotherapy centers using marine environment's beneficial effects with curative or preventive purposes, aiming at ensuring:

- Good quality services responding to customer's implicit and explicit needs,
- The respectful use of the thalassotherapy concept,

- Very specifically, the implementation of hygiene and safety principles, and
- The comfort to the customers.

TRANSDERMAL ABSORPCION OF MINERAL COMPONENTS IN THE THERAPEUTIC BATHS

PONIKOWSKA I., ADAMCZYK P.
Thermal Metabolic Hospital

Knowledge about the absorption of mineral components during bathing is a crucial problem in balneotherapy. It allows to explain the mechanisms of the specific effect of therapeutic baths. Absorption of minerals determines the general (systemic) therapeutic effect of the bath.

The skin is a protective barrier, the mineral components must overcome this barrier during bathing. Most of the dissolved ingredients in mineral water are absorbed poorly. The exception is iodine, which is absorbed in a significant amount in the range of supplementation. Studies indicate that the following minerals are poorly absorbed: Ca, Mg, Na, Cl, slightly better S(II) and K. The gases components, such as H_2S and CO_2, are very well absorbed by the skin.

The most controversial is the absorption of magnesium. It is widely believed that Mg absorbs well, so it can be a way to its supplementation. Many companies produce magnesium preparations that are recommended for use in the form of various treatments. These preparations are recommended for whole body and partial baths, rubbing, spraying, and for massage and drinking. There are few studies explaining the amount of Mg absorption through the skin. They indicate that the absorption of Mg through the skin is small, does not cause slight or no increase in its level in the blood after bathing. Therefore, the possibility of supplementation is doubtful.

Mineral baths act therapeutically through non-specific factors and mineral water osmoticity. Appropriate osmoticity of water causes

superficial absorption and local therapeutic effect. The systemic bathing of absorbed minerals has not been explained so far
New research is needed to explain the specific (chemical) effect of systemic therapeutic baths.

SPA RESORTS MEDICINE AND NON-COMMUNICABLE CHRONIC DISEASES (NCD), A MAJOR AND NOVEL PUBLIC HEALTH ISSUE.

ROQUES-LATRILLE C-F, BOUVIER C-E
Association française pour la recherche thermale (AFRETH), Paris, France

Chronic non-communicable diseases (NCD), such as diabetes, chronic vascular diseases, cancers, chronic obstructive pulmonary diseases (COPD) are a major worldwide public health issue. Overweight and obesity, poor diet, lack of physical activity, alcoholism and smoking are the major risk factors of these diseases. The reduction of these risk factors has significant consequences on the onset and/or evolution of such diseases.

Balneology can be a therapeutic mean for patients with NCD. A lot of patients with COPD are treated in spa resorts with a clinical benefit insufficiently investigated as are the tobacco withdrawal programs delivered in a lot of thermal cares facilities. Balneology demonstrated its ability to deliver efficient post-cancer rehabilitation programs particularly after breast cancers. Patients with type 2 diabetes can benefit of thermal programs combining thermal cares, education, adapted physical activity. Balneology can be of interest for vascular patients particularly with chronic arterial peripheric diseases, consequences of vascular stroke, ... all of these patients need a good weight control and level of physical activity.

Balneolgy can be an efficient mean of prevention as it demonstrated its ability to help patients to lose weight, eat better and move more. The reduction of obesity and physical inactivity is a peculiarly crucial issues for a good health as well the prevention and/or control of NCD.

In the AFRETH experience, 3 controlled studies enrolling 847 patients and 1 uncontrolled interventional study enrolling 97 patients have showed that in patients with overweight or obesity, at

one year, a lasting and significant weight reduction could be observed. The efficacy of the spa treatment appeared significantly enhanced by the association of spa therapy with a well designed and implemented patient education program. Two of these studies allowed also to observe a lasting better diet.

4 studies enrolling 865 patients (of which 3 controlled studies enrolling 825 patients) showed that physical activity could be, lastingly and significantly, increased after spa therapy in patients participating in an education program addressing diet and physical activity. 2 of these studies showed also that the spa resort stay was a relevant time to increase physical activity in patients who didn't reach the WHO recommended physical activity level. These last results were observed with programs based on human coaching as well on the use of connected devices.

It would be relevant for public health that spa balneology got more involved in addressing such issues.

CLIMATE AND HEALTH: A NEW CHALLENGE FOR AN OLD SCIENCE

SOLIMENE U.
World Federation of Hydrotherapy and Climatotherapy (FEMTEC), Italy

The conference on climate change in Paris highlighted the possible significant increase in the incidence of diseases due to environmental changes, which may affect a variety of systems (respiratory, locomotor, and gastrointestinal) and millions of people, sometimes with fatal consequences (climate-l@lists.iisd.ca). Moreover, the World Health Organization (www.who.int) implemented several workshops, whose outcome was a set of important scientific documents with annexed guidelines (http://www.who.int/healthinfo/sage/SAGE_Meeting_Dec2012_StoneA.pdfa)concerning the evaluation of objective/subjective wellbeing as related to the socioeconomic environment. Along side these issues, a variety of forms of tourism aimed at health, experience, and awareness are being developed.

The Thermae and the relevant regions are, therefore, important players in this challenge, which can be considered as a major one for modern civilization, namely environmental, human, and personal development and sustainability.

Thermal medicine, an old therapy that is currently applied in advanced countries according to strict scientific criteria, is now involved in this process to its full right and offers its potential for prevention, care, and rehabilitation to millions of patients all around the world. A stay at a thermal station, if well managed and organized, allows to "review" and "adjust" one's life styles, which are responsible for most active diseases.

The cultural and structural wealth of "thermal regions", sometime satrue legacy of the past experienced through a modern approach,

is a natural "soul medicine" complement, according to a modern interpretation of complex body systems and mind/body relations.

All the above involves multiple components and also represents an important factor for the socioeconomic development of thermal regions.

Environment, health resorts, and tourism are the pillars of a complex structure that may affect the quality of life both in health and economic terms. However, their harmonious development calls for analyses, evaluations, and practica lproposals.

FEMTEC, in the vision of new integrated development models, engages with specialists and the National Government Institutions in charge of health and territorial planning.

In 1969 the CENTRE FOR RESEARCH ON MEDICAL BIOCLIMATOLOGY was founded in Italy, at the Milan University, by Professor Roberto Gualtierotti, later managed by Professor Umberto Solimene. The Centre's activities, connected with those of FEMTEC, can be reviewed at www.femteconline.org. They are primarily aimed at studying relations between human health and weather changes (meteoropathies); climate change and health; characterization of tourist thermal establishments for therapeutic purposes.

The Centre is now a Biometeorology Research Unit (Doctor V. Condemi) based at the Department of Biomedical Health Sciences, within the framework of the activity of the School of Motor Sciences (Professor F. Esposito), and has cooperation agreements in place with FEMTEC-WHO (Professor U. Solimene).

It is also very busy in the educational sphere, including with the recent event *Labirinti d'acqua*, organized on occasion of the World Water Day (www.labirintodacque.it).

By way of example, we hereby introduce a brochure on Italian climate and its characteristics according to its action on the individual human body systems.

In the 4th century B.C., with the treaty *Airs, waters, and places* [1], Hippocrates from Kos stressed − at the dawn of medicine − the

utmost importance of the potential effects of the environment, and particularly, of climate on human health, as well as on its restoration during or after a disease. In another important work, *Prognostics*, Hippocrates focused on the structure of diseases, and in *Epidemics* he summarized the assumptions set out in *Prognostics* and the climatic and geographic conditions postulated in *Airs, waters, and places*. Today these intuitions are consistently confirmed by science based on the combination of two important factors: on one hand, a deep climate change is under way, and on the other the average life expectancy is increasing, particularly in industrialized countries, where new risk categories, unknown in the past, are now introduced alongside the classical fragile groups. As a result, the influence of weather and climatic factors on the pathogenesis of several illnesses has gradually been given solid scientific evidence. The broad scientific literature available on the topic includes epidemiological and clinical studies with a wide and documented range of adverse health outcomes observed after short and long-term exposure as a consequence of weather changes. Weather phenomena in general, and extreme ones in particular, are therefore part of a long and deep climate transformation process that has a clear epidemiological meaning for individuals at risk, fragile groups, and vulnerable Country-systems. One example in this respect is acknowledged by the World Health Organization, which paid great attention to the fluctuations of the phenomenon El Nino (ENSO) that have important epidemiological consequences in broad regions of the world and for a variety of diseases. With a thorough search of literature, the WHO also analyzed the climatic system and its changes to build predictive models for specific infectious diseases and potential micro and macro-epidemics in a future projection (known as climate change sensitive diseases). Some of its Reports summarize consolidated scientific evidence [2], [3]. Several studies were carried out to understand the links between weather, climatic, and environmental conditions and the onset of illness, both acute

and as an expression of new acute phases of disorders mostly affecting the respiratory tract and the cardiovascular system. Studies were also carried out on the number of patients admitted to the ER using measures of the association between diseases and winter weather conditions, *Rusticucci et al* [4]. *Makle et al* [5] focused on the links between weather factors and daily and weekly variability in patients admitted to the ER in Fukuoka, Japan. In another study, *Kovats et al*.[6] elaborated on the dual aspect of mortality and morbidity following an remarkable heat wave in London. Vulnerability and mortality correlated with heat waves in cities were broadly analyzed by, among others, *Besancenot* [7] using a general methodology on a national scale, and by *Stafoggia et al.* [8] with approaches focused on different populations of city dwellers. Following a contribution by *Curriero et al*. [9] embracing 11 US cities and funded by the European Commission Fifth Framework Programme, a complex European Research Project was carried out (Assessment and Prevention of Acute Health Effects and Weather Conditions in Europe − PHEWE − 2002-2005) with the main purpose to investigate associations between certain weather variables and their effects on human health (acute health effects) with a strictly epidemiological approach. The findings of this multi-centric study published by *Michelozzi et al.* [10] demonstrated a close association between heat waves and respiratory diseases, whereas a loose association was observed with cardiovascular diseases that called for admission to the ER. This applied research process also included specific Programmes, carried out with multi-centric and other approaches, aimed at designing and testing meteo-climatic-epidemiological models where the central role of the weather-climate-human health relation promoted the creation of mitigation and/or prevention models. Most investigations only focused on individual cities and the relevant urban context. Only a brief list is provided here: *Thirion*[11] on Marseille; *Semenza et al.*[12] on Chicago; *Ballester et al*.[13] with studies focused on

Valencia; *Dessai* [14], [15] on Lisbon; *Revich et al.*[16] on Moscow; *Hu et al.* [17]on Sidney; *Tan et al.* [18] on Shanghai, *Díaz et al.* [19] on Seville, *Nastos et al.* [20] on Athens with special care, in this work, on the onset of respiratory disorders correlated with weather types; moreover, *Yip et al*. [21] considered a whole region − Maricopa County, Arizona. *Johnson et al*.
[22] contributed to expand the field of analysis by comparing broad geographic regions, such as England and Wales, supported by estimates on winter mortality.
Another interesting study was carried out in France by *Laaidi et al.*[23], who introduced analyses on a variety of environmental and climatic contexts with respect to the GW. With reference to climatic change, the *WHO* [24] with a perspective global scenario, as well as the *Ministry of Health* [25] and the *Higher Health Institute* [26] for Italy, provided a significant input derived from the health effects produced by the heat waves recorded in 2003, later elaborated and confirmed in the light of the latest *IPCC Report* [27]. The consistent scientific production developed in the past decade resulted into a meta-analysis on mortality carried out by *Weiwei Yu et al.* [28] on publications focused on two meteo-climatic categories − winter (cold) and summer (heat) − which highlighted a closer relation with mortality in summer conditions (hot environment).

References

1. M. Vergetti (a cura di), Opere di Ippocrate (1965), Unione Tipografico-Editrice Torinese.
2. World Health Organization (1999), El Nino and Health.
3. World Health Organization (2005), Using climate to predict infectious disease epidemics.
4. Rusticucci M., Bettolli M.L. (2002), Association between weather condition and the number of patients at the emergency room in an Argentine hospital, International Journal of Biometeorology, 46:42-51.
5. Makle T., Harada M., Kinukawa N., Tojoshiba H., Yamanaka T., Nakamura T., Sakamoto M., Nose Y. (2001). Association of meteorological factors and

day of the week with emergency hospital admissions in Fukuoka, Japan ,International Journal of Biometeorology, 46:38-41.
6. Kovats S.R., Hajat S., Wilkinson P.: 2004. Contrasting patterns of mortality and hospital admissions during hot weather and heat waves in greater London, UK. Occup J Environ Med 61:893−898.
7. Besancenot J.P. (2002). Vagues de chaleur et mortalité dans les grandes agglomérations urbaines. Environ Risques Santé, 1:229−240.
8. Stafoggia M., Forastiere F., Agostini D., Biggeri A., Bisanti L, Cadum E., Caranci N., de' Donato F., De Lisio S., De Maria M., Michelozzi P., Miglio R., Pandolfi P., Picciotto S., Rognoni M., Russo A., Scarnato C., Perucci C.A. (2006). Vulnerability to heat-related mortality: a multi-city population-based case-crossover analysis. Epidemiology, 17:315−323
9. Curriero F.C., Heiner K.S., Samet J.M., Zeger S.L., Strug L., Patz J.A. (2002). Temperature and mortality in 11 cities of the Eastern United States, Am J Epidemiol, 155:80−87.
10. Michelozzi P., Accetta G., De Sario M., D'Ippoliti Daniela, Marino C., Baccini M., Biggeri A., Ross Andeson H., Katsouyanni K., Ballester F., Bisanti L., Cadum E., Forsberg F., Forastiere F., Goodman P.G., Hojs A., Kirchmayer U., Medina S., Paldy A., Schindler C., Sunyer J e Perucci C.A. (2009). Hight temperature and ospitalizations for cardiovascular and respiratory causes in 12 european cities. Am J. Respir. Crit. Care Med., 179:383-389.
11. Thirion X. (1992). La vague de chaleur de juillet 1983 à Marseille: enquête sur la mortalité, essai de prévention. Santé Publique, 4:58−64.
12. Semenza J.C., Rubin C.H., Falter K.H., Selanikio J.D., Flanders W.D., Howe H.L., Wilhelm J.L. (1996). Heat-related deaths during the July 1995 heat wave in Chicago. N Engl J Med 335:84−90.
13. Ballester F., Corella D., Perez-Hoyos S., Saez M, Hervas A. (1997). Mortality as a function of temperature. A study in Valencia, Spain, 1991−1993. Int J Epidemiol 26:551−561.
14. Dessai S. (2002). Heat stress and mortality in Lisbon. Part 1. Model construction and validation. International Journal Biometeorology, 47:6−12.
15. Dessai S. (2003). Heat stress and mortality in Lisbon. Part II. An assessment of the potential impacts of climate change. International Journal of Biometeorology, 48:37−44.

16. Revich B., Shaposhnilkov D. 2008: Tempertature-induced excess mortality in Moscow. Int J Biometeorol, 52: 367-374
17. Hu W., Mengersen K., Mc Michael A., Tong S., 2008: Temperature, air pollution and total mortality during summer in Sidney, 1994-2004. Int J Biometeorol, 52: 689-696.
18. Tan J., Zheng Y., Song G., Kalkstein L.S., Kalkstein A.J., Tang X.: 2007. Heat wave impacts on mortality in Shangai, 1998 and 2003, International Journal of Biometeorology, 51:193-200.
19. Diaz J., Garcia R., Velázquez de Castro F., Hernández E., López C., Otero A. (2002). Effects of extremely hot days on people older than 65 years in Seville (Spain) from 1986 to 1997. Intertanional Journal Biometeorology 46:145−149.
20. Nastos P. T.., Matzarakis A. (2006). Weather impacts on respiratory infections in Athens, Greece, International Journal of biometeorology, 50:358-369.
21. Yip F.Y., Flanders W. D., Wolkin A., Engelthaler D., Humble W., Neri A., Lewis W., Backer L., Rubin C., 2008: The impact of excess heat events in Maricopa County, Arizona: 2000-2005. Int J Biometeorol, 52: 765-772
22. Johnson H, Griffiths C., (2003) Estimating excess winter mortality in England and Wales, Health Stat Q, 20:19−24.
23. Laaidi M., Laaidi K., Besancenot JP. (2006). Temperature-related mortality in France, a comparison between regions with different climates from the perspective of global warming, 51:145-153.
24. WHO, (2003). Methods of assessing human health adaptation to climate change.
25. Ministero della Salute, (2008). Relazione sullo Stato Sanitario del Paese.
26. Istituto Superiore di Sanità, (2003). Indagine Epidemiologica sulla Mortalità Estiva.
27. IPCC, Climate Change 2007 - Impacts, Adaptation and Vulnerability Working Group II contribution to the Fourth Assessment Report.
28. Yu W., Mengersen K., Wang X., Ye X., Guo Y., Pan X., Tong S., 2012: Daily average temperature and mortality among the elderly: a meta-analisys and systematic rewiew of epidemiological evidence. Int J Biometeorol, 56:569-581

THE TEGUMENT - THE TURNING PLATE BETWEEN ENERGY, ENTROPY, INFORMATION OF ENVIRONMENT AND HUMAN BODY - NEW APPROACH OF THALASSOTHERAPY

SURDU O., ALMASAN R.E., DEMIRGIAN S.
Techirghiol Balneal and Rehabilitation Sanatorium, Romania
SURDU T-V., SURDU M.
Ovidius University, Faculty of Medicine, Romania

Aim: to present a point of view on thalassotherapy as integrative and holistic medicine using the fundamentals of physic in the physiology.
Materials and method: journals, books, and scientific web-sites were searched using key words from physic as energy, entropy, information, and from medicine as holistic medicine, thalassotherapy.
Results: Thalassotherapy is one of oldest form of natural therapy but nowadays it seems to be obsolete. It is seen as a luxury activity for wellbeing, relaxation. Bathing into the sea is kind of ontogenetic return. The human body is like a cyber system that interact with the energy of sea water, air, ions, and sun radiations, changes its entropy and information and balances its homeostasis.
Tegument has structural and functional elements of nervous system for extern reception and for vascular motility, being like a membrane placed between external and internal environment.
Conclusions: Thalassotherapy is a valuable natural therapy and has a huge impact on human body homeostasis.

References:

- Compendium of Neurorehabilitation in: Children, Mature and Old Peoples, 2008, Bucharest, printing and publishing house of Carol Davila University of Medicine Bucharest, ISBN: 978-973-708-298-5; Cheef Editors: ONOSE G., PADURE Liliana, editor coordinator SURDU Olga et all;

- Comparative Histological Study of the Action of Sapropelic Mud from Techirghiol on the Tegument, PhD Thesis Olga Surdu, Ovidius University, Faculty of Medicine, Constanta;
- Evaluation of chemical factor of action in sapropelic mud from Techirghiol" Olga SURDU, 2006, Bucharest, Publishing House: GRAMAR, 2006, ISBN: 978-973-591-520-9

HYGIENE IN HYDROTHERMAL SPA AREAS - HOW TO IDENTIFY AND AVOID CRITICAL ISSUES

UNBESCHEIDEN H.,
Unbescheiden GmbH - Systems for Wellness, Spa and Hydrotherapy, Baden-Baden, Germany

Nowadays, hygiene presents a lot of institutions with a crucial challenge. Requirements have become higher and the number of control visits to the institutions has grown. This is why the key points to ensure hygiene in hydrotherapeutic areas are being presented. In particular, important aspects of equipment and supply systems are being examined. What are the specific topics that are to be dealt with? The presentation focuses on the current technical state of affairs in relation to cleaning complete supply systems from the infeed of thermal water all the way to the therapeutic equipment.

USE OF NATURAL RESOURCES FOR REHABILITATION AND HEALTH PROMOTION IN LITHUANIAN

VARZAITYTE L., KUBILIUS R.
Lithuanian University of Health Sciences, Department of Rehabilitation, Lithuania
MILINAVICIENE E.
Lithuanian University of Health Sciences, Department of Rehabilitation; Limited company Medical SPA EglėsSanatorija, Druskininkai, Lithuania
BALCIUS A.
Limited company Medical SPA EglėsSanatorija, Druskininkai, Lithuania
RAMANAUSKAS K.
Druskininkai Recreation and Health Centre, Vilniaus, Druskininkai, Lithuania

*Introduction:*Lithuania has long been known for its therapeutic resorts famous for natural resources: mineral salt springs and therapeutic peat.The treatment of knee joint osteoarthritis (OA) using pharmaceutical and non-pharmaceutical measures remains a topical subject. The purpose of this study is to assess the effect of natural factors (mineral water and mud) on changes in the functional state of patients with knee joint OA. *Methodology:* 92 adult people with grade I−III knee joint OA according to the Kellgren and Lawrence scoring systemparticipated in the study. The subjects received 10 mineral water bath or mud application procedures and physical therapy every other day. The control group got physical therapy every other day. The effectiveness of the treatment was assessed on the basis of anthropometric changes of data, VAS, SF−36, KOOS questionnaire indicators. *Results:* Significantly greater walking speed, test of 5 sit downs/stand ups, circumference of a knee joint and calf, flexion and extension range, flexor and extensor strength after treatment lasting 1 month were obtained in the intervention group. After 1 month after treatment pain intensity scores over the past month and when changing position were

significantly higher in the control group. The most significant changes in SF-36 were identified after 1 month after treatment: physical activity increased and pain decreased in the intervention group. There was no significant difference between the averages of any KOOS subscale in groups. However, average percentages of symptoms, stiffness and pain in the intervention groups were significantly better and lasting 1 month. *Conclusion*: in the intervention group, where natural factors were applied (mineral baths and mud applications), after treatment and after one month after treatment anthropometric data significantly improved, pain intensity and joint stiffness decreased, physical activity increased compared to the control group. Future randomized controlled studies are needed to confirm these results. Moreover, further studies involving a higher number of participants with a longer period of observation are encouraged to shed more light on this subject.

CLINICAL EVALUATION OF THE USE OF DRINKING CURE OF HUMIC WATER IN PATIENTS WITH ALCOHOLIC LIVER DYSFUNCTION

VERYHO N.
Department of Balneology and Physical Medicine in Ciechocinek, Collegium Medicum in Bydgoszcz, Nicolaus Copernicus University in Toruo (CM UMK), Poland
ZIÓŁKOWSKI M., CZARNIECKI D.
Department of Psychiatric Nursing Chair of Conservative Patient Nursing CM UMK, Addition treatment Unit Psychiatry Clinic Anthony Jurasz Hospital, Bydgoszcz, Poland
KŁOPOCKA M., LIEBERT A.
Department of Gastroenterology and Eating Disorders Intervetional Endoscopy Center University Hospital, Bydgoszcz, Poland
BUDZYOSKI J.
Department of Vascular Diseases and Internal Diseases CM UMK, Poland
SZOT K.
Department of Pathophysiology CM UMK, Poland
PONIKOWSKA I.
Cuiavian University in Włocławek, Poland

Introduction: Humic water (HW) is a natural solution of humic acids (HA), unique on a global scale originally pure underground mineral water. We conducted the first in Poland and worldwide the control clinical trial of the use of HW in drinking cure.
The aim of the study was clinical evaluation of the impact drinking cure of HW on liver function in patients with alcohol dependence.
Methods: The study included alcohol dependent patients (only men) treated at the Addition treatment Unit of Psychiatry Clinic in Bydgoszcz: 50 patients in the main group and 42 in the control group. In addition to the standard drug treatment program, in a main group a drinking cure of HW was included in a small balneological dose of 8 ml/kg body weight for 30 days, 3 times daily,

45 min before main meals. The patients of the control group were recommended to drink the same amount of tap water. In addition to medical examination, the following studies were conducted before and after treatment in both groups: laboratory tests (blood morphology and biochemical blood tests), liver ultrasound (the size of the liver and portal vein size); quality of life tests for patients with chronic liver disease based on the CLDQ - Chronic Liver Disease Questionnaire.

Results: none of the patients reported any disturbing side effects of the therapy of HW; parameters of blood counts, CRP index, parameters reflecting renal function, electrolyte balance remained within the normal range which speaks for the safety of conducted drinking cure. In both groups, the values of AST, GGTP, total bilirubin, liver size decreased statistically significantly reaching the level practically in the normal range. In the study group, the ALT value and portal vein size decreased significantly in relation to the baseline values.

Comparative analysis of quality of life results before and after treatment showed a significant improvement in both groups in the CLDQ test. Both groups significant improvement in domains of emotional function and worry was achieved. In the main group, a significant improvement in the quality of life in all other domains (namely fatigue, activity, abdominal symptoms and systemic symptoms) was achieved.

Conclusions: The studied humic water does not cause side effects, it is well tolerated when used in drinking cure in patients with alcohol addiction during the course of addiction treatment. The obtained effects of beneficial HW activity on liver function suggest the possibility and desirability of their use in people with diseases and liver dysfunctions.