FEMTEC

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

THE 71° GENERAL ASSEMBLY
AND
INTERNATIONAL SCIENTIFIC CONGRESS
OF THE WORLD FEDERATION
OF HYDROTHERAPY AND CLIMATOTHERAPY
(FEMTEC)

"THERMAE 4.O"
New algorithms for health care, sustainable development and tourism

BATUMI (Republic of Georgia)
October 30th - November 4th, 2018

BEST WESTERN PREMIER BATUMI
www.bwpremierbatumi.ge

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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/).

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CONTENTS

PREFACE

The three major industrial 18th century gave place to mechanical production and paved the way towards the new **industrial economy**; the introduction of electricity, of the combustion engine, and of oil as an energy source **revolutions** brought about significant economic and social changes all over the western world: the creation of the steam engine in the in the **19th century** promoted the shift to **mass production**; the quick development of information and electronic technologies in the **20th century** introduced digital information automation and processing in all fields of application, and gave origin to the new **ITC-based society model**. We are now on the eve of the **fourth industrial revolution (4.0)** – a subject that has been at the focus of the **World Economic Forums** since 2016 and was introduced with the release of the well-known report **"Mastering the Fourth Industrial Revolution".**

Experts and observers are trying to guess **how manufacturing and economic activities will change**, which new professional skills will be required, and which ones will disappear instead. The study **"The Future of the Jobs"** highlights that technological, economic, and demographic factors will have a strong impact on the labour world in the next few years. Emerging web technologies, digital appliances, new iCloud-based applications, and flexible work are already changing the relation between man and his environment. Thus millions of new jobs will be created, while many others will disappear: **a net negative balance of over 5 million jobs** is predicted for Europe alone.

If this is the outlook for industry, one may wonder whether there can be a "THERMAE 4.0" and, if so, which actions and solutions can be envisaged. Facing this upcoming situation, which future can we expect for the Thermae, their role in national health care systems, the need for technological updates, human resources, research,

data collection, and data analysis methods, the organization of hospitality?

The challenge will be to reconcile the new global socioeconomic and environmental conditions with the unique specificities of the thermal tradition, defined by the therapeutic and environmental characteristics of the "genius loci", as well as by the concept of the patient at the heart of care and of the "search for the lost body". Moreover, how can the growing demand for health be integrated with infrastructures allowing sustainable development and tourism? Skills and capabilities will have to change for the Thermae as they did for industry: while problem-solving will still be the most sought-after soft skill by 2020, critical thinking and creativity will also gain importance. The present challenges of modern and advanced society can be summarized into **development and environmental, human, and personal sustainability.**

Ever since its foundation 81 years ago, FEMTEC (www.femteconline.org) has been putting forward innovative subjects for discussion and practical solutions.

This year the 71° FEMTEC congress will take place in Batumi (Adjaria), in the Republic of Georgia (https://georgia.travel/en_US/adjara/batumi), a country of ancient cultural and historical traditions, where hydrotherapy has a well-established and deep-rooted scientific background.

The location was selected for logistic reasons, but also in order to introduce a land that is unique in terms of environmental, cultural, and thermal resources, integrated into an unusual geography.

Adjara is an historical, geographic, and political-administrative region of Georgia. Located in the country's south-western corner, Adjara lies on the coast of the Black Sea near the foot of the Lesser Caucasus Mountains, north of Turkey.

The Congress also provides for a rich cultural agenda including visits to thermal centres (Tzkaltubo, Kokotauri), the Batumi Botanic Centre, Natural Caves, etc.

The main topics of the Congress:

- Structure and organization of national and international thermal systems
- Economic and social strategies and policies for thermalism
- Environment, climate, thermae, and health
- Training and research as tools for knowledge and information. The new possibilities of ITC
- Approaches to care, health, and wellbeing. Complementary, integrated thermal medicine
- New methodologies in the field of balneorehabilitation
- The role of the thermal patient-user
- Telemedicine
- Traditional and IT communication and marketing
- New technologies and health safety
- Health tourism
- Organization of the hospitality

The Board and Executive Committee of FEMTEC thanks above all the Organizing Committee and **Pr. Ramaz Surmanidze**, President of the "Ajara Doctors United Community", about hard work and great support to the Congress.

Welcome to Batumi (Georgia)!

Pr. Umberto Solimene
FEMTEC President

SCIENTIFIC COMMITTEE

Belaitar A. (Algeria), **Bulekbaeva S.** (Kazakhstan), **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), **Santuari A.** (Italy), **Solimene U.** (Italy), **Starzeva N.A.** (Russia), **Surdu O.** (Romania), **Vitale M.** (Italy), **Zhang Y.** (China), **Zorin I.** (Russia)

ORGANIZING COMMITTEE

President:

Ramaz Surmanidze (President of the "Ajara Doctors United Community")

Vice-President:

Georghi Gigineishvili (International Centre of Art-Therapy, Moscow)

Members: **Bakuridze A.** (President of the PharmatAss, Georgia), **Beridze A.** (Vice President of the "Ajara Doctors United Community"), **Zoidze T.** (VisitAjara), **Artmeladze M.** (Dir. Oncocenter, Ajaria), **Kakabadze N.** (Center of balneorehabilitation, Tskaltubo), **Msachuradze R.** (Health Mountain Resort Gomarduli)

Secretariat: **Tavdgiridze T.** (Georgian Language), **Gorgadze N.** (English Language), **Surmanidze Z.** (Russian Language)

SECRETARIAT OF ORGANIZING COMMITTEE

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

ADJARA DOCTOR'S UNITED COMMUNITY

Fondazione per la Ricerca Scientifica Termale

WELLNESS DESTINY MAGAZINE

WORLD
THERMAEDAY
21st APRIL

The Board and Executive Committee of FEMTEC and the President express heartfelt thanks to:

1. **Iremadze Gocha** - Construction Company "Batstroy-2007.'' – Director
2. **Msakhuradze Ramaz** - LLC "House in the Alley." - Director
3. **Kakabadze Aslan** - President of the Batumi People's Academy, director of LLC "Asguli"
4. **Davitadze Vazha** - Owner of LLC "Marani"
5. **Kakabadze Giorgi** - "Group GK.'' - Founder
6. **Nata Kakabadze** - Founder of the balneo-rehabilitation center, Bisels, "Resort Tskhaltubo"
7. **Avtandil Baratashvili** - General Director, "ZAO - metalist." city of Voronezh

CONGRESS PROGRAM

30th October Tuesday

08:00-18:00 Arrival in Batumi. Meeting at the airport, bus transfer to the "BW PREMIER BATUMI" hotel and accommodation of the participants.

20:00-23:00 Cocktail and welcome dinner with local Authorities, a short folklore concert.

31st October Wednesday

07:00-08:30 Breakfast in hotel

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

09:00-10:30

- Official opening of 71° Congress of FEMTEC, by the Authorities of Ajaria Government and Organizing Committee
- ***Official performance of the " FEMTEC Suite " hymn***
- Group photo

10:30-10:45 Coffee break

10:45-11:00

- Speech by the President of FEMTEC
- **Launch of the "WORLDTHERMAEDAY"**

11:00-12:00 ***1st S C I E N T I F I C S E S S I O N - The new challenges: innovation with tradition***

Chairs: S. Bulekbayeva, S. Masiero, R. Surmanidze

1. **M. Boaron (Portugal),** *Thermae 4.0. Impact of the Emerging Digital Technologies in Balneology*
2. **G. Barashkov, G. Gigineishvily (Russia),** *Avant-garde technologies in the hydrotherapy, thalassotherapy and climatology – review innovations and modern decisions in XXI century*

3. **O. Surdu (Romania),** *New algoritms for health and tourism in the balneological system in Romania*
4. **V.L. Adgienko, V.F. Reps, S.V. Krivenko, M.I. Kodonidi, IU.M Kishchenko (Russia),** *The concept of the lean system in the medical and pharmaceutical organizations of the Caucasian Mineral waters*

12:00-13:30 ***2nd S C I E N T I F I C S E S S I O N: Thermal Clusters: new strategies for a new balneology***

Chairs: O. Gozhenko, S. Inokuma, O. Surdu,

1. **C. Munteanu, G. Dogaru, D. Munteanu, M. Hoteteu (Romania),** *Developmental factors of romanian balneary resorts*
2. **I.N. Airo, V.L. Adghienko, I. N. Bobrovskiy (Russia),** *Modern state of the health resort service (on the example of the territory of Caucasian Mineral Waters)*
3. **E. Ivanova (Russia),** *The capabilities of the Resort Town of Anapa in the health improvement of the Russian people on the example of JSC "DILUCH"*
4. **E.V. Dobryakov (Russia),** *Body purification and health improvement at the Sanatorium-resort complex "DiLUCH" located in the Resort Town of Anapa: from the basic endoecological rehabilitation to the "DETOX-EFFECT" program*
5. **S. Bakuridze, R. Surmanidze (Georgia),** *Potential possibilities of Kobuleti climatic-balneological medicinal resources*
6. **S.I. Tsartsara (Georgia),** *The importance of territoriality in the Place Branding process*
7. **V.F. Reps, A. I. Rusak, D.N. Semenova (Russia),** *Natural resources as a factor of development of national resort clusters of the North Caucaus*

13:30-14:30 Lunch (buffet)

14:30-16:00 3rd *S C I E N T I F I C S E S S I O N: Balneology as a driver for prevention and therapy*

Chairs: K. Kouskoukis, R. Ledesma Rosa, C. Monteanu

1. **R. Ledesma Rosa (Cuba),** *Therapeutic benefits of the medical hydrology in the disease of the nervous system*
2. **N. Gvishiani (Georgia),** *New methods of treatment with Tskaltubo thermal radiation water*
3. **F. Fornasini (Italy),** *Mediterranean diet and SPA treatment: a healthy association?*
4. **R. Oueslati (Tunisia),** *Strategies for prevention and cure of the health in the Tunisian Thalasso Centres*
5. **I. Paluyanava (Belarus),** *Health Resort Treatment of metabolic Syndrome in the Republic of Belarus*
6. **S. Inokuma, Y. Goto, M. Uchida (Japan),** *Aberrant responses to thermal stimulus of finger vasculature in connective tissue disease patients*
7. **G. D'Alessandro (Switzerland),** *Climate and health in mountain areas in the experience of thermalism centers*
8. **A. Bakuridze (Georgia),** *Results of the research of hydromineral resources of Adjara region and prospects of their use in balneological practice*
9. **N. Kakulia (Georgia),** *Results of the research of "barezhin" type peloids of Adjara region and prospects of their use in balneological practice*

16:00-17:30 4th *S C I E N T I F I C S E S S I O N: Balneology and Physical Rehabilitation: an old alliance with a new concepts*

Chairs: L. Bressan, G. Gigineishvili, L. Semino Garcia

1. **S. Masiero, F. Vitale (Italy),** *Innovative rehabilitative care models based on a multidisciplinary approach and new technology in thermal setting*

2. **S. Bulekbayeva (Kazakhstan),** *Human resource management in rehabilitation*
3. **L. Bressan (Italy),** *Theoretical-practical basis of a new re-educational activity for Parkinson's and Alzheimer's patients*
4. **S. Ospanova (Kazakhstan),** *Question of quality and safety of patients*
5. **A. Kassis (Italy),** *Thermae 4.0 and rehabilitation: a new business opportunity for thermal companies*
6. **G. Gigineishvili (Russia),** *Art-therapy as complementary treatment for rehabilitation*
7. **L.E. Semino Garcia (Cuba),** *Comprehensive Rehabilitation Program in Cuba. Main results of a decade*
8. **Yu.V. Koriagina, L.G. Roguleva, G.N. Ter-Akopov, E.V. Kostyuk (Russia),** *Application of applications of medical mud in tambukan lake for restoration of elite sportsmen*

17:30-19:30 City tour; Free time and visit to Batumi dolphinarium
20:30-22:30 Dinner (traditional Georgian cuisine), live music
10:00-13:00 FOR ACCOMPANYING PERSONS:
- Visit to the State Museum and Art Museum
- City tour, shopping

1st November Thursday
07:30-08:30 Breakfast in hotel
08:30-11:00 5th *S C I E N T I F I C S E S S I O N: New trends of Balneology in the world*

Chairs: A. Belaitar, R. Oueslati, N.A. Starzeva, Zhang Yue

The CHINA HOT Springs Case.
Introduction and remarks by Li Peng

1. **Linh VU (Vietnam),** *The Binh Chau Hot Spring Resort*

2. **O. Gozhenko (Ukraine),** *Balneological clusters of Ukraine: scientific substantiation, treatment and resort development strategies*
3. **K. Kouskoukis (Greece),** *Thermal medicine in Greece*
4. **A. Belaitar (Algeria),** *Thermalism in Algeria and perspective*
5. **K. Musaeva (Kazakhstan),** Recovery *of children in the mountain resort of Kazakhstan*
6. **F. Hellmann, J.W. Motta (Brazil),** *Social Thermalism in Brazilian Public Health: perception of the public health secretaries from municipalities with thermal water sources*

10:45-11:10 Coffee break

11:00-13:30 6th *S C I E N T I F I C S E S S I O N: Technology, Health Tourism, marketing and media (mass and social)*

Chairs: M. Boaron, F. Maraver, F. Menendez

1. **N. Tsintsadze (Georgia),** *Platon Gigineishvili: Founder of Therapeutic and Physical Therapy Assistance in Western Georgia*
2. **M.Á. Fernández-Torán, I. Canizares, F. Maraver (Spain),** *Lifestyle Medicine and Thermal Medicine*
3. **N.N.S. Oliveira, F. Hellmann (Brazil),** *Comparison of social thermalism in health systems*
4. **F. Menendez (Cuba),** *Creation of the First "Health and Wellness Tourism Chair" in Latin America and Caribbean and the new International Magazine "Wellness Destiny"*
5. **R. Surmanidze (Georgia),** *Historical Medical Relations between Italy-Georgia*
6. **I. Tutberidze (Georgia),** *Perspectives of the introduction of medical tourism in tourist hotels*
7. **E. Melkadze (Georgia),** *The resort as a medical and recreational facility*

8. **G. Gurnari (Republic of San Marino), "***Self- monitoring" as instrument of quality for the management of balneotherapy centers*
9. **R. Surmanidze (Georgia),** *Perspectives of Balneological and Peloid Treatment in Adjaria*
10. **N. Chkheidze (Georgia),** *Exemption of unnecessary ions from mineral waters, using them to be used for standards and use for medicinal purposes*
11. **P. Giorgadze (Georgia),** *Creation of underground water bottling industry of various mineral composites of Georgia and the use of these waters for balneological purpose*
12. **T. Masiukovichi (Georgia),** *Results of chemical and pharmacological research of sulphide peloids of Adjara region*
13. **A. Tsertvadze (Georgia),** *Chemical and pharmaco-technological evaluation of Adjara region peat peloids*
14. **A. Gabrindashvili (Georgia),** *Pharmacotechnical evaluation of clays spread in Adjara region*

13:30-14:30 Lunch

15:00 Planting of FRIENDSHIP TREE (magnolia)
16:00-17:00 FEMTEC EXECUTIVE COMMITTEE (for Members)
17:00-18:00 FEMTEC GENERAL ASSEMBLY and awarding of participants
20:00-23:00 Gala dinner with traditional music

10:00-13:00 FOR ACCOMPANYING PERSONS:
- Visit to Gonio fortress
- Trip to Kvariati and Sarpi

2nd November Wednesday
07:00-08:00 Breakfast in the hotel
08:30 Departure by bus to Tskhaltubo

12:30-16:30 Excursion to the Prometheus Caves. Lunch. Visit to thermal springs.
17:00 Return to Batumi
21:00-22:00 Dinner in hotel

3rd November Saturday

07:30-08:30 Breakfast in hotel
09:00-11:30 Excursion to the Botanical Gardens
11:30-19:00

- Bus trip to mountain Adjara to visit:
  - Waterfall and the arch bridge of Tzar Tamar
  - Winehouse of Nodar Shervashidze
- Lunch
- Wine cellar

21:00-23:00 Dinner at the hotel. Live music.

4th November Sunday

08:00-12:00

- Breakfast at the hotel
- Transfer to Batumi airport (depending on the time of departure)

SPEAKERS

ADGHIENKO V.L., Pyatigorsk medical-pharmaceutical Institute - branch of FSBEI "Volgograd state medical University" Ministry of health of Russia

AIRO I.N., Pyatigorsk medical-pharmaceutical Institute - branch of FSBEI "Volgograd state medical University" Ministry of health of Russia

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BAKURIDZE K., Tbilisi State Medical University, Georgia

BAKURIDZE L., Tbilisi State Medical University, Georgia

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GOTSIRIDZE R., Tbilisi State Medical University, Georgia
GOZHENKO O., Ukrainian Research Institute of Transport Medicine of the Ministry of Health of Ukraine
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TSIVADZE N., Batumi Shota Rustaveli State University, Georgia

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ABSTRACTS

THE CONCEPT OF THE LEAN SYSTEM IN THE MEDICAL AND PHARMACEUTICAL ORGANIZATIONS OF THE CAUCASIAN MINERAL WATERS

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More than 215 years Caucasian Mineral Waters take patients from Russia and the world to rest and treatment. Today, about 300 resort organizations serve over 1,000,000 people each year. Such a huge potential and the presence of a medical-pharmaceutical institute in the region make it possible to introduce new methods and improve the quality of medical services and services in general. Competition in the medical tourism market stimulates the entire industry to use modern approaches to process management with an emphasis on customer focus. One such path may be the concept of lean manufacturing.

The aim of this study was to check the possibility of applying lean production methods in various medical and pharmaceutical organizations in the region in order to integrate into a single lean system.

Currently, the national project “Creating a new model of a medical organization providing primary health care” is being implemented in the Russian Federation. This state program of changes in the work of a clinic, pharmacy or sanatorium that is familiar to the patient sets the main purpose - increasing customer and employee satisfaction. To this end, the leadership of the Russian healthcare system studied the materials and international experience of the founders of the philosophy of lean manufacturing, the Toyota

production system, and developed recommendations adapted for the country.

For several months, the institute staff conducted practical experiments on the introduction of lean production methods in the processes of several organizations: an institute, a pharmacy, two hospitals and two sanatoriums. The methods of value stream mapping, questionnaires, open surveys using sheets of problems and suggestions, visualization, timekeeping, etc. were applied.

When analyzing the results of the experiment, losses that did not create value for the consumer were identified, requests for information about some processes from customers and employees of organizations, ways to solve certain problems, and also showed increasing interest of customers and employees in improving the conditions of service and labor.

The findings lead to the conclusion about the possibility and necessity of introducing the principles of lean production into the medicine and balneology sphere, as well as the relevance of creating a single lean system at all stages of training (for staff), treatment and rehabilitation (for patients), especially in Caucasian Mineral Waters.

MODERN STATE OF THE SANATORIUM-RESORT SERVICES (ON THE EXAMPLE OF CAUCASIAN MINERAL WATERS)

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Spa treatment and rehabilitation in the Russian Federation are traditionally aimed at: the restoration and compensation of body functions after injuries, operations and chronic diseases, as well as the General improvement of the nation, to improve the quality of life of the population and the extension of its active longevity. Sanatorium-resort rehabilitation and treatment of patients is carried out using traditional environmental factors, mineral waters, mud and other resort procedures. The complex impact of these factors ensures the effectiveness of treatment and rest of patients in the resort areas. The potential of the resort resources of the region Caucasian mineral waters are huge and unique. In fact, these resorts have no analogues and competitors. In recent years, there has been a trend of growth of tourist flow to the region, which is 6-7% per year. Every year Caucasian mineral waters (according to Rosstat) is visited by more than 1 million tourists from different regions of Russia and foreign countries. It formed up to 17% of the market of health services in Russia.

The region is included in the cluster" ECO-resort Caucasian mineral waters", which was included in the Federal program for the development of domestic and inbound tourism until 2018 with funding from the Federal budget. First of all, financing will be directed to the development of infrastructure and transport logistics, repair, expansion and reconstruction of sanatoriums and other health resorts. A number of measures are planned to increase the investment attractiveness of sanatorium complexes.

The analysis of the features of personnel and material support of the health resort service showed that in this territorial integrity there are 451 units of the health system, including the "Pyatigorsk research Institute of balneology" and 156 sanatoriums of various Ministries and departments, which employ more than 14,800 employees. In addition, there are more than 200 hotels in Caucasian mineral waters. According to the expert organization RAEX, the total capacity of accommodation facilities in the region is more than 43 thousand places, including 34.8 thousand people in health resorts. The average load of health resorts is 69%, the average cost of one guest per day is 2826 rubles ($43).) and includes the cost of accommodation, meals and medical services.

Sanatorium-resort complex Caucasian mineral waters can be viewed in two planes. First, it should be noted that about 40% of all health resorts belong to the state, and their main mission is to perform social functions for the improvement of the population and prevention of diseases. Sanatoria of the state form of ownership belong to various departments and are assigned to the Federal center.

Other organizations have the form of trade Union-19,20%. private - 4.30%, mixed Russian-30.20%, foreign – 3.70%, mixed with foreign ownership – 2.20%. These sanatoria are a market component in the health resort sector of the economy, removing the limitations inherent in state health organizations.

This turns them into full-fledged participants of the tourism market, whose activities primarily triggered the concept of effective development of recreation and treatment, based on the formation and development of highly efficient economic entities with a predominance of the economic component of the social. At the moment, these sanatoriums lack the infrastructure of sports and health-improving orientation, which is being re-equipped at a slow pace. Only 40% of health resorts have indoor or outdoor pools.

Analyzing the emerging trends in the sanatorium industry in Russia, we believe that the development of resort organizations should go to the Caucasian mineral waters in several directions.

First of all, it is necessary to allocate the objects specializing in medical tourism, equipped with high-tech diagnostic and physiotherapy equipment, having a staff of highly professional medical staff, conducting research work on the influence of resort factors and other means on the course of the disease. Such organizations today there are about 30 units or 22% of the total number of sanatorium organizations Caucasian mineral waters. These organizations should become the basis for the development of medical tourism in the region in the future. The main contingent of these resorts are as in the old days, citizens suffering from various diseases and the elderly.

The second type of health resorts owned by trade unions and individuals is more like a holiday home. The contingent of vacationers of these sanatoriums are mostly citizens at an active age, in need of General improvement. In such sanatoria, the staff of doctors is limited to therapists and physiotherapists, conducting mainly General supervision of vacationers. There are about 30% of such sanatoriums.

A fundamentally new model of Spa organizations appeared in the last 10 years. These are modern hotels with a well-developed infrastructure of accommodation and food, modern medical facilities, and the presence in the complex of services provided SPA and other health programs: relax, detox, diet. This mixed model provides the opportunity to take on treatment and rehabilitation of all categories of tourists, including healthy young people and it just has all the advantages to a greater spread in the region of Caucasian mineral waters. With the strengthening of this position in the future, Russian health resort organizations will cease to be a place of treatment and rest only for patients and elderly people and will

become multifunctional health centers designed for a wide range of consumers.

Thus, the health resort organizations of Caucasian mineral waters are very diverse and are aimed at serving different segments of consumers. The use of different types of physical recreation in addition to Spa treatments allows them to have an obvious competitive advantage in a market economy and to be the best multifactorial resort base for the prevention and treatment of a number of diseases.

WELLNESS TOURISM: CHALLENGE FOR UKRAINIAN HEALTH-RESORTS

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The priority of the development of tourism and resorts for the Ukraine is due to the economic importance of this area, the need to form a positive international image of Ukraine, a powerful function of wellness tourism in promotion of healthy lifestyle, an objective need for the rational use of natural recreational and healing resources. In the structure of inbound medical tourism in Ukraine by the number of clients spa and wellness tourism is 25 %.

According to data of Global Wellness Institute (2017) wellness tourism earns 563 billion US dollars, among them termail/mineral springs – 51 billion and spa industry – 99 billion. The Global Wellness Institute experts identify five best ways for promotion of wellness tourism, among which the fundamental for Ukrainian health-resorts are to focus on a unique offering (the unique for our resorts are various healing mineral resources) and don’t forget the domestic wellness tourist.

The resort complex of Ukraine is a large industry of health and recreation with unique climatic, balneological, mud resorts. According to the Law of Ukraine "On Resorts" (2000) healing mineral resources are mineral waters, peloids (medical mud), climate, rump of estuaries and lakes, seawater, ozocerite, bischofite. The mineral waters for intertnal and external usage and

peloids (medical muds) of almost all types are found in Ukraine: mineral waters with specific organic substances ("Naftusya", Truskavets resort, Lviv region), organic substances and metasilic acid (Berezovsky mineral waters, Kharkiv region); carbonic, ferrous, arsenic, sulphide, radon (Khmelnik, Vinnytsia region), thermal (Zakarpattia, Kherson, Odessa regions) waters, etc.; Sulphide, peat, sapropel, soponic peloids (Odessa, Kherson, Nikolaev, Donetsk, Ivano-Frankovsk regions), bischofite (Poltava region) and ozocerite (Lviv region). There are unique therapeutic climatic conditions of recreation complexes of the north-western Black Sea and Azov region and Solotvin salt caves (Transcarpathian region), big forest and mountain regions etc.

Tourism and health-resort sector are the city-forming for many resort areas of Ukraine, a key to sustainable development of these areas. The transformation of the resort complex of Ukraine into a highly profitable, competitive, attractive investment sector will enable our state to take its place among the leading tourist countries in Europe.

RESULTS OF THE RESEARCH OF HYDROMINERAL RESOURCES OF ADJARA REGION AND PROSPECTS OF THEIR USE IN BALNEOLOGICAL PRACTICE

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There are over 2000 healing waters discovered on the territory of Georgia, that have been used by the local population for curing reasons for centuries. The healing mineral waters effectively cure various diseases, and the efficiency of mineral waters are rising for several times in case they are accompanied by mountain air, sun rays and vitalizing greenery of the forest.

Adjara is one of the regions of Georgia, rich in fresh and mineral water resources, which can be found on the seacoasts, as well as in the mountains. These resources have been known to the local population since the ancient times and have been widely used for the treatment of various diseases.

In the available literature there is found scarce information on the use of hydromineral resources of Adjara region in balneological practice.

The chemical compositions (micro- and macroelements) of 38 mineral waters located in Adjara region have been studied by using the chemical and modern instrumental methods of analysis.

In almost all studied objects have been stated the contents of the following balneological components: iron, calcium, silicon and gases, hydrogen sulfide in some of them (Keda, Namonastrevi, Ghoma waters, Makhinjauri, Khulo, Khidistavi, Beshumi etc.).

Based on the pharmacological studies have been established, that the mineral water “Shubani” of Shuakhevi municipality significantly

stimulates the acid and enzyme producing function of stomach, while not affecting the peripheral blood composition; it stimulates the synthesis and release of bile acids, secretion of bilirubin. By loading of the body weight by 2% (single time) the mineral water mildly reduces the secretion of bile and bilirubin.

The further development and practical realization of the results of conducted studies will promote the development of medical, particularly healthful tourism and arrangement of balneological resorts in Adjara region.

AVANT-GARDE TECHNOLOGIES IN BALNEOLOGY, THALASSOTHERAPY AND CLIMATOLOGY – REVIEW OF INNOVATIONS AND ADVANCED SOLUTIONS IN HEALTH RESORT MEDICINE IN XXI CENTURY

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The report is devoted to the analysis of the development of new, innovative solutions and technologies that marked the end of the 20th and the beginning of the 21st century. The evolvement of new materials and systems in balneology has led to the production of new forms of bathtubs, showers and other hydrotherapeutic installations. Medical acryl, Corian, stainless steel have allowed to create other ergonomic forms of baths. Innovative technologies of water and air pumps have laid the foundation for automatic hydromassage. In 1978, the first baths with automated air, water and mixed massage were set up. Further, the development of automated massage in water went onward and upward, and the creation of electronic systems and automated regulation at the turn of the 21st century made it possible to almost completely automate the processes in balneology today. To date, modern hydrotherapeutic installations have been created (TRAUTWEIN, Germany) that provide ECG monitoring directly in the bath, exposing to micro-currents in water, and a number of additional effects on the principle of “multi-factorial exposure” in one procedure. Currently, the “multifactorial impact” is realized through formation of new therapeutic shower assemblies with electronic automated control (DORNBRACHT, Germany) that facilitate the work of the personnel and increase the efficiency of balneological

therapeutic procedures. The progress of aqua-therapy and methods of physiotherapy exercise in water significantly expands the possibilities of rehabilitation and recovery in patients with musculoskeletal system disorders. Advances in biochemistry and biology in the analysis and evaluation of algae and seawater have developed and made popular and scientifically based the direction of thalassotherapy as a modern seaside resort.

The elaboration of plastic materials, new electronic control systems has brought the organization of the processes of crenotherapy and inhalation therapy in the resort sphere to a new level. Nowadays, these processes are almost completely automated and make it possible to increasingly use these methods not only in resorts. New solutions in climatic treatment have allowed us to reapply at a new level to such effective procedures as solar and air baths, sleeping on climatic terraces, as well as to artificially recreate natural climatic zones such as salt caves, zones with controlled aero-therapy and a number of others. The advance in these technologies, along with other factors, is one of the reasons for the renewed interest of mankind in the capabilities of the resort, as a place where the natural resources of health can be restored and the pharmacological dependence can be reduced.

THERMALISM IN ALGERIA AND PERSPECTIVE

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The communication is about the thermalism in Algeria, it is presented the thermal potentialities in Algeria, as defined during the last thermal assessment carried out in 2015.
It also presents the establishments in operation throughout the national territory, the projects in progress as well as the operations related to the upgrading of the personnel working in these establishments.
Finally, a brief overview of the 2030 sector's development plan is presented in terms of issues, strategic orientations and the action plan to be implemented.

THERMAE 4.0 – IMPACT OF THE EMERGING DIGITAL TECHNOLOGIES IN BALNEOLOGY

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Recent developments in Information Technology are having a major impact in all sectors, changing people lifestyle, professional activities and business strategies.
It is therefore important to analyze this scenario, identifying potential developments, emerging opportunities and possible risks. Hence the objective of this study: to provide the balneology operators useful information to define short and medium-term strategies.
Analyzing the information available on the Web, very few advanced IT applications appear in the Balneology sector. But if we consider separately its three components, Tourism, Wellness and Health, we can see that many of the most advanced technologies are present in applications already in operation or under development.
Virtual reality and robotics are at the base of innovative rehabilitation systems. The IoT (Internet of Things) is present in a wide range of wearables, under-skins and internal devices, to monitor the vital parameters and detect risk situations (infections, tumors, ...).
But the most revolutionary applications are those based on AI + BigData and AI + NPL, which generally reduce costs and improve the quality of services. AI + NPL systems allow to realize highly effective Customer Care applications, giving information and indications both for the organizational and for the medical aspects. AI + BigData systems allow to improve the Tourism marketing strategies, while their Medical applications give exceptional results in image analysis (identification of pathologies or body anomalies) and statistical data

processing (effects of environmental factors, evaluation of therapies, …).
In conclusion the Balneology sector should adopt as soon as possible IT based applications to reduce the costs, improve the services and to expand its offers with new added value proposals.

THEORETICAL-PRACTICAL BASIS OF A NEW RE-EDUCATIONAL ACTIVITY FOR PARKINSON'S AND ALZHEIMER'S PATIENTS

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This article explains the theoretical-pratical basis of a new re-educational activity for Parkinson's and Alzheimer's patients.
Expressive Therapies (*Art- Music- and Dance Therapy*) can effectively perform in Alzheimer's e Parkinson's Diseases, maintaining the highest level of Life Quality (LQ), despite the gradual progress of disease, because are preferred access route to limbic brain.
In particular, music offers rhythmic stimuli and mnestic-imaginative cues that can help reducing Parkinson's motor deficiencies, both regarding imagery and real movement. Music further represents an interpretative framework against anxiety and it promotes positive feelings, strengthening focus capabilities and motivation in Alzheimer's patients.
Another our re-educational activity for Parkinson's and Alzheimer's patients, employs special trained dog handler teams, selected for their attitude and ability , as a characteristic element of re-educational session.
The method includes cycles of osteopathic manual treatments for the rigidity of Parkinson's patient and the related pain. At rigidity and global body flexion are related muscular-skeletal pain due to the spinal roots compression.

HUMAN RESOURCE MANAGEMENT IN REHABILITATION

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Human resource management — the field of knowledge and practical activities aimed at providing of the organization with the qualitative staff capable to execute the labor functions laid to it and its optimum use. Human resource management is an integral part of qualitative management systems of the organization

Rehabilitation of children with limited opportunities is a long and complex process in which the multidisciplinary team have the different level of preparation and different education from nurses to doctors and tutors, speech pathologists, orthosists, psychologists and else take part in it. Complex rehabilitation is made by three aspects: medical, psychological-pedagogical and social. Only in that case it is possible to expect the positive dynamics in a state of children.

Aim: study and improve human recourses management process when rendering rehabilitation

Tasks:

- To research features and needs of staff and to increase motivation of the center employees
- To prepare measures to increase efficiency of patients motivation

Risks for staff:

- Syndrome of Chronic Fatigue
- Syndrome of "psycho-emotional" burning-off

Risks for patients:

- Lowering motivation of child
- Syndrome of Chronic Fatigue

Features of patients:

- 100% of children have psycho-motor and speech disturbances
- Children from 1 year to 7 years are 62%
- 67% of children have disabilities, 52 per cent of them are children with cerebral palsy
- 70% need leaving and are hospitalized with mothers

Base of integrative rehabilitation is a multidisciplinary team.

Conception of multidisciplinary team – specialist, who takes part in the process of multidisciplinary team, cannot be limited only with his field of knowledge – he is a member of rehabilitation team.

Our specialists work not only with the patients but also with their parents. In Center we have mother's school where our specialists teach mothers how to take care after their children.

Some elements of the existing system of motivation:

Material and non-material incentive	***The atmosphere in collective: social need and feeling of accessory***
1. provision of apartments and rooms in the hoste	1. carrying out various corporate actions (Day of mothers, April Fools' Day, etc.)
2. provision of vouchers to sanatoriums by union line	2. patronage programs (for example, for veterans of the Second World War)
3. delivery of 5% of employees to work, granting a gym for trainings	3. image calendar with photos of employees of RCRC, the organization of circles for dances, singing
4. help in preparing children for school (purchase of portfolios, school supplies, sports forms)	4. organization of mentoring and competition between wards
5. payment for educational trainings	5. publication of media

The results of operations of HR department in Center:

- Increase of employees' satisfaction on 5,0%
- Reduction of employee turnover on 2,3%,
- Increase of categorization of doctors on 5,4%

EXEMPTION OF UNNECESSARY IONS FROM MINERAL WATERS, USING THEM TO BE USED FOR STANDARDS AND USE FOR MEDICINAL PURPOSES

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An important amount of the world's underground mineral and sheer drinking waters contain excess amounts of various harmful minerals, such as of Barium and Fluorine, the concentrations of which reach - of Barium 5-10 mg/l and Fluorine 5-15 mg/l, which is why the World Health Organization and sanitary organizations of states and correspondingly the country standards sharply limit the existence of these elements in sheer and mineral waters. The same problems persist in the mineral and sheer drinking waters existing in Georgia. According to standards, the Maximum Acceptable Concentrations (MACs) are overlooked in drinking waters, both sheer and mineral; Ba (barium) - 0,7 mg/l, F (fluorine) - 2 mg/l, in healing drinking mineral waters Fluorine is allowed 3 mg/l.

Since the excess of amounts of Barium and Fluorine in sheer and mineral drinking waters does not allow their use and capitalization, the existing multiple drinking and mineral waters in Georgia arc either not used completely or if they are used, that is only with greater restrictions, or more importantly, with special, long-term conditions that not at all satisfy the requirements of domestic and foreign markets. The example of this is provided by the shutting down of the factory of mineral water "Zanavi" because of excess amounts of Fluorine; the inability to master the mineral waters "Gvara" and "Qobuleti" because of the containment of harmful ions in excess amount; the containment of excess amounts of Barium and Fluorine ions in the mineral water "Borjomi" and "Likani"

questions the future perspective of the use of this unique drinking mineral waters.

The purpose of the project is: through the modification of naturally formed sorbents, the creation and /research of selective sorbents which will have high selectiveness towards the ions of Barium and Fluorine. The treatment of sportive technological process of extraction of Barium and Fluorine ions from sheer and mineral drinking waters until the Maximum Acceptable Concentration. To derive an experimental amount of selective sorbents and to create the appropriate device. To develop technological regulations of the regeneration of sorbents.

CLIMATE AND HEALTH IN MOUNTAIN AREAS IN THE EXPERIENCE OF THERMALISM CENTERS

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Mountain nature and climate offers an ideal enviroment for classic musculo-skeletal and neurologic rehabilitation.
Research shows benefits for many different conditions as anemia, cardiovascular diseases, metabolic syndrome, obesity.
Moreover lately there is a development of mountain therapy, facing psychological and psycho-social disorders with a new approach.
Mountain thermal centers are an ideal pivot where to organize many activities responding to important health problems and to these new needs of our stressful society, putting together healthy enviroment, healing waters, medical competency, psychological and psychosocial support.

AGEING PROCESS AND SAPROPELIC MUD FROM TECHIRGHIOL LAKE

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Aging represents the expression of a progressive functional imbalance of the neuroendocrine system and antioxidant status.
The aim of this study was to investigate some determining factors: insulin 1 growth factor (IGF-1), serum cortisol, dehydroepiandrosterone-sulfate (DHEA-S), glutathione-peroxydase (GPx), that seem to play a major role in the beginning and evolution of the biological ageing process and their behaviour under the effect of peloidotherapy.
Material and method: This research is a prospective clinical study, developed between July 2013-February 2016 and included a total number of 1377 patients but only 52 patients of this group met the inclusion and exclusion criteria. They were evaluated at admission, at the end of treatment, one and 4 months after the treatment. The batch was divided in two groups, the first one with 37 patients underwent mud bath at thermoneutral application and 15 patients underwent old mud ointment. All patients received 3 additional electric procedures, one regional massage and kinetotherapy session per day.
Results: For the group who received cold mud ointment, the results showed a statistically significant increase ($p=0.044$) of IGF-1, the variation of this hormone demonstrating the positive effect of the balnear treatment with contrasting factors in the biological ageing process. For the group who received mud bath, the results showed an increase of IGF-1 close to the statistical significance ($p=0.067$). Increasing tendency at the end of treatment, shows, as a whole, the

general positive effect of the balnear treatment in the ageing process.

Conclusion: The IGF-1 low activity is associated with a significant morbidity in adults, with a high risk of cardiovascular diseases, diabetes, osteoporosis and neurodegenerative diseases, with certain implication in ageing modulation. There is one hypothesis that maximum human life expectancy depends on the strict regulation of the GH-IGF axis and on maintaining the optimal action of IGF-1[1]. The optimal activity of this hormonal axis is involved both in the extension of life expectancy and in the increased resistance to the oxidative stress[2].

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BODY PURIFICATION AND HEALTH IMPROVEMENT AT THE SANATORIUM-RESORT COMPLEX "DILUCH" LOCATED IN THE RESORT TOWN OF ANAPA: FROM THE BASIC ENDOECOLOGICAL REHABILITATION TO THE "DETOX-EFFECT" PROGRAM.

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In the 50-ies of the XX century A.A. Bogomolets drew the attention on the importance of managing the state of the body's internal environment. The urgent need to develop a method for endoecological rehabilitation (ERL) arose after the Chernobyl disaster to eliminate its consequences. In 1999, the authors of the ERL method in spa, among others V.S. Sevryukova, were awarded a government prize for creating the basics and applying methods of general clinical and preventive lymphology. The ERL is an effective medical and health improving technology based on methods of stimulating fluid transport in organs and tissues of the body, purification of the cell space and lymphastimulation. Adverse environmental factors, stress, metabolic disorders, hypodynamia, overeating, bad habits, age-related accumulation of slags in the body, sleep disorders, somatic diseases of the gastrointestinal tract or endocrine system contribute to the special importance of purifying the body for the moment. There is a large endoecological department in the medical and diagnostic center of the Sanatorium-resort complex "DiLUCH", where due to the current trends the ERL became the basis of the DETOX program. The DETOX program includes seven-day procedures, such as: hydro-massage and dry carbonic baths, a swimming pool, a gym, pneumocompression of the limbs, an intravenous laser irradiation of blood; and every second day: liver flush, hydrocolonotherapy. According to the

indications a drug infusion therapy or plasmapheresis, a course of skin cleansing in a SPA-salon are prescribed. An evaluation of the effectiveness of treatment in 42 patients before and after the DETOX program was carried out. Improvement of overall health was noted in 100%, half of patients showed a decrease in body weight from 4 to 8% of the original. Stimulation of lymph drainage led to a decrease in the endotoxicosis manifestations, improvement of the excretory function of the kidneys and liver (triglycerides decreased from 2.5 ± 0.1 mmol / l to 1.7 ± 0.7 mmol / l, $p < 0.05$). DETOX activates biological resources, stimulates adaptation mechanisms, which leads to an increase in the rehabilitation capabilities of the patient. The effectiveness of the system of consecutive detoxification measures of sanatorium treatment used in DETOX, aimed at all levels of detoxification, is proved, providing an integrated approach to the treatment of humans as a single biological system.

MEDITERRANEAN DIET AND SPA TREATMENT: A HEALTHY ASSOCIATION?

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Background: In 2014, around 1.9 billion adults over the age of 18 were overweight. In the United States and Europe obesity has become a primary public health problem. Many people who go often to SPAs to perform mud therapy are overweight. The possibility of a dietetic evaluation to follow a dietetic program could be an occasion for both slimming and food education.
Objectives: We have look for a possible cooperation between Mediterranean diet and mudpack treatment in losing weight.
Methods.We enrolled 275 people in this study, from January 2014 to September 2016. 193 people of these were female (70%) and the other 82 was male (30%). Most diet-requiring patients were over 50 years of age.The 38% of the patients were from Russian countries (ex USSR), 29% were Italians, 19% were French and 14% from the rest of the world.
Spa therapy consisted in 1 or 2 week program performed at the Borile Group Thermal Spa in Abano (Italy). For 200 patients the program included 6, 10 or 14 daily mud-pack applications, thermal bath, and some massage; 75 patients didn't undergo mud-pack applications.
The mud-pack was applied on the whole body for 15 minutes at the initial temperature of 45°C. After this application there was a thermal bath in mineral water at the temperature of 36°C for 10 minutes with a light hydromassage.All the patients in the period of the study were on a 1000-1500 kcal diet, according to their basal metabolism. The main outcome measures are weight, BIA (Body Impedence Assessment), waist-hip ratio, abdominal circumference

RESULTS: Anthropometric measurements showed that the 42% of the patients was overweight and the 38% was obese with the presence of severe obese (BMI over 40).
If we consider the fat percentage measured with BIA together with the BMI and WHR, the 83% of our patients was obese.
We have considered whether mudpack could have some effect on weight loss, and / or on fat mass reduction. We have considered the two groups: 201 patients who underwent mudpack together with diet and 74 patients who underwent only diet. .
Overweight and obese subjects, if they have undergone diet and mudpack therapy, seem to have lost more weight and achieved a greater reduction in the fat mass than those who have done only diet.(tested, with a T-Student test).
Most overweight and obese patients have lost weight and fat, and this seems to be due not only to low caloric regimen, but also to the mudpack therapy itself. It will be very important to carry out studies with larger statistical relevance in the future.

PHARMACOTECHNICAL EVALUATION OF CLAYS SPREAD IN ADJARA REGION

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Georgia is reach of useful endemic resources, which are not untapped but is not studied also. Their reveal, study and develop using methods is one of the most important issues as in Modern Medicine also in Cosmetology. No one from the Earth's resources has such a broad, important and versatile use as clays. They are widely used in medicine and cosmetology – as a natural as well processed form, they are used: in Balneology and Resorts Therapy, for treatment of bone-joint and rheumatic disease, various types of skin diseases, besides it's very interesting to use them as an auxiliary means and a base in various soft and solid medicinal forms. Adjara is one of the most interesting regions of the clay resources. Here, a local population and many tourists use clays arbitrarily, despite the fact that their chemical composition and medical properties have not been studied and it's only on the traditional medicine level. In the literature available to us, we have not found the data about the clays widespread in Adjara Region. That's why the most actual problem in medicine and pharmacy is to research the clays widespread in Adjara for further usage in medicine and cosmetology.

ON THE ISSUE OF ORGANIZING AND CREATING IN GEORGIA AN INDUSTRY FOR SPILLING UNDERGROUND DRINKING WATER OF VARIOUS MINERAL COMPOSITION FOR USE IN BALNEOLOGICAL PURPOSES

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Georgia is one of the most richest countries in the world in respect to its constantly regenerative resources of vitally necessary water formed by rivers, glaciers, lakes, bogs and groundwater.
The total amount of rivers is 26060, their total length is 58957 km.
Resources of underground drinking water amount to 573 m^3/min, operationally allowable level is 301 m^3/min, which is equal to 26 billion liters per day. This amount far exceeds the daily vital need 7.4. billion people on Earth (biological norm -2 -2.5 liters per day).
The factors that determine competitiveness of resource potential of drinking water are: naturalness, abundance, stability, renewability, cheapness, non-seasonality, short period of recoupment of capital investment, constant growth of world population's needs for bottled (packaged) drinking water. These factors fully prove prospectivity and necessity of the stable development of drinking water industry.
Natural drinking water "Velis Tskaro" (mineralization, 2.0-3.0 g / dm3) was found in the eastern part of the outskirts of Tbilisi. Its medicinal properties have been established since 2001, it flows from the depths as a source without any drilling and belongs to the sulphate-sodium and magnesium-calcium mineral water group. The analogue of this water is located in the resort area of the Autonomous Republic of Adjara, in Gundauri of the Keda municipality and Racha-Lechkhum municipality.

Anions, mg/ dm^3	Anions, mg/ dm^3	Biol. active elements
Mz – 146 **NA + K – 201**	**SO_4 – 1834** **HCO_3 – 244** **CL**	**H_2SiO_3 – 31,20** **Silicic acid**

The formula of mineral water:

$$M2{,}9\,\frac{SO_4 89}{Ca52Mg28Na-20}$$

This medicinal drinking water has a number of healing properties:
Chronic gastritis (with normal, increased or decreased secretion function), chronic colitis and enterocolitis, chronic liver and biliary tract diseases, hepatitis, cholecystitis, angiocholitis, pancreatitis, diabetes, gastric and duodenal ulcers in remission and incomplete remission.
Based on the type of water (GOST 13273-88) and clinical and experimental studies conducted, mineral drinking water is useful for healthy people for prevention purposes.
Drinking water of this type strengthens people's health, eliminates the processes associated with metabolic disorders, which causes many diseases in human organism.

In the form of baths: chronic diseases of the peripheral nervous system, gynecological, skin and other diseases.

BALNEOLOGICAL CLUSTERS OF UKRAINE: SCIENTIFIC SUBSTANTIATION, TREATMENT AND RESORT DEVELOPMENT STRATEGIES

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Sustainable development of the Ukrainian economy, which is now steadily moving through the implementation of reforms, is impossible without sustainable development of resorts.
The Strategy for the Development of Tourism and Resorts until 2026 was adopted in 2017. One of the priorities of the Strategy is complex modernization of the resort areas.
One of the resort-forming factors are natural therapeutic resources (NTR). According to the Law of Ukraine "On Resorts", NTR include mineral waters (MW), therapeutic mud (peloid), ozocerite, liman and lake brine, seawater, natural objects and complexes with favorable climatic conditions for treatment. The efficacy and safety of NTR, the ability to use them with sanatory(recreational) and therapeutic purposes to be based on the results of their biomedical quality and value estimation. Today, the state inventory of NTR contains data on 388 NTR.
At the legislative level, the status of six resorts of the nationwide scale and three resorts of local scale was established. A number of natural sites can also claim for the status of resorts.
Thus, balneological clusters (BCs) can be distinguished within Ukraine. Of course, they are limited to certain geographical areas. Somewhere in these natural sites there are NTR in a unique combination and developed spa resort complexes.
Powerful BCs are available on the territory of the southern region, in particular the seacoast zone, which uniquely combines sea and

steppe climate, seawater, sandy beaches and numerical NTR, in particular medical mud, mineral waters, liman brine. This allows for development of balneotherapy and rehabilitation, in particular for patients with spinal and walking disfunctions, in the following sites: BCs of the Southern Odessa region, Kuyalnik, Zatoka, Sergievka, Carolino-Bugaz, Lebedivka and Arabat Arrow and Gengirka, the uniqueness of which is the presence of a thermal MF.

Central Ukraine is characterized by the presence of BCs with radon water and peat muds: Khmilnyk, Nemiriv (Avangard), where treatment is provided for diseases of the locomotorium as well as gynecological and skin diseases. Digestive organs treatment is provided in the BC of Mirgorod with its medical MW.

The western region is rich in variety of NTR, which led to the presence of a large number of BCs. Truskavets and Skhidnitsa are the unique BCs with curative MW with a high content of organic substances. BCs Polyana, Shayan, Morshyn, Soymi with curative MB offer treatment of digestive organs. BCs WBerehove, Solotvyno, Velyatino have well-known thermal MW. BC Kvasy has the unique arsenic MW.

”SELF-MONITORING” AS INSTRUMENT OF QUALITY FOR THE MANAGEMENT OF BALNEOTHERAPY CENTERS

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The demand of quality for balneology is growing. The innovation is a must.
The worldwide demand for “aquatics” is steadily growing, with relevant investment for the construction of aquatic centers and aquaparks leisure/recreational-oriented, where often the water element is completed by other secondary services (restaurants, accommodation, music entertainment, etc.). At the same time, the demand for health prevention - associated with the use of spa facilities and aquatic wellness centers – is growing. Today water physiotherapy is becoming more and more popular, as well as the growing demand for water gym; the healthy properties of water connected to the way of use it, always known and recognized at medical level, are more and more popular among customers and physicians that prescribe the use of water as therapeutic treatment.
While in the field of swimming pools the general discipline for their construction and management is subject to national and regional regulations and recommendations, in the field of thermalism there is a need to highlight the operating and management criteria regarding technology and hygiene & health prevention. The objective is trying to combine the qualitative aspects (offering a certain expected medical service) with the economic ones, following the policy of big investment (high technology) with reasonably short pay-back period (good management, energy saving, high-level maintenance).

For the moment the basic document remains the historic WHO Guidelines (2006), but some regional realities have already adopted regulations based on the rules applied to recreational swimming pools.
Unfortunately, however, the complex issue cannot be simplified because the fundamental conditions of the spa world (closely connected to the healthcare one) are different because the water used can be very mineralized, aggressive and at high temperature and the peculiar chemical-physical characteristics of the precious natural resource cannot be altered, in order not to affect its possible therapeutic applications, even for prevention ones. Furthermore it's necessary to pay attention to health & hygiene aspects – often ignored – inside facilities essentially dedicated to the healthcare and to the wellbeing of customer; it's not conceivable to get out of that facilities in a worse state of health than before.
Waiting for the evolution of scientific, industrial and - above all - political research to identify sustainable criteria in the application of thermalism, regardless of the allocation and the molecular complexity of available water, a basic preventive criterion can be adopted.
The criterion is based on some focal points that can be shared in every reality:

- specific knowledge of the water (chemical-physical parameters, available flow rate, temperature, etc.);
- knowledge of the facility where the water is used, especially for reliability of technology and professional expertise in management;
- knowledge of functions and intended use of water inside the facility, both for leisure and recreational uses and for medical/healthcare ones;
- capability of the industrial market to support the indispensable need to have high quality materials and maintenance products.

By adopting the principle that the spa is actually a healthcare facility and that the basic criterion must be to ensure the quality of hygiene & health prevention and the benefits of therapy - also from the psychophysical point of view - the ideal instrument to support the management of the facility is the “Selfmonitoring Plan”.
Once all of the aforementioned knowledge are acquired, a “cautious principle” is adopted through the following points:

- Description of the facility from the architectural and functions point of view (layout, location, etc.)
- Description of the functioning of the various technological devices used (swimming pools, hot and chilled water distribution, electromechanical devices controls, electromedical devices, air conditioning and ventilation devices, lighting, shapes and materials for furniture and architecture, etc.)
- Analysis of risk of infections
- General maintenance plan
- Plan for cleaning, specific cleansing, disinfections and sanitization, for every environment, with related modalities of intervention
- List of materials, chemicals used and time schedule of intervention criteria
- Periodic verification of hygiene & health quality of environments and water
- Registration of non-compliance compared to available standards
- Definition of remedial actions to correct methods, materials and products in order to guarantee the compliance
- Professional roles of reference and their responsibilities
- Refresher courses plans
- Forms of communication and representation of the adopted quality system.

In this way the “Self-monitoring Plan” becomes not only the reference for the internal management of the facility, but also the reference for the controls, also providing the applicative instruments for ordinary management and for interventions in particular cases of emergency.
This means offering the customer - but also the staff - an additional form of quality to guarantee the prevention of health and goodness of the service.
The Self-monitoring Plan also represents the recorded history of the whole actions and interventions of maintenance (ordinary and extraordinary), providing a precious support for technical-economic analyses; with a good application this "register" becomes also the reference for management savings in economic and financial terms, with benefits for both Enterprise and Customers.

This method of work may seem useless and expensive. It is actually the most advanced "on-line" tool in the management of services related to Thermalism that allows management to constantly check both productivity and efficiency. It then determines an important economic advantage: in fact, it prevents management problems and especially maintenance issues. With proper application you can optimize and rationalize the interventions, planning the various activities and reducing the cost centers.
Finally, this tool allows you to constantly test the controls and verification of the Authorities concerned, which draw interest and value from this continuous traceability system. Its adoption can also be advertised as an irreplaceable quality factor. So at last it costs a little and it gives a lot! A success for Thermalism of innovation.

TREATMENT WITH RADON WATER AND MUD IN TSKHALTUBO RESORT

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In the report, it is briefly reviewed the origin and composition of the mineral waters of Tskhaltubo, the action of the water on the human body. In the report, attention is paid to the medical features of radon water and the diseases that are treated in Tskaltubo and on the treatment procedures which are used in the resort Tskaltubo.

SOCIAL THERMALISM IN BRAZILIAN PUBLIC HEALTH: PERCEPTION OF THE PUBLIC HEALTH SECRETARIES FROM MUNICIPALITIES WITH THERMAL WATER SOURCES

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Given the immense Brazilian potential, social thermalism are little explored practice as a factor for health promotion. In 2006, the National Policy on Integrative and Complementary Practices was created in Brazil, where the Social Thermalism was included as observatories in public health. However, there are still no results materialized in social thermalism in the country, which means that there is a need for more research, not only about the mineralogical characteristics of mineral-medicinal and thermal water sources, but also public management mechanisms for that thermalism is incorporated into the national health system as a structured practice and beneficial to the quality of community life. Within this scenario, the objective of this study was focused on identifying the perception of members of the Municipal Health Secretaries in ten municipalities, in Santa Catarina estate - south of Brazil, thermal source retainers. The present investigation was done in a qualitative and descriptive way by means of surveys recorded and later transcribed. This initiative was approved by the Ethics Committee of the State Secretariat of Health of Santa Catarina. In the ten cities, two managers in charge of primary health care and ten municipal health secretaries were interviewed about their level of knowledge about balneoterapy, the probability of developing the activity in their region and the possible challenges for implementing social thermalism as an local activity. The data obtained through the surveys were worked through the content analysis and the results

were segregated into three categories: (1) General knowledge of managers and secretaries of health about social hydrotherapy; (2) potential for insertion / development of social thermalism in the local public health system; and (3) Difficulties in the implementation of social thermalism as a structured practice in the public health system.

With that, it was diagnosed that even if there is a lack of known about this practice, all the interviewees agree that the inclusion of thermalism in the structure of public health will be able to provide preventive and strengthening treatment to the quality of life of citizens. However, the constant change of the Municipal Health Secretaries in the ten municipalities was identified as the main weakness for the continuous structuring and financial contribution of the state in the potential projects.

ABERRANT RESPONSES TO THERMAL STIMULUS OF FINGER VASCULATURE IN CONNECTIVE TISSUE DISEASE PATIENTS

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Background

In connective tissue diseases, peripheral blood flow disorder is frequent. It might develop both in limbs and in internal organs, sometimes resulting a severe outcome including pulmonary hypertension, pseudoileus and fingertip necrosis. When it develops in fingers, fingertip temperature is frequently dispersed aberrantly among fingers.

Objective

Response to cold thermal stimulus is evaluated by thermographic inspection.

Patients and Methods

The connective tissue disease patients with suspected peripheral perfusion disturbance underwent thermo-stimulus test. From before to 30 mins after hand Immersion in 10 °C water for 10 secs, nailfold temperature of each finger was sequentially measured by thermography. Temperature dispersion was evaluated by coefficient of variation (CV: standard deviation/average, right 5 fingers) . Sequential change of the temperature was classified into patterns, and in addition, numbers of patient with maximum temperature difference among fingers of over 2ºC were examined.

Results

Twenty-seven patients were included. CV was 0.030 at baseline, and increased to 0.057 5mins after finishing immersion. The sequential change of the temperature was roughly classified into 4 patterns: (1) near-normal, n=6, (2) delayed recovery, n=10, (3) persistently

low, n=6, and (4) rebound, n=4. The numbers of patient with a 2ºC< temperature difference among fingers in each group were (1) 2, (33.3%), (2) 10 (90.9%), (3) 6 (100 %) , and (4) 3 (75.0%).

Conclusion

In connective tissue diseases patients with a suspected peripheral perfusion disorder, temperature dispersion among fingers evaluated by CV were frequently observed. Sequential temperature change from before to after cold water hand immersion might be classified into 4 patterns. Temperature dispersion among fingers was frequent especially in association with aberrant temperature recovery.

Reference

Horikoshi M, Inokuma S, et al. “Thermal disparity between fingers after cold-water immersion of hands: A useful indicator of disturbed peripheral circulation in Raynaud phenomenon patients” Intern Med. 2016;55:461-6

RESULTS OF THE RESEARCH OF "BAREZHIN" TYPE PELOIDS OF ADJARA REGION AND PROSPECTS OF THEIR USE IN BALNEOLOGICAL PRACTICE

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During studying the mineral waters widespread in Adjara region, it found out, that some mineral water is clean and transparent while running out on the surface, but it leaves lubricant mud at the place of coming out and when flowing into the pits. These types of peloids are successfully used in the balneological practice and are known in the literature by the names of the geographical locations, such as "Barezhin" – according to city of Barezhin in the Pyrenees mountains. In the available literature there is found no data on the research of "Barezhin" type peloids widespread in Adjara region with the purpose of their application in balneological practice.

The aim of our research was to study "Barezhin" type peloids of Adjara region with the purpose of their use in balneological practice.

The chemical compositions (micro- and macroelements) of 17 so called "Barezhin" type peloids located in Adjara region have been studied by using the modern instrumental methods of analysis.

It is noteworthy, that the studied peloids are saturated with micro- and macroelements. The results of X-Ray phase analysis have shown, that Kvirike and Chakhati peloids mainly represent rentgenoamorphous mass. The contents of the following minerals have been established in the objects: Ca-Na feldspar, K feldspar, Ca-montmorillonite, quartz (SiO_2), hematite (Fe_2O_3), chlorite, magnetite, amphiboles, trace amounts of mica and chlorite.

The presence of bacteriophages have been stated in the water extracts of Chakhati and Kvirike peloids, which have the ability of the lyses of E. Coli and Staphylococcus strains.

Based on the pharmacological studies have been established, that the study objects (Chakhati and Kvirike peloids) are not characterized by general toxic, cumulative, local irritant, allergic, internal organs damaging and systemic actions during local administration.

At present, the instructions for use in the balneological practice have been processed on 2 kinds of "Barezhin" type peloids located in Adjara region.

THERMAE 4.0 AND REHABILITATION: A NEW BUSINESS OPORTUNITY FOR THERMAL COMPANIES

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In recent years we've seen everywhere, and especially in Italy, a crisis of the classical spa model. Especially in our country the thermal plants that have not been able to renew themselves have undergone a decline in the number of services provided and a lack of turnover for generations of visitors.
A possible strategy to solve this problem involves the reconversion of some departments in rehabilitation centers specialized in thermal water therapy.
This allows to combine the benefits of thermal water to the new protocols of medical gymnastics making the rehabilitation center unique.
Fisiokine proposes itself as a partner for the planning, realization and training for those entrepreneurs who want to undertake this path and will present a case report of the experience in progress at the Terme Stufe di Nerone in Naples.

APPLICATION OF APPLICATIONS OF MEDICAL MUD IN TAMBUKAN LAKE FOR RESTORATION OF ELITE SPORTASMENTS

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The aims of this work was to study the use of mud in the Tambukansky lake in the complex rehabilitation of elite athletes.

Materials and methods. The study involved 30 elite athletes (rugby, judo, boxing, athletics). For the rehabilitation of the musculoskeletal apparatus of the lower extremities of elite athletes during the intensive physical exertion, a mud applicator Tambukansky, was used. During the procedure, the athletes lay on the couch in a relaxed state for 15 minutes. At the course of the procedure, the procedures were performed daily, in total 7 procedures. To substantiate the effectiveness of mud application, methods were used: electroneuromyography (ENMG) and testing of the dynamometric characteristics of the musculoskeletal system in the robotic complex CON-TREX.

The results of the research show that after 1 session of Tambukan mud applications, elite athletes had a tendency to improve ENMG indices during stimulation at the «tarsus» point. There was a tendency to increase the amplitude of the M-response. The area of the M-response on the left leg increased significantly ($p<0.05$). With stimulation at the «caput fibulae» point, the motor speed on both legs significantly increased ($p<0.05$). With stimulation at the point “fossa popliteav”, the amplitude and area of the M-response on the left leg and the speed of motor conduction on the right leg increased significantly ($p <0.05$).

The study of the effect of the application of the course of procedures showed significant improvements in the parameters of the M-response at all points of stimulation. At the point of stimulation “tarsus” the parameters of terminal and residual latency improved, the duration of the M-response. At the point of stimulation, the “caput fibulae” improved the indicator of terminal latency. At the point of stimulation, the popliteal fossa improved the parameters of terminal latency and duration.

Comparison of the performance of the muscles surrounding the right knee joint in highly qualified female athletes before and after applying the course of 7 sessions of Tambukan mud revealed a significant decrease in the fatigue factor of flexor and extensor muscles.

Conclusion

The use of mud in the Tambukanlake in the sport of higher achievements contributes to:

- enhancement of the functional capabilities of the neuromuscular and musculoskeletal system;
- urgent recovery of athletes (mud application immediately after an intense load on the neuromuscular apparatus);
- delayed recovery;
- prevention of fatigue injuries and injuries to athletes.

THERMAL MEDICINE IN GREECE

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The Hellenic Thermal Medicine Academy was founded in 2015 as a non-profit health organization dedicated to the development of thermal culture in Greece among professionals of medicine and consumers. The main purpose of the Academy includes representing and promoting world hydrotherapy, shared studies, research and experience in the sector, as well as new discoveries in Thermal Medicine and finally sponsoring high quality forums for education of medical professionals in the practice of thermal medicine. Thermal Medicine is a basic segment of Health Tourism and consists of a wide range of preventive, therapeutic and cosmetic applications using natural resources of seawater (thalassotherapy) for physical health, anti-aging and wellness for patients and non-patients in facilities called MediSpas (thermal centres under medical supervision). Academy's vision for MediSpas is to provide competence and experience for qualified treatment, prevention and rehabilitation in a clean and healthy environment.
Recently in Greece, the Complimentary Medicine was established by Hellenic Ministry of Health legislation and recognized as the main sector of health services since it combines medications with thermal springs compounds according to Hippocrates' spirit. We are working on the cross-border health procedures trying to be adopted to the European health network in order to have similar therapeutic certified protocols. We are also developing research programmes of the therapeutic elements efficacy in order to establish the Thermal Medicine as evidence-based medicine, aiming to work altogether in

common programmes of preventive medicine and antiaging according to high level education and practice.
To sum up, Greece is a place devoted to enhancing overall well-being through a variety of professional services that encourages the renewal of mind, body and spirit, antiaging and prevention under medical supervision in the unique Hellenic climate.

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

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Acute lymphoblastic leukemia (ALL) is the most common pediatric cancer worldwide. In modern treatment era it generally has relatively good prognosis with long-term survival about 90% in general patient cohort. The multicomponent intensive chemotherapy, which is a backbone of pediatric leukemia treatment, may lead to a whole spectrum of long-term adverse events. Vincri-stine polyneuropathy is associated with cumulative dose of the drug and usually develops after 2-3 injections. Therefore, after the standard treatment course is finished most patients have signs of neuropathy. As vincristine is able to cause axonopathy and gangliopathy mostly involving long axons innervating legs or, more rarely arms. Cranial nerves are the least likely to be involved. The clinical signs observed involve muscular weakness, lower tendon reflexes and peripheral palsy. More than one half of patients have gait impairment, in some cases leading to inability to walk unassisted. All these factors lead to significantly lower quality of life. As the pharmacotherapy of pediatric ALL treatment-associated polyneuropathy plays only a limited role, the main rehabilitation components are medical massage and hydrokinesitherapy. In some patients pain control measures must be used.

In 2017 a total of 38 ALL-type therapy pediatric recipients aged from 2 to 16 years were treated. All patients developed peripheral polyneuropathy, mostly moderate, during treatment. The

rehabilitation in this patients' group included medical massage, hydrokinesi therapy and, if needed, analgesia. The medical massage of the limbs was conducted according to classical technique 3 times per week. The massage intensity was individual and depended on pain severity. The hydrokinesi therapy was conducted in 2 stages. The first one included exercise therapy in therapy tank. After 3 weeks of massage and hydrokinesi therapy the condition of most patients improved. After the pain resolved all further hydrokinesi therapy was performed in a swimming pool. When all the rehabilitation was complete, all 38 patients noted pain disappearance and gait improvement.

THERAPEUTIC BENEFITS OF THE MEDICAL HYDROLOGY IN THE DISEASE OF THE NERVOUS SYSTEM

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The XX century it filled from splendor to the medicine with the revitalización and the resurgence of the Centers Thermal calls also called spas and that significantly the systems of health have created the bases for the development of a highly beneficial medicine and of very low cost, this way the Medical Hydrology with their waters mineromedicinales, the mire mineromedicinal, the climate, the seawater among other, acquires a considerable relevance again, everything added it to the importance that they are acquiring the preventive therapies and of promotion, with that which people don't only go to the Thermal Centers to receive a very established rehabilitation program, and to recover of pathologies, but to prevent them and to be liberated of the physical and psychic load of with a lot of estrés, that generates the current life, being pointed out, therefore, as an important line in the public health of many countries in the current moments. Among their many very grateful results they are the affectations of the Nervous System so much Central as outlying as for example meningomielorradiculitis, epidemic poliomyelitis, meningoencefalitis, aracnoiditis, encephalitis, traumas of the spinal marrow and their membranes, radiculitis, polirradiculoneuritis, plexitis, neuritis, neuralgias and neurofibromiositis, parkinson in non-severe forms and anothers.

LIFESTYLE MEDICINE AND THERMAL MEDICINE

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In the 2013 the concept of *Thermal Medicine* was declared in the Congress of St Petersburg, introducing a new era that united the Balneotherapy and Education to improve the healthy life expectancy of the population.
Over the last decades society has increasingly become more aware of the impact of a healthy lifestyle in prevention. Individuals are starting to understand that a healthy lifestyle is not a selfish attitude but an altruistic one, as it reduces the future impact on your family and society.
The potential impact of Thermal Clinics in this field is huge. As Doctors, our mission is to inform and educate patients on how to design a healthy lifestyle. As Thermal Clinics, we have all the tools to create the biggest network of Health Schools, designing ongoing education programs with concentrated kick-off and follow up weeks.
Our goal should be to unite Balneotherapy with Lifestyle Medicine, a branch of evidence-based medicine in which integral lifestyle changes are used (including nutrition, physical activity, stress management, social support and environmental exposures) to prevent, treat and reverse the progression of chronic diseases by addressing their underlying causes. Lifestyle Medicine interventions include health risk assessments, advice on behavioral changes that affect health, and the clinical application of lifestyle modifications. Lifestyle medicine is an interdisciplinary field of internal medicine,

psychosocial and neuroscience, public and environmental health, and biology.

The key principles of Lifestyle Medicine include prevention strategies that address lifestyle habits, underlying biological causes and the pathophysiologies common to Lifestyle Related Illnesses (eg, systemic inflammation, dysregulated stress disorder, metabolic dysfunction, etc.). As such, Lifestyle Medicine is an expanded form of treatment that helps unite the best aspects of public health and conventional clinical medicine.

We believe that Lifestyle Medicine is of great interest to Thermal Clinic patients and therefore its educational programs should be introduced as part of the thermal.

This year the Spanish Society of Lifestyle Medicine was founded with the Spanish Society of Medical Hydrology as a founding member.

INNOVATIVE REHABILITATIVE CARE MODELS BASED ON A MULTIDISCIPLINARY APPROACH AND NEW TECHNOLOGY IN THERMAL SETTING

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The aim of this work is to measure the movement in water and to store the data for the patient follow-up. It is based on the added value generated by the association of biofeedback with water rehabilitation, thanks to the instrumental prototype known as Biofeedback Scuba Suit (BFSS) suitable for water motion analysis and proper data transmission to both the biofeedback system and the therapist. The BFSS prototype is a hybrid motion capture system, portable and waterproof, coupled with a software that can analyze and reproduce on a virtual platform the kinematic data of the anatomical segments of the subject that wears it, generating a visual biofeedback by capturing and transmitting the data from the patient in the water. The algorithm allows the measurement of relative and absolute angular positions as well as axial rotary movements of the different anatomic segments to which the sensors are applied. In this study, the prototype was tested and validated by analyzing and comparing the movements of the upper left arm of healthy volunteers; being a pilot study, it was considered sufficient to analyze the movement of a single limb to demonstrate its accuracy. The results of the validation tests described in the

results section, first performed out-of-water and then in water, provided excellent results comparable with those obtained by the gold standard of kinematic measurement, represented by optokinetic systems. The potentials of BFSS for therapeutic purposes is vast: a) in aquatic rehabilitation; b) to improve the interaction with the patient and his motricity, as well as a basis for the continuous adaptation of the therapeutic program; c) allow to record, visualize and memorize the kinematic data during the aquatic rehabilitation.

RESULTS OF CHEMICAL AND PHARMACOLOGICAL RESEARCH OF SULPHIDE PELOIDS OF ADJARA REGION

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The use of natural healing factors for the treatment and prevention of various diseases represents the one of the actual tasks for modern medicine. The introduction of balneological methods of the treatment at the resorts as well as outside of them promotes the effective improvement of population's health.

In the world today, the demand for the preparations and cosmetics, made on peloids is increasing significantly, which is explained by the increased interest of the society to the ecologically clean raw materials of natural origin, they often replace expensive chemical preparations, which are frequently accompanied by some contraindications. The increased interest in peloids in the world put on the agenda the question of rational use of acting mud mines as well as the issue of cosmetic and medicinal preparations, developed on their basis. In the available literature there is found no data on the research of sulphide peloids of Adjara region with the purpose of their application in medical practice.

The aim of our research was to carry the chemical and pharmacological research of sulphide peloids of Adjara region with the purpose of their application in medical and pharmaceutical practices.

By using the physical-chemical and modern instrumental methods of analysis the chemical compositions of sulphide peloids have been studied, the contents of important balneological components have been stated in the study objects. The physical-chemical and technological characteristics of peloids have been determined. The

content of bacteriophages in the study objectsd have been established by using the standard biological methods of analysis.
On the basis of the conducted studies the formula and technology of preparation of the hydrogel on Ardagani lake sulphide silt peloid have been developed, it`s anti-inflammatory activity has been established using formalin induced rat hind paw edema model.
The results of determination of the main good-quality characteristics of the given hydrogel provide the desired quality and efficiency of the product.

RESORTS - AS WELL AS RECREATIONAL AND HEALING TOURISM FACILITIES

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In the report, it is briefly rewieved the importance and role of health-care tourism in the process of improvement of people. It is also very briefly reviewed the origin of medicinal and recreational resorts, and in particular their development in Europe. By bringing the appropriate numbers, it is briefly discussed the financial revenues from the healing and recreational tourism in EU28 budget. In short, modern trends of development of health-care resorts in Europe and former Soviet Union countries are discussed. The resort resources of Europe and other countries are also briefly described. Georgia's resort potential and resort Tskhaltubo and its development perspectives are briefly discussed until 2030.

CREATION OF THE FIRST “HEALTH AND WELLNESS TOURISM CHAIR” IN LATIN AMERICA AND CARIBBEAN AND THE NEW INTERNATIONAL E-MAGAZINE “WELLNESS DESTINY”

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The FEMTEC further reinforces its important role of international professional training and updated information through its actions in Latin America and the Caribbean with the creation in Cuba of the first "Health and Wellness Tourism Chair" of the region and with the new Magazine International "Wellness Destiny” in collaboration with the company Solymed. Digital magazine edited by professional journalists, in English and Spanish, where the novel and updated disclosure has all the ingredients to mix action with pleasure and communicate spaces where beauty, health and quality of life are the hosts.

The Chair of Health and Wellness Tourism will be the only one of these characteristics existing in America and the Caribbean and is created with strong institutional and professional support with the aim of contributing to the study and development in these sectors with training and scientific programs and new methods of activities and new business innovation tools. Professionals with recognized international experience in Medical Hydrology, Health Tourism, Physical Medicine and Rehabilitation, Welfare, Economy, Organization and Management of services, Marketing and other related specialties will participate in the "Chair of Health and Wellness Tourism" fruit of an important scientific-technical collaboration between the Ministry of Public Health, the University of Medical Sciences of Havana, National Direction of Physical Medicine and Rehabilitation, the Cuban Society of Medical

Hydrology and the FEMTEC. The scope of action of the Chair is international and includes teaching activities, research, occupational training, postgraduate studies, dissemination, business opportunities, business innovation, projection and promotion, international collaborations, new challenges and future perspectives related to these new segments of the generating market of various specialized alternatives, wealth, employment and that complements and enhances conventional tourism products. The updated and professional information through the digital magazine Wellness Destiny and the international training activities, propose the training of the sector at a regional level, from an area known for its uncontaminated beaches, nature, enviable climate, historical and cultural heritage, thermal waters, good health system and high professional level recognized worldwide, to consolidate as a reference in health tourism and quality wellness destination.

DEVELOPMENTAL FACTORS OF ROMANIAN BALNEARY RESORTS

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Romanian Association of Balneology, Romania

Economic relevance of balneology and healthy-aging is easily noted in the context of the socio-economic development at national and global levels. Demographic imbalanced pyramids and strong growth of the population aged over 65years are a serious challenge for the humankind. Human ageing and longevity are complex and multi-factorial traits that results from a combination of environmental, genetic, epigenetic and stochastic factors, each contributing to the overall phenotype. Currently, health is understood as the removal of diseases in a defensive manner to the pathological process and with higher costs. Would be more effective the maintenance of health through prevention mechanisms identified by modern science. The study of the mechanisms by which various natural or health factors can, positively or negatively, influence the ageing process opens the path to design and obtain new products for the benefit of elderly people to maintain health for a long time and so to have socially active and positive role for others.

Healthy ageing should ideally start in childhood and take a lifelong perspective. Yet it is never too late to start. Investing in prevention can have important benefits for the individuals involved and has also societal benefits, since it is better to finance effective strategies to prevent diseases than to use the resources to cure them. Combining the balneotherapy with using products with healthy-ageing effect provides a significant advantage and represents the sustain ability of the strategies for healthy ageing.

Balneotherapy is acting by three main ways: thermally, mechanically and chemically. We suggest that the joint use perspective of natural therapeutic factors and physiotherapy with new robotic assistive

interventions might increase the clinical importance of balneal resorts, and also include the modern trend of availing robotic assistive equipment to the benefit of patients. Applied aspect of the research seeks to maximize the economic exploitation of natural resources for health needs in a sustainable manner. In Balneal Resorts, traditional balneal rehabilitation interventions are now combined with robotic assisted possibilities, revealing a modern and advanced technological development of the medical/clinical units from the Balneal Resorts. This can improve, including medical address ability and increase health tourism in the respective resorts. The increasing interest in mechatronic/robotic technologies, for medical rehabilitation, changes the upper and lower limb neurological impairments therapeutic approach and introduces in the medical repertoire of methods, beside the current physiotherapists interventions, robotic-assisted medical interventions.

RECOVERY OF CHILDREN IN THE MOUNTAIN RESORT OF KAZAKHSTAN

MUSAEVA K.K
Children's Clinical Sanatorium “Alatau”, Kazahkstan

Clinical sanatorium “Alatau” is the only children's somatic sanatorium of the Republican level.
The basic profile - Bronchial asthma.

1. General description of the “Alatau” sanatorium: Territory, climate.
2. Educational work: Cultural events, learning English, children's activities, games, city tour
3. Healing procedures: shungite therapy, Hydrotherapy, light therapy.
4. Efficiency of children's health improvement.

COMPARISON OF SOCIAL THERMALISM IN HEALTH SYSTEMS

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Social Thermalism refers to access of balneotherapy in National Health System. Although Brazil has no great tradition in balneotherapy, Social Thermalism is proposed in the National Policy of Integrative and Complementary Practices in Brazilian in the Public Health System. However, it is necessary to establish guidelines, financing, training for the implementation of balneotherapy in Brazil. Therefore, it is necessary to understand the social thermalism in different health systems in order to elaborate a proposal for Brazilian health system. Objectives: To compare Social Thermalism in different European health systems, aiming a proposal of possibilities to enhance this practice in Brazil. Methodology: Official documents were studied from European countries that have Balneotherapy in public health system. The following aspectswere analyzed: Access / Coverage, Financing, Organization and provision of services, Essential medical products and technologies, Problems and current trends. Preliminary results indicated that there are different forms of access of balneotherapy in National Health System, for example, while in France there are no restrictions as to age, in Spain the IMSERSO (thermalism program) is aimed at those over 65 years of age. Also another difference is about therapeutic indication and duration of treatment: in Germany there is a mandatory prescription by specialist in resort therapy or spa doctor; in Spain the prescription is indicated by the doctor. Portugal: spa doctor, general practices or specialist. France and Italy there are a mandatory prescription by general practitioners or specialist. Number of days of treatment: Germany: 18, Spain: 10 to

12 days; France: 18; Italy: 12 and Portugal 12 to 21 days. Financing: Portugal - after cutting off in 2011, Ministry of Health studies a proposal for reimbursement in 2018. France: Social security reimburses treatments since 1947; however occurred a freezing of the base of reimbursement for cares since 2013. Problems and current trends: health systems experience similar problems, such as tendency of not to cover certain treatments by health plan, freezing of financing, lack of investment in infrastructure, lack of research support. Also there are few health professionals specialized in this area. Therefore, it is necessary to stimulate training of health professionals in this area, investing in research that promote benefits of this modality, elaborating guidelines and financing for maintenance of health resorts and application of thermal practices. Preliminary considerations: This study aims to deepen comparison of balneotherapy in different National Health Systems, describing their approaches and distances, giving visibility to the problems faced in health systems and to identify future trends. This knowledge may facilitate discussions for growth of balneotherapy in public health policies in Brazil.

EVALUATION OF THE QUALITY OF MEDICAL SERVICES

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National Center for Children's Rehabilitation, Kazakhstan

Text: Accreditation is an external evaluation of the medical organization for compliance with approved standards. It is a key mechanism of quality management system that provides assessment and uninterrupted improvement of medical care quality. The quality is reached by factors identification that affects defects emergence in medical care provision technological processes and recommendations elaboration to eliminate the revealed defects.

Control of Quality Management:
Effective management:

1. Continuous provision of the organization with goods and services;
2. Creation of a supportive (non-punitive) environment;
3. Funding of quality processes;
4. Motivation of employees;

Process management:

1. Standardization of operating procedures;
2. Development and approval of the diagnostic and treatment protocols;
3. Monitoring of quality indicators;
4. Monitoring of operating activities KPI;

Risks management:

1. Openness and transparency in reporting of incidents (incident reports);

2. The root cause investigation and analysis of incidents;
3. Projects to improve the processes;
4. Questionnaires and interviews with patients, managerial decision-making;
5. Analysis of complaints;
6. Questionnaires and interviewing of employees;

Management of personnel:

1. Continuous training of personnel;
2. Evaluation of efficiency of the staff at all levels;

Prevention of risks:

1. Commission checks;
2. Prevention efforts of possible hidden risks.

SUSTAINABLE HEALTH TOURISM: ISSUES AND CHALLENGES

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Tunisia has significant thermal water reserves around 1048 million m3 and very advantageous geothermal provisions that allow it to diversify its tourism products.

The strategic study of the thermal sector in Tunisia in 2020, has shown that the thermal potential not yet exploited is very important.

The south has a very high potential for hot water, it is the seat of several deep layers and the quantities not exploited are important.

The preservation of water resources is an essential element in ensuring the sustainability of the sector. The first major challenge facing Tunisia is to ensure that water never becomes a limiting factor for the economic and social development of present-day Tunisia and that of future generations.

In order to guarantee the development, protection and sustainable management of these resources, accompanying measures have been put in place in the thermal sector.

HEALTH RESORT TREATMENT OF METABOLIC SYNDROME IN THE REPUBLIC OF BELARUS

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The Republican Centre for Health Resort Treatment, Republic of Belarus

The last decades are characterized by a significant increase in cases of metabolic syndrome in the world and in the Republic of Belarus.
Metabolic syndrome is considered one of the most actual problems of medicine. Its medical and social importance is due to the fact that patients with metabolic syndrome about 4 times the frequency of life-threatening cardiovascular diseases and diabetes mellitus.
Experts of the World Health Organization define it as "the pandemic of the twenty-first century". This is due to the wide spread of metabolic syndrome - up to 30% or more in the population.
Currently, metabolic syndrome is defined as a symptom complex that combines insulin resistance, abdominal obesity, hyperglycemia, hypertriglyceridemia, dyslipoproteinemia, arterial hypertension, linked in a single pathogenetic chain. The main link in the pathogenesis of metabolic syndrome is the insulin resistance associated with visceral obesity.
Pharmacological treatments do not yet have effective drugs that can be used to solve the problem of metabolic syndrome in the complex. Most often are used drugs to reduce cholesterol in the blood, blood pressure, appetite suppression in order to reduce body weight. However, it is known that various natural and preformed physical factors such as mineral water, mud-therapy, diet, massages and physical activity, can have a real modifying effect on the processes of hormonal regulation of metabolism.
The purpose of our study is to identify the role of resort factors in the treatment of this disorder.

All patients with metabolic syndrome receive diet recommendations.

Patients are explained that the minimum physical activity of moderate intensity should be 30 minutes daily: walking, including Nordic, mechanotherapy, swimming, hydrokinesotherapy, skiing, cycling.

Mineral water is used in the form of mineral drinking therapy and as a balneological factor - for baths.

The program of complex treatment of patients with metabolic syndrome also includes acupuncture.

Mud therapy and mud-bath correct the parameters of carbohydrate, lipid metabolism, reduces the severity of clinical manifestations of the disease.

The complex program of health resort treatment of metabolic syndrome also includes one of the types of massage (manual massage; underwater shower-massage or pneumocompression therapy), physiotherapy, herbal medicine, swimming pool and saunas 2 times a week. All patients with metabolic syndrome attend psychological programs to change eating behavior and increase motivation.

Conclusion. As a result of the clinical study of patients with metabolic syndrome receiving individual complex programs of health resort treatment, there is a tendency to reduce body weight, reduce waist circumference, reduce cholesterol and normalize blood pressure. To preserve the result of treatment, the lifestyle must be combined with a rational diet, optimal physical activity and using the methods of increased motivation.

BALNEOTHERAPY FOR FUN: CHINESE TOURISTS IN HOT SPRING DESTINATION

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The history of China's Balneotherapy

As early as the records "the flowing hot spring, washes away the filth, drives away evil spirits, and returns to the right way" of Ode of Hot Spring by Zhang Heng in the Eastern Han Dynasty to the Commentary on the Waterways Classic by Li Daoyuan in the Northern Wei Dynasty, there have been 31 records of hot spring in China, among which Lushan Mountain Hot Spring and Taiyi Mountain (Zhongnan Mountain) Hot Spring have detailed description of curative effect. Because of the its health benefits, hot spring bathing went into the residence of the upper ruling class. Many hot spring areas became temporary residence of the royal family, while the public use of hot spring was rarely recorded in the official history. For example, the Tang Dynasty poet Bai Juyi wrote Everlasting Regret, saying that "granted shower in Huaqing Pool in cold spring, with slippery hot spring water washing her silky skin." Although the beauty effect of the hot spring was clear, what impressed the world was the political marriage of Imperial Concubine Yang. In the 14th century, the Mongols established a vast empire across Eurasia, and the Chinese and Western civilizations had an unprecedented intersection. Western balneotherapy has entered China for the first time. According to archaeological discovery, the remaining Yude Hall in The Palace Museum in Beijing was built in the Yuan Dynasty, built by Byzantine craftsmen at that time. Its architectural form was influenced by the Roman spa, which became the historical witness of the introduction of balneotherapy from the West into China. However, the sinicization of this only

combination of Chinese and western balneotherapy was only used by the imperial palace of the Yuan Dynasty and it was not popularized in Chinese society after all. When the empire that unites Eurasia is gone, Yude Hall is forgotten gradually in the humble corner of Palace Museum.

Influenced by the revival of western balneotherapy in the 19th century, Chinese warlords and senior officials built a number of hot spring accommodations throughout the country during the Republican period, such as Tangshan in Nanjing, Tanggangzi in Liaoning and Conghua hot spring. Unlike in the west, balneotherapy in China attaches great importance to the theory of natural health and neglects the development of water quality, medical facilities and complementary therapies. For example, the Pearl River Nursing Home built in the Conghua hot spring in the Republican period was named as the place of heavenly medicine, with an inscription of “a disease cannot be cured by medicine, but only by heaven”, which means to restore health through the efficacy of the natural environment.

From 1950s to 1970s, China began the construction trend of nursing homes. More than 1,500 nursing homes of all kinds were set up in the 1960s, many of which are hot spring sanatoriums. At this stage, Chinese hot spring sanatorium introduced relatively completed balneotherapy from the Soviet union and became an important part of the national medical system. However, as the institutional reform in the 1990s was gradually pushed forward, the state's financial support for nursing homes gradually decreased, and a large number of nursing homes closed down due to the lack of patients. The development of balneotherapy in China fell into a low ebb again.

Reform and opening-up in 1980s drived the redevelopment of hot spring tourist destinations in China. According to the China Hot Spring Association, there were 2,538 hot spring enterprises in China (excluding Hong Kong, Macao and Taiwan) as of 2017. In 2017, the total number of hot spring tourists reached 770 million, and the

total revenue of national hot spring enterprises reached 242.83 billion yuan. China's hot spring tourism has experienced rapid growth in the past 30 years. Many new hot spring projects include the hot spring pool, water park, restaurant and high-end hotel, and balneotherapy has been preserved in many hot spring projects. However, what do China's vast tourist population think of balneotherapy, and what do they do with their consumption in modern hot springs, all of which are worthy of attention.

Method and data collection

From May to July 2017, the China Hot Spring Association selected 26 representative hot spring enterprises in Beijing, Chongqing, Guangdong Province, Shandong Province, Fujian Province, Jiangsu Province, Guangxi Province, Hunan Province, Liaoning Province, Hebei Province and Hubei Province, and distributed 2,600 questionnaires for tourists, and recovered 1,938 valid questionnaires, with an effective rate of 74.5%. The questionnaire surveys the basic personal information of tourists and the consumption behavior of visiting hot spring destinations.

Results

Basic characteristics of visitors

(1) 65.28% of the visitors are aged between 19 and 38.

According to the questionnaire results of hot spring tourists, among the age structure of tourists in China's hot spring tourism market in 2017, young consumers aged 29 to 38 accounted for the largest proportion, reaching 34.21%; the proportion of consumers aged 19 to 28 was not far from the former, accounting for 31.07%; consumers aged 39 to 48 took the third place, accounting for 17.77% of the total; the proportion of middle-aged consumers aged 49 to 58 was far different from the former, accounting for 8.24%; the number of elderly consumers over 59 was less, only 3.30%; the proportion of young consumers under the age of 18 was the smallest, with only 1.96% (Figure 1). The change of age structure is

not very big, and generally similar to the structure in recent years. The young and middle-aged are the main force of travel.

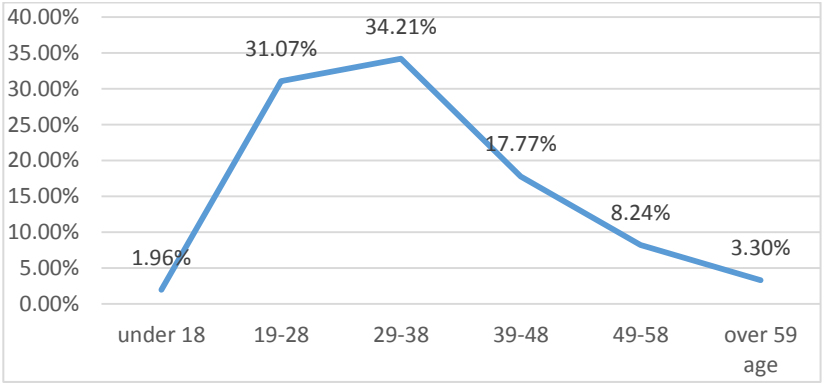

Figure 1 Age structure of Chinese hot spring tourists

The main consumer group is families with children

According to the results of the visitor survey, in the Chinese hot spring tourism market in 2017, more than half of the total tourists were married with children, accounting for 59.94%; the proportion of unmarried consumers was lower than that of married consumers with children, which was 33.01%; the proportion of married consumers without children was the smallest, at 7.05% (Figure 2). It can be seen that most of the hot spring tourists are already economically independent and have established families with independent consumption capacity. Families in China tend to be small. In 2017, a family of three consisting of parents and one child accounted for the highest proportion of families, with 82% in urban areas and 55% in rural areas. Smaller Chinese families have better consumption ability. In addition, the implementation of the two-child policy in China also means that the consumption structure of hot spring tourism, which is mainly married with children, will still be the main trend in the future.

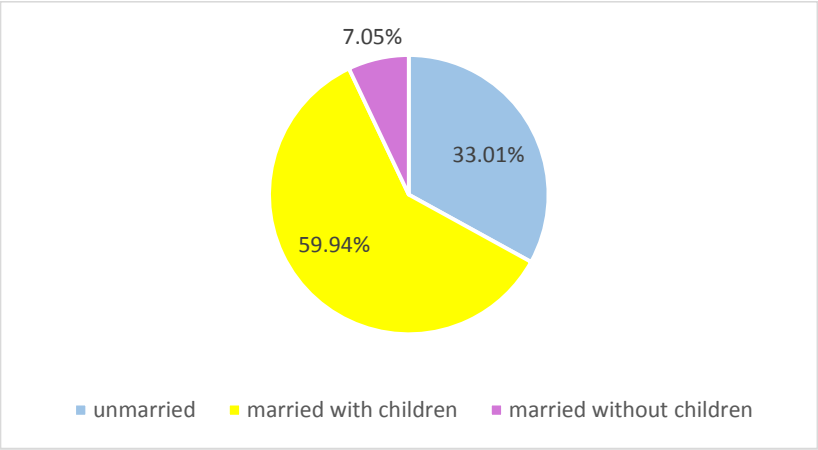

Figure 2 Family structure of Chinese hot spring tourists

Behavior characteristics of hot spring tourists

Per capita hot spring bath number is up to 4 times/year.

According to the results of the questionnaire, the mainstream of the hot spring tourism market is tourists taking hot spring bath for more than 4 times a year, accounting for 32.82%; followed by the number of the first time visitors to hot springs, accounting for 20.23%; the third time visitors and the second time visitors account for 19.14% and 18.99% of the total number of visitors respectively; at the bottom of the list is the number of the fourth time visitors, with only 8.82% (Figure 3). This shows that the repeat tourists of Hot springs account for the overwhelming majority. The number of tourists with two or more bathing in hot spring accounts for 79.77% of the total number of tourists surveyed, which indicates that China's hot spring industry has a good market foundation, and the common people have gradually formed the consumption habit of hot spring entertainment and vacation. On the other hand, the market demand potential of initial tourists of hot spring tourism is not small. It is the next challenge and opportunity for hot spring

enterprises to deeply explore and meet the market demand of these customers and make it a new central force.

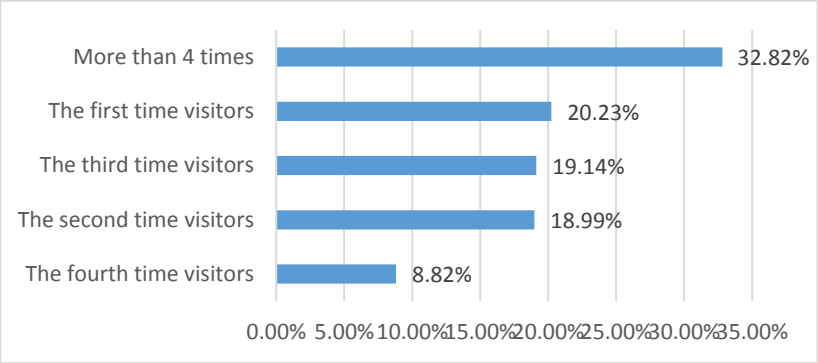

Figure 3 Revisiting rates for Chinese hot spring visitors

Visitors mainly take short trips for one to two days.

The proportion of Chinese hot spring tourists who choose to stay for one day is the highest, accounting for 52.53%; followed by the proportion of tourists stay for two days, accounting for 30.99%. The two add up to 83.52%, indicating that a stay of one to two days is the choice of most visitors. Among the remaining options, the proportion of visitors stay for three days accounts for 9.44%; the proportion of visitors stay for three to seven days is 3.78%; the number of visitors stay for over seven days is the lowest, at 3.25% (Figure 4). It can be seen that Chinese hot spring tourists mainly consume in the hot spring area on weekends. As a result of the introduction of the national statutory short holiday policy, the majority of tourists mainly take short trips, focusing on hot springs around.

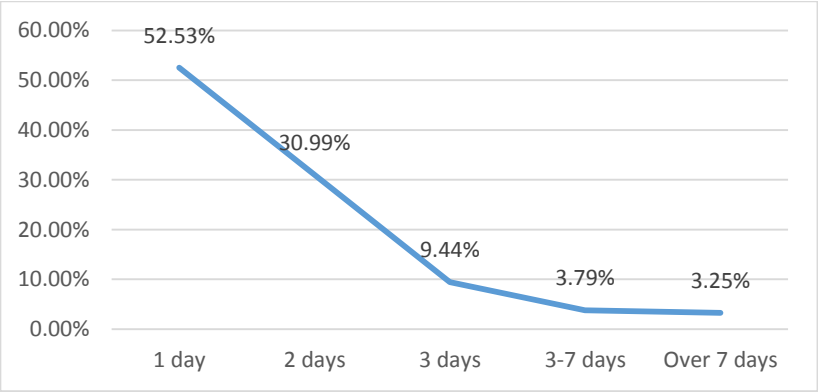

Figure 4 Length of stay for Chinese hot spring tourists

The average cost of a hot spring tour is 677.43 yuan.

The average per capita consumption of hot spring bath for tourists is 677.43 yuan, with the highest per capita consumption of 20,000 yuan and the lowest of 42.86 yuan. The difference in per capita consumption level between different hot spring projects is large. 55.80% of hot spring tourists spend less than 677.43 yuan on average, while 44.20% of hot spring tourists spend more than 677.43 yuan on average. This indicates that the hot spring tourism market is increasingly differentiated, and some tourists have higher consumption capacity and higher requirements for the hot spring project facilities. Others will not spend more on hot springs.

Promoting health and relaxing are the main purposes of hot spring tourists.

According to the questionnaire results, tourists believe that the value of promoting health and relaxing in hot springs are the most important, with an important score of 4.63 and 4.6 respectively. Secondly, the tourists consider the security and privacy of the hot spring is also more important, with a score of 4.44. The value of experiencing traditional health preservation and getting close to

nature are relatively important, with the scores of 4.38 and 4.37 respectively. The score of feeling family atmosphere and effective pain relief are 4.36 and 4.33, higher than the average score of importance level (Figure 5). It can be seen that relaxing the body and mind and promoting health are the main motives of most hot spring tourists, who believe that hot spring bathing is a way of recreation and health maintenance. Therefore, hot spring enterprises should pay attention to this consumer demand.

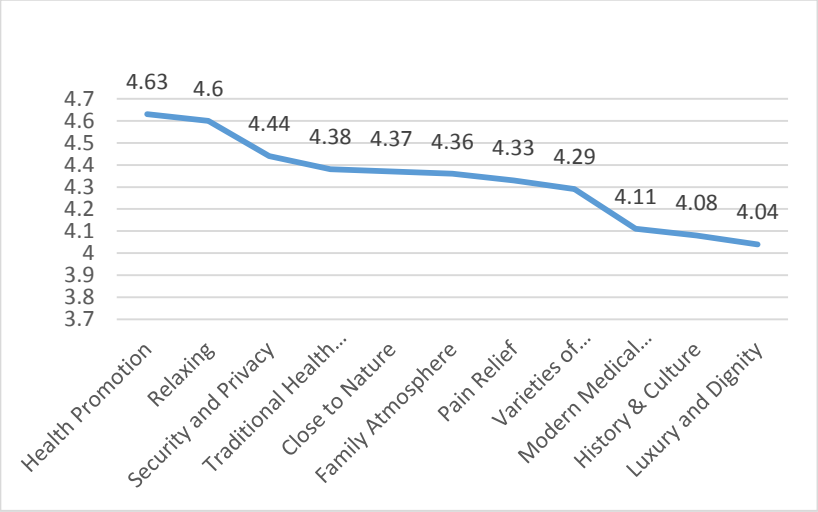

Figure 5 The main purpose of Chinese tourists to visit hot springs

Visitors prefer related experience products of balneotherapy.

The results of the questionnaire show that tourists who prefer natural hot spring take up 25.57%. Secondly, the proportion of tourists who prefer to experience the medical hot spring pool (add materials such as traditional Chinese medicine, petal, tea, wine and milk, etc.) is 17.80%. The percentage of people who like hydrotherapy pool (such as strike, bubble, whirlpool, etc.) is similar to the percentage who like hot spring swimming pool, at 10.17% and 9.50%, respectively. The proportion of tourists who like hot

spring slate bath is 5.59%. At the same time, some tourists express their love for SPA, accounting for 5.19% of the total number of tourists surveyed. Moreover, the hot spring mud mine and sand bath and the hot spring water park are also favored by a few tourists, the proportion is 4.82% and 3.40%, respectively. Other hot spring facilities, such as naked bath, the Dead Sea floating and hot spring museum, are less popular with tourists(Figure 6). Most Chinese tourists have a special preference for natural hot spring pools, and they have a high interest in experiencing the original nature of natural hot spring. Therefore, Chinese hot spring enterprises should show more characteristics of natural ecology in the design, so that tourists can experience more natural ecological elements in products.

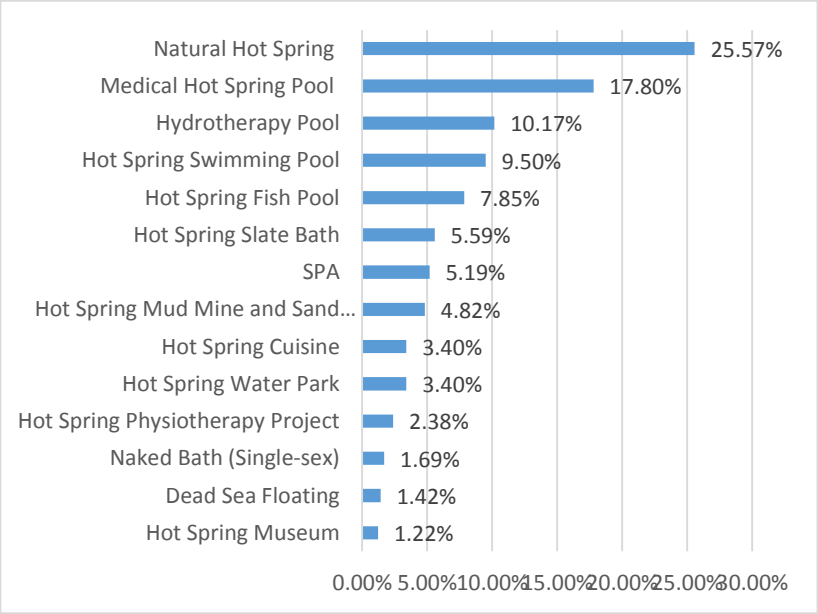

Figure 6 The hot spring products that visitors enjoy most

Conclusion and discussion

China's hot spring tourism has a large market size and has formed a relatively stable consumption pattern. Tourists' consumption of hot springs is fundamentally based on the demand for health and relaxation. Especially in the context of China's increasing urbanization, young urban working group and affluent urban families are looking for places to spend their weekends for leisure and relaxation. Because many provinces in China have hot spring resources, it is a natural choice for urban people. However, Chinese hot spring tourists do not pay much attention to the medical effect of hot spring. They consume hot spring resources in the way of entertainment and relaxation. As a result, Chinese consumers will not stay in hot springs for too long, nor will they be able to truly recover in a short time. They only seek a short period of entertainment and leisure at the hot spring destination.

There are two main reasons for this result. First, China's recent hot spring projects have been developed to attract tourism. Instead of inheriting the medical traditions such as balneotherapy in nursing homes in China since the 1950s, these programs are mainly aimed at attracting group tourists. As a result, many Chinese hot spring projects only regard the health effect of hot spring as a propaganda means, but do not actually develop the products of hot spring convalescence. Visitors cannot realize the medical benefits of balneotherapy at such hot spring destinations, nor do they have the opportunity to experience balneotherapy. Second, China's health insurance system does not include balneotherapy, which leads visitors to pay for all balneotherapy themselves. This limits the development of balneotherapy in China and makes the operation of existing hot spring sanatorium facing great difficulties. Many of China's hot-spring nursing homes have been forced to reform, gone bust or been privately purchased and turned into recreational hot spring events in the last 30 years. Therefore, if China's medical insurance system cannot be reformed to absorb balneotherapy into

its reimbursement program, China's hot spring program will continue to focus on short-term tourists as the main source market, and medical projects such as balneotherapy will not have more attraction to Chinese tourists than leisure and entertainment programs.

NATURAL RESOURCES AS A FACTOR OF DEVELOPMENT OF NATIONAL RESORT CLUSTERS OF THE NORTH CAUCAUS

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Natural medical factors favourably differ in safety, availability, dosage simplicity, absence of by-effects and immunity to the action of disorder agents. More humane, social and scientifically progressive principles are the basis of sanatorium-and-health resort treatment: preventive and rehabilitation trend, succession between out-patient and diagnostic, hospital and sanatorium institutions, high specialization of the administered treatment. Sanatorium-and-health resort service of Russia has proved its medical and economic efficiency in the system of medical rehabilitation and health improvement of Russian people for decades.

There are more than 130 medicinal mineral springs are concentrated in this unique nook surrounded with a picturesque ring of Caucasian Mountains. There are 115 spa-hotels, equipped with the advanced equipment only of four cities in the Caucasian Mineral Waters region. Spa -hotels have many well qualified and highly experienced doctors and medical teams. They can offer health services in Wellness centres, natural thermal and mud baths. There are 2 medical institutes. At present Caucasian Mineral Waters region is a nationwide centre of balneology and sanatorium-resort treatment. Hydro-mineral springs, climatic conditions, sanatoria and boarding houses are some kind of a «supporting frame» of the tourist- recreational regional complex. The worked out infrastructure, available human resources and natural ecological conditions is a competitive condition, a factor of stable recreation functioning.

At the resort region of the North Caucasus complex monitoring (mineral springs -trace element composition, aerosol, trace gases NO_x, CO, O_3, CH_4; periodically – heavy metals) is performed at two high levels (860 masl - a park zone of a large mountain resort, 2070 masl - alpine grassland, the net station). The results of the measurements are used in programs of bioclimatic, landscape and medical monitoring to specify the influence of aerosol on rehabilitation properties of the environment and human adaptative reserves. The natural aero ionization ∑(N+)+(N-) varied from 960 ion/cm^3 to 1460 ion/cm^3 in the resort park (860 m); from 1295 ion/cm^3 to 4850 ion/cm^3 on the Alpine meadow (2070 m); from 1128 ion/cm^3 to 3420 ion/cm^3 – on the tested site near the edge of the pinewood (1720 m). In the group of volunteers the trip from low-hill terrain zone (860 m) to the lower zone of highlands (2070 m) caused the activation of neuro and humoral regulation, vegetative and central parts of nervous system, psychoemotional status, normalization of frequency spectrum of brain activity and organism adaptation level.

Drinking mineral water treatment is used for medical rehabilitation diseases of the gastrointestinal tract, metabolism, excretory and cardiovascular system. Short-term metabolic reactions (single dose) and effects after the course of procedures (14-21 days) are distinguished in the structure of the biological effect of the MW.

COMPREHENSIVE REHABILITATION PROGRAM IN CUBA. MAIN RESULTS OF A DECADE

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Specialist in Physical Medicine and Rehabilitation. Professor Medical University of Havana, Cuba. National Manager of Physical Medicine and Rehabilitation in Cuba

Cuba is a country of eleven million people, with, free and accessible to 100% of the Cuban national health care system. There are three levels of care comprehensive rehabilitation program being present in the same, well-defined for each service level and 613 total goals.
Rehabilitation services are comprised of various medical specialties that are responsible for health promotion, prevention of disability and motor, psychosocial and work partner of the individual rehabilitation and family in the different age groups, there subprograms home and community rehabilitation. Today we prepare to face the great challenge of our aging population and improve the quality of life of Cubans.
This work allows to present the main results of this program in the last decade, for which a retrospective exploratory study of data collected by the National Statistical System in the period from 2007 to 2017, which allowed us to evaluate was made, some aspects of the operation of rehabilitation services and its impact on the health picture of the Cuban population. We conclude that this program has successfully responded to in a decade an average of more than 9 million patient days, with high quality and satisfaction.

THE CAPABILITIES OF THE RESORT TOWN OF ANAPA IN THE HEALTH IMPROVEMENT OF THE RUSSIAN PEOPLE ON THE EXAMPLE OF SANATORIUM-RESORT COMPLEX “DILUCH”

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

There is being realized the concept of development of sanatorium and resort complexes for the period until 2030 in the Krasnodar Krai, where therapeutic tourism is considered as an essential component of an innovative development, goals, tasks, principles and directions of state policy in the field of sanatorium treatment are defined. In economic terms, Anapa is one of the most developed regions of the Krasnodar Krai. According to an informal survey of more than 250 thousand people, Anapa became one of the three most popular resorts in Russia and won first place in the rating of "10 Best Russian Cities" in 2017. The resort town of Anapa is the only children's recreational zone in Russia. Anapa combines all natural and climatic (Mediterranean type of climate - maritime, mountain and steppe climatic zones) and balneological factors (sea, sun, air, mineral waters) with an attractive municipality and service sector, what allows to take tourists on all disease profiles. There are 6 mineral water deposits, more than 5 million tons of liman sulpharated hydrogen therapeutic muds in the territory of Anapa. Every year about 3.7 million tourists go on vacation in Anapa, which is 21.3% of vacationers in the Krasnodar Krai. The length of the beaches is 19.8 km. There is the bright sun 280 days a year in Anapa. Sanatorium and resort complex DiLUCH is the largest diversified medical institution in Anapa, where 16-18 thousand adults and 2 thousand children from the age of two receive treatment on a year-round basis, 55-65 thousand people from all regions of Russia -

individual procedures and consultations. DiLUCH uses all the natural resources of Anapa in medical, rehabilitation and preventive directions in combination with the professional application of all known prefomed physio-therapeutic methods. The laboratory-diagnostic center allows to conduct more than 400 types of examinations, consultations of doctors in 36 specialties. DiLUCH provides comfortable living conditions in 6 buildings, diet food, cultural and entertainment programs, medical support. DiLUCH has its own healing beach, pump room. The resort uses specialized programs due to the disease profile and shortened health courses. The result of treatment is a state improvement in 98,7% of cases.

TERMAE 4.0. NEW BUT OLD ALGORITHMS FOR THERMAL MEDICINE IN BALNEAL AND REHABILITATION SANATORIUM TECHIRGHIOL.

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Aim to present the Romanian approach of rehabilitation as holistic and integrative medicine.
Materials and methods – legislation, regulation for health, health education and environment.
Results. What is new, what is old in balneotherapy? Everything's new but old in the same time. We are now on the eve of the fourth industrial revolution (4.0) and modern medicine including thermal medicine fully benefits of the scientific and technological progress. Balneotherapy continuously shows its value and therapeutic virtues in the context of modern life. What do expect society from medicine and what can offer balneal/thermal medicine. Keeping health and preventing illnesses is the golden dream of medicine and to accomplish it nowadays means multidisciplinary cooperation within the frame of research, education and legislation.
In Romania balneotherapy represents the heart and the hub for physical medicine and rehabilitation because what else could be balneotherapy if not a hydro-thermo-therapy with thermo / mineral waters used in rehabilitation? Historically, in thermal resorts, around the balneotherapy, have added (in a natural way) the scientific acquisitions from physical medicine (electromedicine, phototherapy, and physiotherapy), have bloomed, flourished and developed alternative and/or complementary therapies such as acupuncture, homeopathy, herbal medicine, and geriatrics just because they gain therapeutic potential from each other.

The main characteristics of Romanian balneotherapy are:

1. unity between balneotherapy, physical medicine and rehabilitation;
2. the coherence of education, training and practice of specialist medical doctors and therapists;
3. holistic and integrative approach.

We strengthen cooperation and collaboration with specialists in various fields by emphasizing that balneotherapy is part of the European common heritage and that it is up to us, the balneologists, neurologists, cardiologists, rheumatologists, physicists, biochemists, geologist, etc, to keep and to transmit to young people the heritage of knowledge on the sanogenic virtues of natural therapeutic factors.

Conclusion

In Romania, the practice of balneal medicine has been continuously enriched, following the European direction.

Today, balneotherapy is part of physical medicine and rehabilitation, in accordance with European regulations/requirements. The teaching is coherent, the professionals of the field study the same disciplines with the adequate content at the level of their diploma.

HISTORICAL MEDICAL RELATIONS OF ITALY-GEORGIA

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Ajara Doctors United Scientific Community, Georgia

Italy-Georgia friendly relations begins from the first years of the new nation, which has gone beyond our travels and naturalists, and has acquired scientific, socio-economic literature.
Unique assistance from Italian scientists is special in the study of the Georgian coastal area, the recovery and health of the resort. Italy-Georgia's medical relations are now on a new stage, leading to rich climatic-balneological resources, scientific research and exploration, which has a great perspective and greatly contributes to the rapprochement of the two countries.

THE IMPORTANCE OF TERRITORIALITY IN THE PLACE BRANDING PROCESS

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South East Europe Long Term Care

The years of economic crisis and administrative reform have caused sharp reduction of social care costs towards local authorities which has limited their developmental capabilities and, on the other hand, social benefits.
The study focuses on Care provision for a population over 60 as an example, but the model is applied in all areas of Health Tourism development and provision from Municipalities which own such resources.
The process of economic adjustment of 11 out of 18 countries of the Eurozone has limited the means of municipalities, increasing their income. The research question is how to produce a design model for Local Authorities with an inverse availability of resources and budget to the growing needs of elderly care in a context of population cohesiveness and aging - especially in remote, rural, coastal, mountain and border regions where accessibility is an issue for the population.
Health Tourism resource-based development at the local level highlights the added value of territory through the territoriality process and makes the region's resources the center of the branding strategy of their site. A methodology will be presented that demonstrates that territoriality brings real income for the local areas with resource based development, branding and marketing of the site and investment planning. An innovative environment must come from a territorial entity (Aydalot, 1986).
After that, the innovative organizational and territorial structure leads to a learning dynamic. In other words, it is the creation of an

ecosystem in a territory where its stakeholders, in a coordinated way, will manage sustainable sector development of heatlh tourism, specially in areas where the primary resource is Thermalism springs, muds, waters etc to shape a very particular Product in that sense.

CHEMICAL AND PHARMACO-TECHNOLOGICAL EVALUATION OF ADJARA REGION PEAT PELOIDS

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"Peloids" is an internationally recognized name of all kind medical muds. They are natural mixture of inorganic and organic materials and performs homogenous, finely dispersed mass with definite physical and chemical properties

The effectiveness of peloids is due to high content of biologically active substances. High content of organic substances in peloids, such as chemically and biologically active organic carbon compounds formed by long-term chemical and microbiological processes, provides their application prospects in clinical practice.

The objective of the research was evaluation chemical and pharmaco-technological properties of Adjara region Peat Peloids.

The following tasks were to be solved to achieve the goal: Study chemical properties of Adjara region Peat Peloids; Determination spectrum of organic and inorganic substances; Formulation of nanocomposite containing sphagnum peat peloids; Formulation composition and development preparation technology of topical dosage form, plaster, containing nanocomposite of sphagnum peat peloids; Study anti-inflammatory and antibacterial activity of peat peloids;

The materilas of the research: sphagnum peat peloids of different ages (Ispani, Anaklia, Chirukhi, Peranga, Churia). Research strategy was to held experiments gradually from simple to complicated.

Technological and biologic methods were used to solve research tasks. Research was held using modern instrumental methods of analysis&apparatus (UV spectrophotometer, Scanning Electron

Microscopy, X ray fluorescence, Centrifuge, Dry oven, Ultraturax, AFM, XRD).

It is estimated that Kolkheti sphagnum peat peloids contain a wide range of organic substances: humic acids, amino acids, fatty acids, carbohydrates and others.

As a result of the research composition, design and preparation technology of plaster containing nanoconstructed system of sphagnum peat peloids is determined. Based on the research data Isapani sphagnum peat peloids and formulated dosage form (plaster) obtained anti-inflammatory action. Based on serial dilution (macro) method antibacterial activity of high concentration (1:1) sphagnum peat peloids (Ispani) was established.

FOLK HEALER – PLATON

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Platon Gigineishvili is among those few doctors who played great part in healthcare of Adjarian population at the beginning of 20th century, and throughout his life, he had a sacred name of the healer.

Within the period of 1922-1942 Platon Gigineishvili was the head of Therapy Department at the Republican Hospital, at the same time he was also performing as the principal of Tuberculosis, Childcare and Infection departments.

Platon was a member of the self-government of Batumi in 1902-1910. He actively participated in the process of drying out the bogs; fought against Malaria and Typhoid. Along with other doctors, Platon Gigineishvili is considered to be one of the founders of the outpatient services for Adjara population. He actively participated in sanitation - educational activities. He was conducting popular lectures.

Platon Gigineishvili played a big role in the development of Adjarian resort business. The first data on the balneological significance of the Black Sea region of Adjara appeared after a year from regaining independence from the Ottomans, but nobody paid attention to this case. He actively participated in sanitation - educational activities. He was conducting popular lectures.

The Society of Adjarian Doctors, led by Platon Gigineishvili, played a great role in the development of medicine in the region. Scientific units of different fields created within the society for accomplishing various tasks are still interesting and exemplary.

Particular attention of the society was paid to the study of climate and balneological conditions of Adjara, mountainous region,

development of resorts, geography of the area, study of flora, fauna, climatology and their medicinal effects.

The doctor's contribution was appreciated and Platon Gigineishvili was one of the first who was granted the status of Honorary Doctor of the Georgian SSR in 1941 and in 1946, he was awarded as Honorary Doctor of Adjara.

BINH CHAU HOT SPRING BECOMES THE FIRST VIETNAMESE MEMBER OF FEMTEC

VU LINH
Binh Chau Hot Spring, Vietnam

Binh Chau Hot Spring in Vietnam is the first Vietnamese member to join FEMTEC in 2018.

Binh Chau Hot Spring is the only hot spring source available in the southern part of Vietnam, located approximately 125km away from Ho Chi Minh City. The hot spring was found in early 20th century by a French scientist and the Saigon Binh Chau Corporation has been developing the hot spring to the public for more than a decade now. In 2017, the number of visitors reached over 300,000 per year and in light with the increasing demand for wellness tourim, the corporation decided to substantially invest in a new development plan. Binh Chau Hot Spring aims to offer to its visitors a holistic experience of hydrotherapy within a preserved environment. The new Binh Chau Hot Spring will highlight its fantastic location between the sea and the forest and create a full range of activities around the hot spring and nature in general. Such activities will include a hot spring theme park, an ecological park (bamboo reserve, botanical garden...) and a 4-star international hotel.

As far as hydrotherapy treatments are concerned, Binh Chau Hot Spring will provide both traditional and modern medicine. While the hot spring theme park will largely take its inspiration from the Japanese onsen, the treatments provided to the visitors will include a wide range of thalassotherapy techniques often used in Western countries and also traditional Vietnamese techniques (cupping, acupuncture...) that are well known among the Vietnamese public.

Thanks to this unique positioning, Binh Chau Hot Spring aims at promoting the vertues of the hot spring and hydrotherapy to

domestic and international visitors and consequently to become a major tourism attraction in the province of Ba Ria Vung Tau.
In conclusion, it is a great honor and a high responsibility for Binh Chau Hot Spring to represent Vietnam and showcase our savoir faire to the world but we are deeply convinced of our mission and will devote all our best efforts in promoting FEMTEC and the benefits of hydrotherapy worldwide.

NATIONAL CENTRE FOR RESEARCH
ON THERMAL MEDICINE AND REHABILITATION
Head N.A. Starzeva

International Scientific Center of Art-Therapy
Head G.R. Gigineishvili

Pr. Georgi Gigineishvili, Ph.D. in Medicine, Member of the Medical Academy of Rome and of the Art Academy of Moscow, International Artists' Association, *UNESCO*

Medicine and art share the same meanings and values. This is why it is so important for the different profiles of creativity and art to merge in our life. Educated people, including physicians, are largely responsible for the quality of our life, for the psychophysical balance of the people entrusted to them and, ultimately, for the health of a nation.

In this respect, at the International Center of Art-Therapy different applications of therapeutic options are sought and found through a combination of science, medicine, and art.

Duly qualified painters, sculptors, and performers, in co-operation with clinical psychologists, use a variety of operational activities to treat patients submitted to mastectomy. This helps them leave behind the depression and bitterness connected with their physical and psychological trauma in a "soft" way. Patients are involved in a creative process that encompasses different forms of artistic expression, and are often newly stimulated and motivated.

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