

The thermal rehabilitation Reality and perspectives

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Nongovernmental Organization
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**THE 73° GENERAL ASSEMBLY
AND
INTERNATIONAL SCIENTIFIC CONGRESS
OF THE WORLD FEDERATION OF HYDROTHERAPY
AND CLIMATOTHERAPY
(FEMTEC)**

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"BALNEOLOGY IN CHANGING SOCIETIES"
Multilateral approach to health care and well-being

World populations are getting older, especially in Europe, North America and China: the prevalence and impact of neuromusculo-skeletal conditions are expected to continue to increase significantly over the next few years!

THE LANCET

ARTICLES | VOLUME 396, ISSUE 10267, P2006-2017, DECEMBER 19, 2020

Global estimates of the need for rehabilitation based on the Global Burden of Disease study 2019: a systematic analysis for the Global Burden of Disease Study 2019

Alarcos Cieza, PhD   • Kate Causey, BSc • Kaloyan Kamenov, PhD • Sarah Wulf Hanson, PhD •

Somnath Chatterji, MD • Prof Theo Vos, PhD

- At least **one in every three people in the world needs rehabilitation** at some point in the course of their illness or injury (> musculoskeletal disorders)
- **Globally in 2019**, 2.41 billion individuals had conditions that would benefit at some point during the course of disease from rehabilitation services.

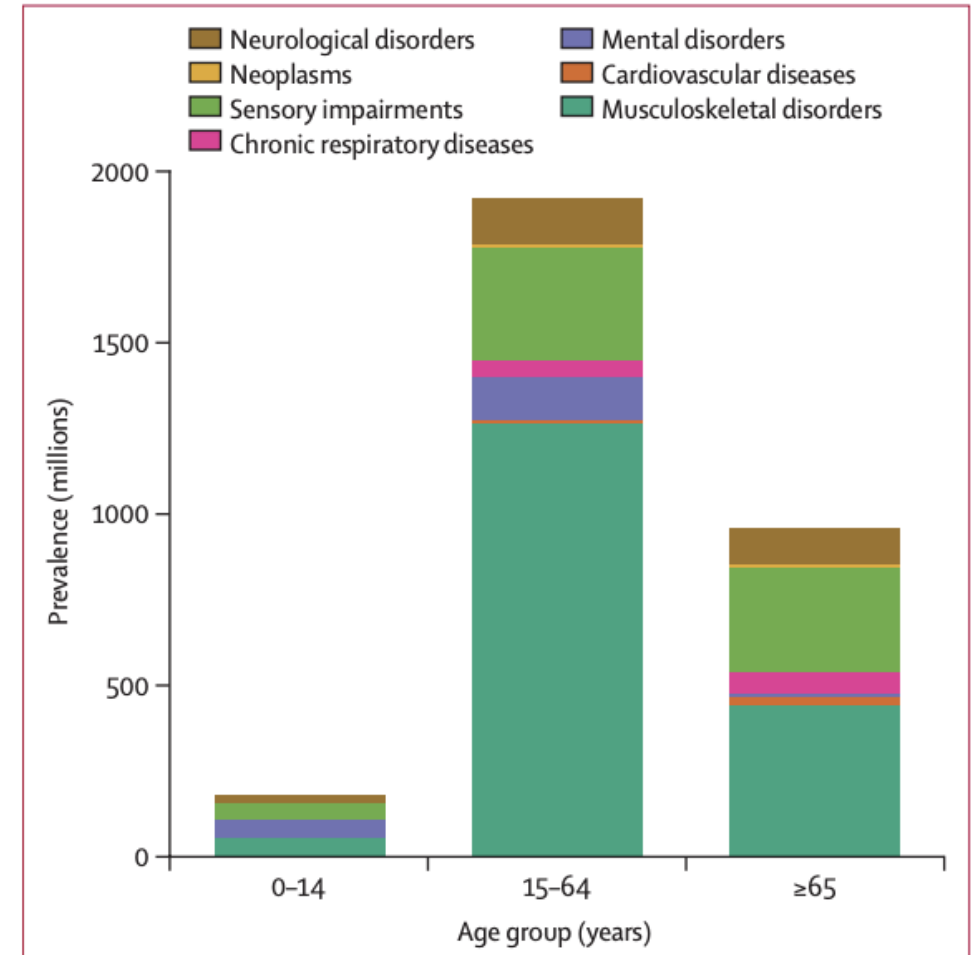


Figure 2: Disease categories of prevalent conditions that would benefit from rehabilitation globally, by three age groups, 2019

REHABILITATION

2030

a call for action



1. Creating strong leadership and political support for rehabilitation at sub-national, national and global levels.
2. Strengthening rehabilitation planning and implementation at national and sub-national levels, including within emergency preparedness and response.
3. Improving integration of rehabilitation into the health sector and strengthening intersectoral links to effectively and efficiently meet population needs.
4. Incorporating rehabilitation in Universal Health Coverage.
5. **Building comprehensive rehabilitation service delivery models to progressively achieve equitable access to quality services, including assistive products, for all the population, including those in rural and remote areas.**
6. **Developing a strong multidisciplinary rehabilitation workforce that is suitable for country context, and promoting rehabilitation concepts across all health workforce education.**
7. Expanding financing for rehabilitation through appropriate mechanisms.
8. Collecting information relevant to rehabilitation to enhance health information systems including system level rehabilitation data and information on functioning utilizing the International Classification of Functioning, Disability and Health (ICF).
9. Building research capacity and expanding the availability of robust evidence for rehabilitation.
10. Establishing and strengthening networks and partnerships in rehabilitation, particularly between low-, middle- and high-income countries.

Many authors underline the importance of introducing new ways of providing care and new settings for rehabilitation, especially for chronic diseases, different from the hospital



We need to look to the future for an appropriate and innovative rehabilitation models for patients with disability!





Mud Therapy



- Health Resort Medicine
 - health promotion
 - prevention
 - rehabilitation

COMPREHENSIVE REHABILITATION MODEL THAT COULD BE PROVIDED IN HEALTH RESORT MEDICINE

Multidisciplinary team: Psychiatrist, Thermal Physician, Pneumologist, Nurses, Physiotherapists, Neuropsychologist, Nutritionist, ...

Classic thermal treatments

- Thermal baths
- Muds
- Inhalations and aerosols
- Climatotherapy

Rehabilitation strategies

- Therapeutic massage
- Thermal water massage
- Physical therapies
- Exercise (therapeutic)
- Health education
- Neuropsychological interventions
- Other treatments complementary to balneotherapy



Specific mineral content



Physical changes

(Temperature, heart rate, Blood pressure)

Neuroendocrine effects

(ACTH, PRL, GH, Beta-endorphin, Cortisol)

Metabolic effects

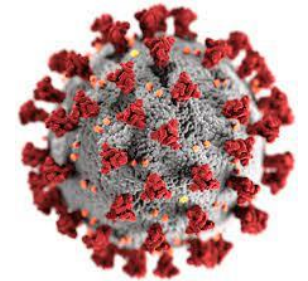
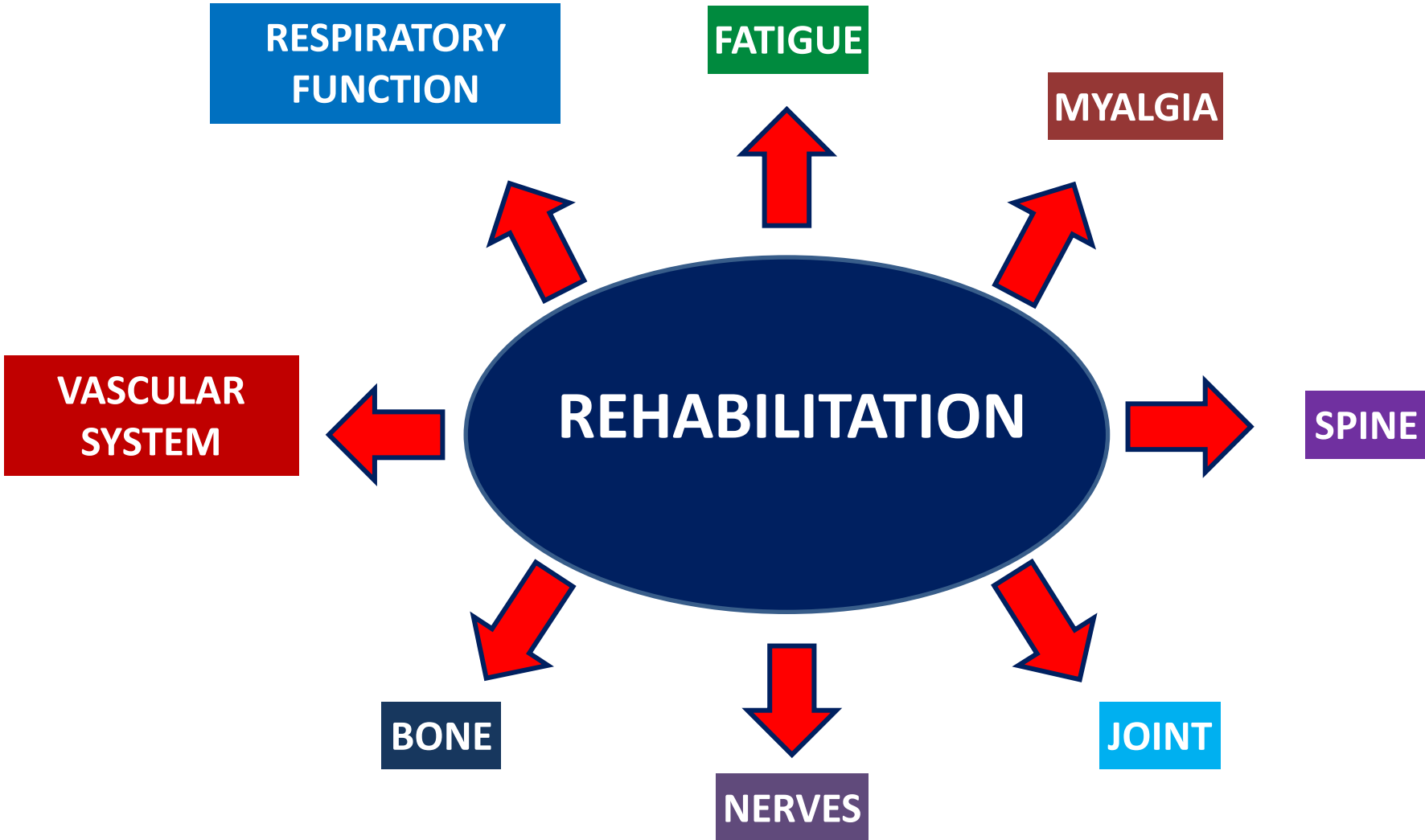
(Cholesterol, Glycemia)

Modifications of Biomarkers

(Cytokines, Adipokines, microRNA)



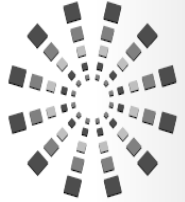
Health Resort Medicine & post Covid-19 Rehabilitation



The spa environment can be the ideal setting to rediscover sociality after the pandemic period

Health Resort Medicine & Oncological disorders (1)

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Gerhard Strauss-Blasche, PhD
Eva Gnad, MD
Cem Ekmekcioglu, MD
Birgit Hladschik, PhD, MD
Wolfgang Marktl, MD

Combined Inpatient Rehabilitation and Spa Therapy for Breast Cancer Patients

Effects on Quality of Life and CA 15-3

- 3-week inpatient breast cancer rehabilitation program with spa therapy (manual lymph drainage, exercise therapy, massages, psychological counseling, relaxation training, carbon dioxide baths, and mud packs.
- **Quality of life and mood improved significantly**
- **Tumor marker CA 15-3 declined significantly to follow-up**

The present study investigated the changes of quality of life, mood, and the tumor marker CA 15-3 associated with a 3-week inpatient breast cancer rehabilitation program incorporating spa therapy. One hundred forty-nine women, 32 to 82 years, participated in the study 3 to 72 months after breast cancer surgery. Quality of life (QoL, EORTC QLQ-C30), anxiety, and depression (HADS) were measured 2 weeks before, at the end, and 6 months after rehabilitation; CA 15-3 at the beginning, end, and at 6 months follow-up.

Patients received an individualized rehabilitation program incorporating manual lymph drainage, exercise therapy, massages, psychological counseling, relaxation training, carbon dioxide baths, and mud packs. Quality of life and mood improved significantly, the greatest short-term improvements found for mood-related aspects of quality of life, the most lasting improvements found for physical complaints (eg, fatigue). Also, the tumor marker CA 15-3 declined significantly to follow-up. Patient characteristics, as well as the time since surgery, moderated rehabilitation outcome to a limited extent. Older patients, nonobese patients, patients with a greater lymphedema, and patients with an active coping style showed slightly greater improvements. Hot mud packs inducing hyperthermia did not affect CA 15-3. In conclusion, the combination of inpatient rehabilitation with spa therapy provides a promising approach for breast cancer rehabilitation.

Health Resort Medicine & Oncological disorders (2)

European Journal of Oncology Nursing 18 (2014) 505–511



Contents lists available at ScienceDirect

European Journal of Oncology Nursing

journal homepage: www.elsevier.com/locate/ejon



Positive and cost-effectiveness effect of spa therapy on the resumption of occupational and non-occupational activities in women in breast cancer remission: A French multicentre randomised controlled trial



Charline Mourgues^{a,b}, Laurent Gerbaud^{a,b}, Stéphanie Leger^{a,b}, Candy Auclair^{a,b}, Fleur Peyrol^{a,b}, Marie Blanquet^{a,b}, Fabrice Kwiatkowski^c, Anne Leger-Enreille^c, Yves-jean Bignon^{c,*}

The intervention group underwent spa treatment combined with consultation with dietician whereas the control underwent consultations with the dietician only.

Key results

The main results showed a higher rate of resumption of occupational activities in the intervention group ($p = 0.0025$) and a positive effect of the intervention on the women's ability to perform occupational activities 12 months after the beginning of the study ($p = 0.0014$), and on their ability to perform family activities ($p = 0.033$).

Conclusions

Spa treatment is a **cost-effective strategy to improve resumption of occupational and non-occupational activities and the abilities of women in breast cancer remission.**

→ **Higher rate of resumption of occupational activities and family activities. The stay in a thermal centre was cost-effective at 12 months.**

European Journal of Cancer (2013) 49, 1530–1538



Available at www.sciencedirect.com

SciVerse ScienceDirect

journal homepage: www.ejcancer.info



Long term improved quality of life by a 2-week group physical and educational intervention shortly after breast cancer chemotherapy completion. Results of the 'Programme of Accompanying women after breast Cancer treatment completion in Thermal resorts' (PACThe) randomised clinical trial of 251 patients

F. Kwiatkowski^{a,f}, M.A. Mouret-Reynier^b, M. Duclos^g, A. Leger-Enreille^c, F. Bridon^h, T. Hahnⁱ, I. Van Praagh-Doreau^b, A. Travade^j, M. Gironde^d, O. Bézy^d, J. Lecadet^k, M.P. Vasson^e, S. Jouveny^e, S. Cardinaud^a, C.F. Roques^l, Y.-J. Bignon^{f,*}

Background: Quality of life (QoL) after breast cancer is nowadays a major challenge. Aim: to test 2-week intervention in SPA centres (Intervention comprised group physical training, dietary education and physiotherapy)

Conclusion: This 2-week group intervention seemed to durably influence QoL of breast cancer patients treated by chemotherapy. Differences, smaller at 12 months than at six, suggest that a second but shorter intervention could help maintain the 6-month benefits.

Health Resort Medicine & and Rheumatic diseases

International Journal of Biometeorology

<https://doi.org/10.1007/s00484-019-01731-z>

ORIGINAL PAPER



Spa therapy and rehabilitation of musculoskeletal pathologies: a proposal for best practice in Italy

Andrea Bernetti¹  · Massimiliano Mangone¹ · Federica Alviti¹ · Teresa Paolucci² · Carmine Attanasi¹ ·
Massimiliano Murgia² · Luca Di Sante² · Francesco Agostini¹ · Marco Vitale³ · Marco Paoloni¹

- Beneficial effects and mechanisms of action of thermal therapy compared to placebo/other treatments in the management of **OA (of the knee, hip, and shoulder), chronic back pain, fibromyalgia, rheumatoid arthritis, and ankylosing spondylitis**

Health Resort Medicine in neurological diseases

International Journal of Biometeorology
<https://doi.org/10.1007/s00484-022-02369-0>

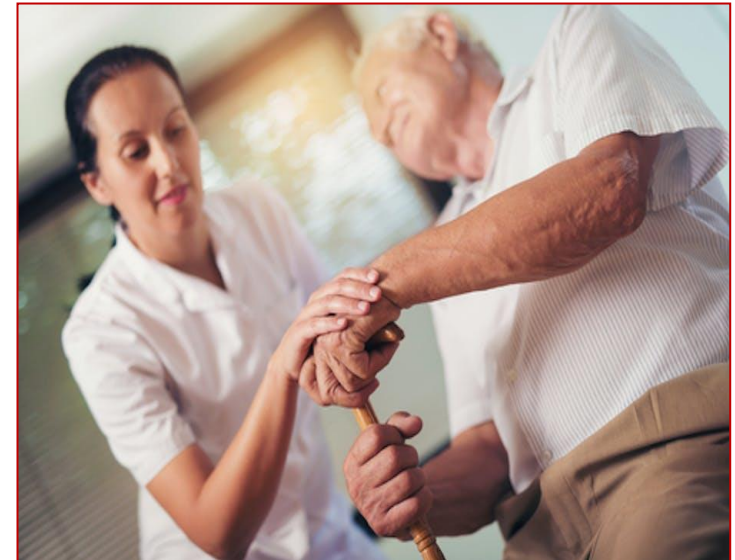
REVIEW PAPER

Can spa rehabilitative interventions play a role for patients suffering from neurodegenerative disorders at the early stages? A scoping review

Maria Chiara Maccarone¹  · Stefano Masiero^{1,2}











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Despite the heterogeneity in the treatment modalities reported, the small number of trials, and the little number of patients, **initial evidence seems to show a promising role of rehabilitative interventions conducted in the thermal setting for patients affected by neurodegenerative disorders and, especially for patients affected by Parkinson's disease**



Article

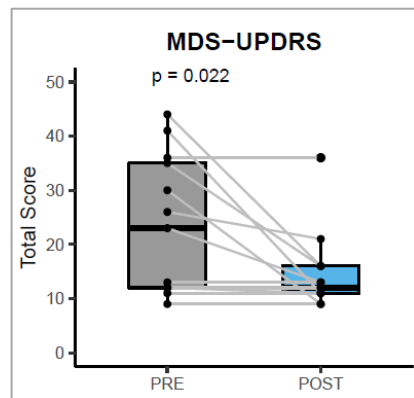
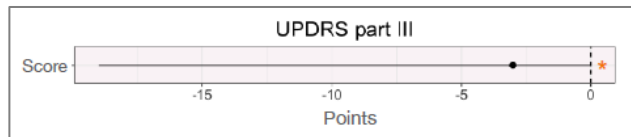
Effect of Intensive Rehabilitation Program in Thermal Water on a Group of People with Parkinson’s Disease: A Retrospective Longitudinal Study

Roberto Di Marco ^{1,2,3,*}, Francesca Pistonesi ¹, Valeria Cianci ¹, Roberta Biundo ^{1,4}, Luca Weis ¹,
Lucrezia Tognolo ^{2,3}, Alfonc Baba ³, Maria Rubega ², Giovanni Gentile ¹, Chiara Tedesco ¹,
Miryam Carecchio ¹, Angelo Antonini ¹ and Stefano Masiero ^{2,3}

Supported by "Foundation for Italian Thermal Scientific Research" (FoRST), Rome, Italy

Rehabilitation Intervention in thermal health resort :

- 20 individuals recruited (Hoehn and Yahr stage II-III in OFF-state)
- 12 sessions of exercise in aquatic environment; 45 minutes each; twice a week for 6 weeks; 1.4 m depth thermal pool)
- Significant improvement of **balance** (Mini-BEST test score or Mini Balance Evaluation System Test)
- The improvement in the participants’ **motor status** (The 6-min walk distance and Unified Parkinson’s Disease Rating Scale)
- Significant improvement in **quality of life** (Parkinson’s disease Quality of Life Questionnaire)
- **No adverse effect** due to the rehabilitation program



Health Resort Medicine in Cardio-vascular system (1)

Cochrane Database of Systematic Reviews | Review - Intervention

Balneotherapy for chronic venous insufficiency



✓ Melissa Andreia de Moraes Silva, Luis CU Nakano, Lígia L Cisneros, Fausto Miranda Jr Authors' declarations of interest

Version published: 26 August 2019 Version history

<https://doi.org/10.1002/14651858.CD013085.pub2>

Seven randomised controlled trials: 891 participants.
Six studies (836 participants) evaluated balneotherapy versus no treatment.

Moderate improvement in HRQoL at 3 months, 9 months, and 12 months

Improvement in pain

Reduction in incidence of skin pigmentation changes at 12 months

No clear effect related to oedema

Complications: erysipelas, thromboembolic events and palpitations. No clear evidence of an increase in reported adverse effects with balneotherapy. **No serious adverse events.**

Health Resort Medicine in Cardio-vascular system (2)

From the American Venous Forum

Randomized trial of balneotherapy associated with patient education in patients with advanced chronic venous insufficiency

Patrick H. Carpentier, MD, and Bernadette Satger, MD, *Grenoble and La Léchère, France*

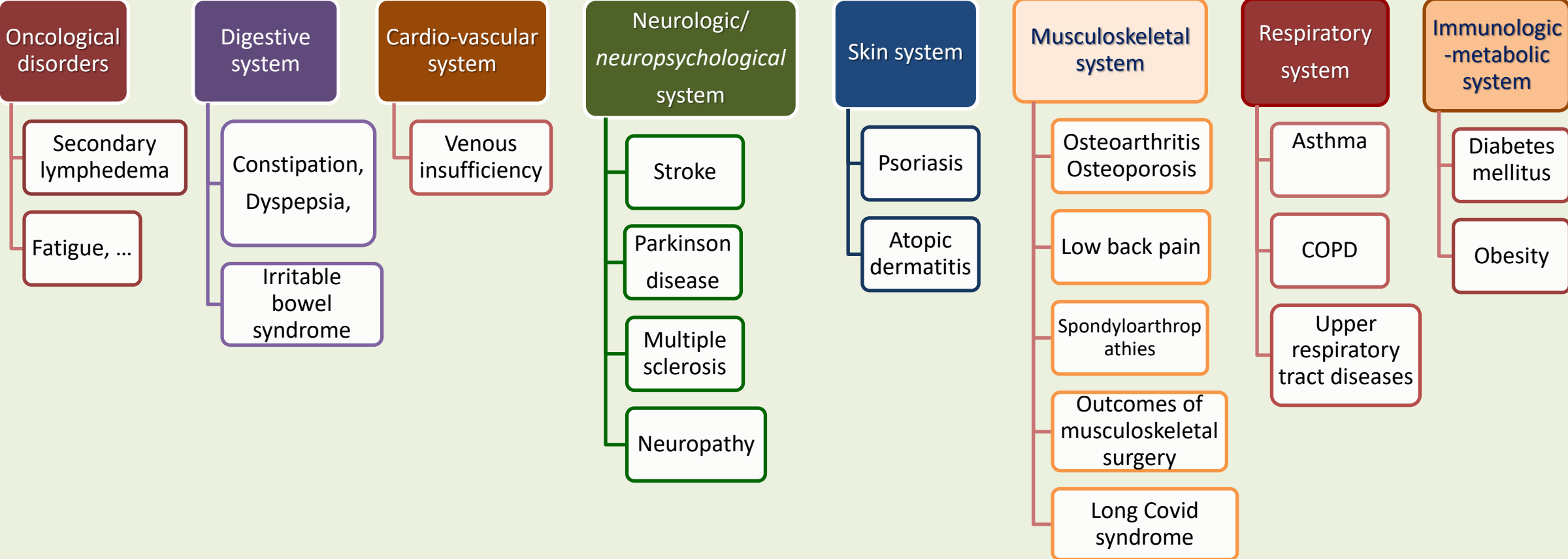
J Vasc Surg 2009

- 4 sessions per day, six days a week for 3 weeks:
- 15 min joint mobilization session in a deep (150 cm) and warm (34 °C) pool
- 15 min walking session in a semi-deep (80 cm) and cool (28 °C) water pool
- 20 min whirlpool bath session
- 10 min under affusion massage session
- 10 min bath session with customized underwater strong massage

All these spa sessions used the mineral waters of La Léchère cooled down for therapeutic use.

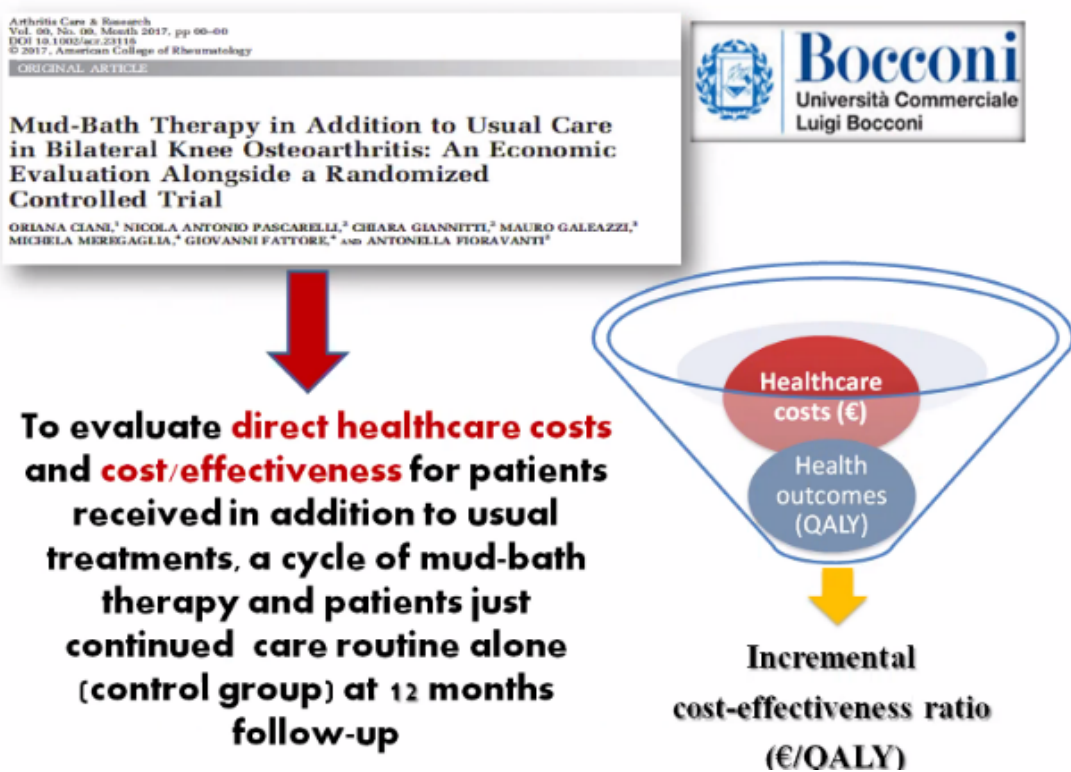
After treatment, significantly **decreased pigmentation and erythema** in the TG compared with the CG (P< 0.01). **Quality of life** (P< 0.01) and **symptoms** (P< 0.001) also improved significantly. These differences remained **significant after one year follow-up**.

Health Resort Medicine & Rehabilitation in different systems



Preventive programs in the spa setting: Cost-effectiveness

- Medical spa treatment has clearly evidence based therapeutic effect documented in rigorous scientific studies.
- Cost-effectiveness of medical spa therapy** is documented in health statistics as spa therapy leads to statistically significant reduction in symptoms and hospitalizations



AVERAGE COST PER PATIENT (€)

Assessment	V1	V3	V6	V9	V12	V13	V14	TOTAL
Time	Baseline	1 m	4 m	7 m	10 m	11 m	12 m	
MBT [53] (m ± SD)	8.3 (7.20)	17.6 (62.42)	12.3 (40.13)	8.1 (20.05)	10.1 (29.56)	17.7 (55.06)	12.3 (38.49)	168.4 (223.14)
MBT								134.4
Totale	8.3	17.6	12.3	8.1	10.1	17.7	12.3	302.8
Control [50] (m ± SD)	5.8 (7.86)	88.1 (133.1)	57.6 (79.39)	74.0 (113.88)	32.6 (34.87)	70.7 (251.41)	75.6 (109.55)	975.0 (740.10)

Euro -672



Eastern Economic Journal, 2008, 34, (364-374)
© 2008 EEA 0094-5056/08 \$30.00
www.palgrave-journals.com/eej

Do Spa Visits Improve Health: Evidence From German Micro Data

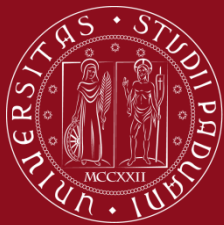
Jonathan Klick^a and Thomas Stratmann^b

Take-home message

- We need to look to the future for an appropriate rehabilitation model for patients with disability because the prevalence and impact of patients to need rehabilitation approach is growing continuously
- **Health Resort Medicine applications are increasing:**
 - Innovative protocols for patients with respiratory, oncological and neurological outcomes
 - Innovative health resort medicine strategies for new pathologies (e.g., Long Covid syndrome)
 - Prevention strategies for patients with metabolic and cardiovascular diseases but also for healthy patients (lifestyle and healthy aging)



- Research must follow these advances providing the foundations to validate the feasibility and effectiveness of these innovative applications.
- Research services and National Health Systems should collaborate to generate specialized global health-oriented protocols for preventive and rehabilitation of patients with different disabilities



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