

BALNEOTHERAPY – The Clinical Evidence

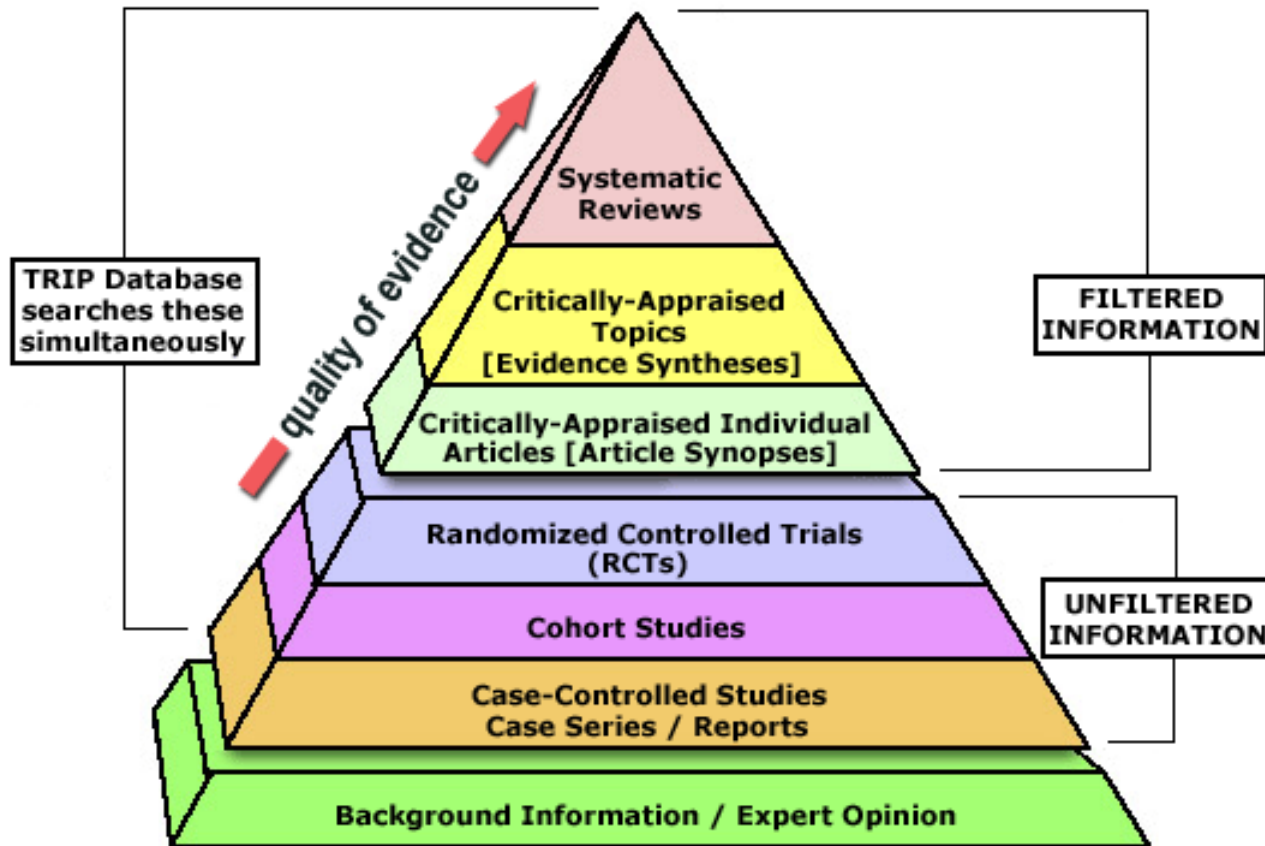
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Definition of Balneotherapy

- Balneotherapy is defined as the immersion in geothermal water with salt content exceeding 1 g/L and at a temperature around 35°C.
- It is traditionally considered a useful treatment in managing selected musculoskeletal and dermatological conditions

Evidence based medicine heirarchy



Systematic Reviews

Review	Disease states	Number of RCTs
Bender et al 2013	Musculoskeletal	18
Falagas et al 2009	All reviewed	29
Francon, Forestier 2009	Musculoskeletal	19
Harzy et al 2009	Knee osteoarthritis	9
Francon, Forestier 2008	Limb osteoarthritis	18
Verhagen et al 2008	Rheumatoid arthritis	7
Verhagen et al 2008	Osteoarthritis	7
Pittler et al 2006	Low back pain	5
Brosseau et al 2006	Rheumatoid arthritis	7

Choosing which systematic review?

- Depends on intent e.g if looking at specific condition
- In general, we suggest Falagas et al. 2009 or Bender et al 2013
 - Falagas et al
 - Recent publication; Most papers included; As wide a coverage of clinical conditions as possible
 - Bender et al
 - Most recent publication; many papers included; good coverage of musculoskeletal conditions

Falagas et al findings

Health Outcome	Positive Outcomes from Balneotherapy	Statistically Significant?
Clinical Improvement	In 25 of 25 musculoskeletal* studies included (25/25)	25/25
Pain Improvement	25/25	17/25
Quality of life	4/4	4/4

* 3 other included studies were in people with psoriasis and one in Parkinson's disease

Bender et al findings

“Based on the results, we conclude that balneotherapy with Hungarian thermal-mineral waters is an effective remedy for lower back pain, as well as for knee and hand osteoarthritis.”

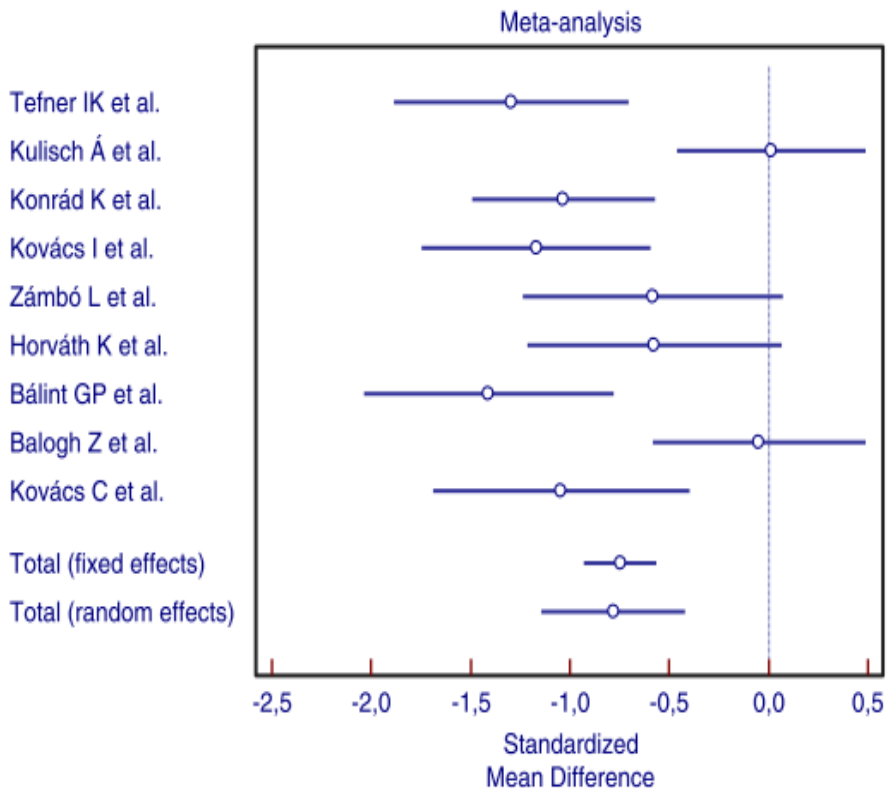


Fig. 2 Visual analogue scale (VAS) intensity of pain on loading

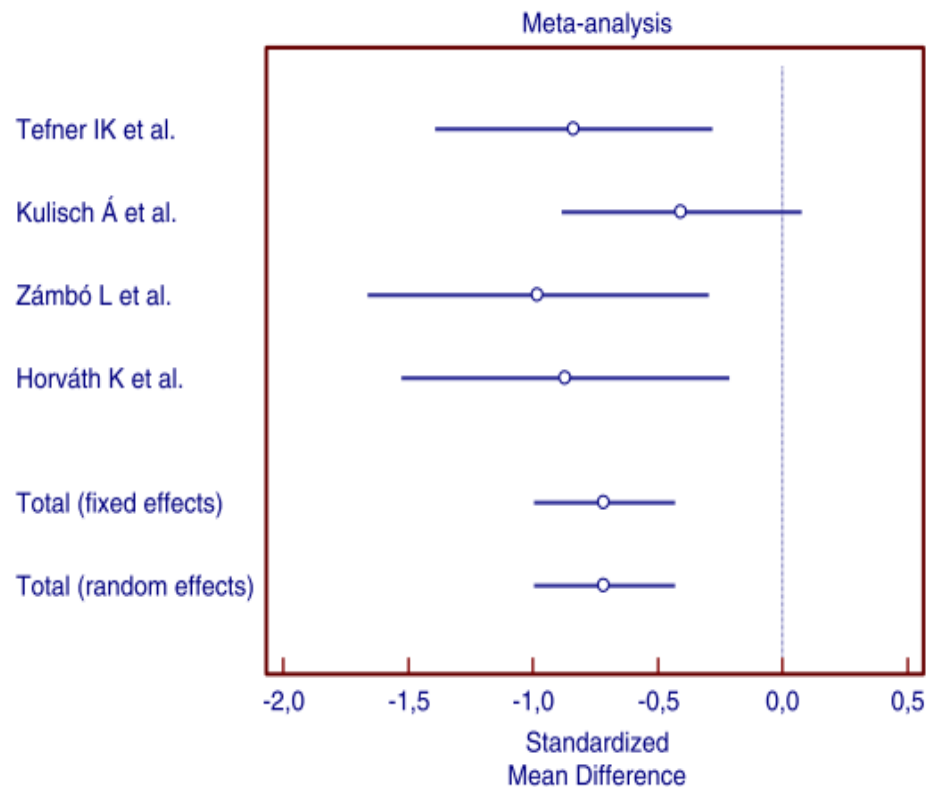


Fig. 3 VAS intensity of pain at rest

Separate Randomised Controlled Trials (RCTs)

- Based on study methodological quality
 - Oxford Study Score
 - 4 = Moderate quality
 - 5 = High quality
 - Van Tulder scale
 - 7-8 = Moderate quality
 - 9+ = High quality

High Quality RCTs

Study (first author)	Patient number	Disease state	Main Outcomes
Constant	224	Low back pain	Improved physical health at 3 months (P=.011) Improved mental health at 3 months (p=.033) Less anxiety (P=.001) and depression (p=.0001) Reduced pain duration (P<.00001), pain intensity (P<.00001)
Kulisch	71	Low back pain	Patient measured Health status at 15 weeks (P<0.05) Improvement in Schobers index at 15 weeks (P<0.05)
Kovacs	70	Osteoarthritis	Reduced Pain at 3 months (P<.0001) Range of motion at 3 months (P<.05) Tenderness at 3 months (P<.0001)
Horvath	63	Hand osteoarthritis	Hand pinch strength short term and at 13 weeks (P<0.05) Health Assessment Questionnaire (P<0.01)
Yurtkuran	61	Knee osteoarthritis	Reduced Pain at 12 weeks (P=.02) Tenderness 12 weeks (P=.0020)
Franke	60	Rheumatoid arthritis	Lower pain Intensity at 6 months (P=.04) Arthritis Impact Scale reduction at 6 months (P=.01)

Moderate quality RCTs

Study (first author)	Patient number	Disease state	Main Outcomes
Forestier	382	Knee osteoarthritis	50.8% in balneo arm achieved the minimal clinically important improvement at 6 months vs 36.4% in control arm (P=.005)
Balint	64	Knee osteoarthritis	WOMAC activity score at 3 months (P=.009) WOMAC pain score at 3 months (p=.005) WOMAC total score at 3 months (p=.012)
Szucs	62	Knee osteoarthritis	Movement pain and knee joint sensitivity reduced at 18 days (P<.05)
Balogh	60	Low back pain	Reduced Pain at 3 months (P<.01) Reduced muscle spasm (P<.01) Improved Shoeber's index (P<.01)
Tefner	57	Low back pain	Mobility of lumbar spine, Oswestry index, EQ-5D, SF-36, short and long term (P<0.05)
Wigler	33	Osteoarthritis	Improvement of knee OA at 16 weeks (P<.05) Reduced night pain at 20 weeks (P<.05)
Halevy	23	Psoriasis	58% in balneo arm reduced PASI score >25% vs 36 in control arm at 3 weeks (P=NS)

Observational Data

- **NAIADE (Italy)**
 - 297 certified Italian Spa centres
 - 23,680 clients
 - 1 year follow up

- **Major Reductions in:**
 - Hospitalisations
 - Sick days off work
 - Drug usage

NAIADE Results

Disease condition	Hospital admissions	Sick days from work	Regular Rx Drug use
Musculoskeletal	-73% P=.0001	-40% P=.0001	-40% analgesics P=.0001
Lung	-35% P=.0001	-35% P=.0001	-36% bronchodilators P=.0001
Skin	-44% P=.0025	-44% P=.0001	-31% antihistaminics P=.0025
Vascular	-27% P=.0001	-43% P=.0001	-29% heparins P=.0001

Results also for Gynaecologic, Urinary, gastroenteric and ORL conditions, not presented here

Future Research?

- **Randomised Controlled Trials**
 - **Not worthwhile doing more placebo studies**
 - Effect diluted in meta-analysis by many existing lower quality studies
 - **High Quality Studies vs active treatments, e.g. pain drugs**
 - Larger size studies required
 - **More good quality studies in psoriasis and other non-musculoskeletal health conditions required**
- **Observational Data**
 - More NAIADe's

References Pg 1

- Balint, G. P., Buchanan, W., Adam, A., Ratko, I., Poor, L., Balint, P. V., Somos, E., Tefner, I. and Bender, T. The effect of the thermal mineral water of Nagybaracska on patients with knee joint osteoarthritis – a double blind study. *Clinical Rheumatology*. 2007; 26; 890-894.
- Balogh Z, Ordogh J, Gasz A et al. Effectiveness of balneotherapy in chronic low back pain – a randomised single blind controlled follow up study. *Forsch Komplementarmed Klass Naturheilkd* 2005; 12;196-201
- Bender T, Balint G, Prohaszka Z et al. Evidence based hydro and balneotherapy in Hungary. A systematic review and meta-analysis. *Int J Biometeorol*. DOI 10.1007/s00484-013-0667-6 16 May 2013
- Brousseau, L., MacLeay, L., Robinson, V., Casimiro, L., Pelland, L., Wells, G., Tugwell, P. and McGowan, J. Efficacy of balneotherapy for osteoarthritis of the knee: A systematic review. *Physical Therapy Reviews*. 2002; 7(4): 209-222.
- Coccheri, S., Gasbarrini, G., Valenti, M., Nappi, G., and Di Orio, F. Has the time come for a re-assessment of spa therapy? The NAIADE survey in Italy. *International Journal of Biometeorology*. 2008; 52; 231-237.
- Constant F, Guillemin F, Collin JF et al. Use of spa therapy to improve the quality of life of chronic low back pain patients. *Med Care* 1998;36; 1309-14
- Falagas, M. E., Zarkadoulia, E. and Rafadailidis, P. I. The therapeutic effect of Balneotherapy: Evaluation of the evidence from randomised controlled trials. *The International Journal of Clinical Practice*. 2009; 63 (7), 1068-1084.
- Forestier, R., Desfour, H., Tessier, J-M., Francon, A., Foote, A. M., Genty, C., Rolland, C., Roques, C-F., and Bosson, J-L. Spa therapy in the treatment of knee osteoarthritis: A large randomised multicentre trial. *Annals of Rheumatological Disease*. 2010; 69, 660-665.
- Franke A, Reiner L, Pratzel HG et I. Long term efficacy of radon spa therapy in rheumatoid arthritis – a randomised sham controlled study and follow up. *Rheumatology (Oxford)* 2000; 39; 894-9802
- Francon, A. and Forestier, R. Medical spa therapy for limb osteoarthritis: Systematic literature review with a methodological analysis. *Joint, Bone Spine*. 2008; 1-11.
- Francon, A. and Forestier, R. Spa therapy in rheumatology. Indications based on the clinical guidelines of the French National Authority for Health and the European League Against Rheumatism, and the results of 19 randomised trials. *Bull. Acad. Natle Med*. 2009; 193(6); 1345-1358.
- Halevy S, Giryas H, Frieger M et al. The role of trace elements in psoriatic patients undergoing balneotherapy with Dead Sea bath salt. *Isr Med Assoc J* 2001; 3; 828-32
- Harzy, T., Ghani, N., Akabsi, N., Bono, W. and Nejjari. Short and long-term therapeutic effects of thermal mineral waters in Knee osteoarthritis: a systematic review of randomised controlled trials. *Clinical Rheumatology*. 2009; 28;501-507.
- Horvath K, Kulisch A, Nemeth A et al. Evaluation of the effect of balneotherapy in patients with osteoarthritis of the hands; and randomised controlled single blind follow up study. *Clin Rehab* 26: 431-441. 2012.
- Jadad, A. R., Moore, R. A., Carroll, D., Jenkinson, C., Reynolds, D. J. M., Gavaghan, D. J. and McQuay, H. J. Assessing the quality of reports of randomised clinical trials: Is blinding necessary? *Controlled Clinical Trials*. 1996; 17:1-12.
- Kovacs, I. and Bender, T. The therapeutic effects of Cserkeszolo thermal water in osteoarthritis of the knee: a double blind, controlled, follow-up study. *Rheumatology International*. 2002; 21: 218-221.
- Kulisch, A., Bender, T., Nemeth, A., and Szekeres, L. Effect of thermal water and adjunctive electrotherapy on chronic low back pain: A double-blind, randomised, follow-up study. *Journal of Rehabilitation Medicine*. 2009; 41: 73-79.
- Pittler, M. H., Karagulle, M. Z., Karagulle, M., and Ernst, E. Spa therapy and balneotherapy for treating low back pain: Meta-analysis of randomized trials. *Rheumatology*. 2006; 45: 880-884.
- Szucs L, Ratko I, Lesko T et al. Double blind trial on the effectiveness of the Puspokladany thermal water on arthritis of the knee joints. *JR Soc Health* 1989;109;7-9

References Pg 2

- Tefner I, Nemeth A, Laszlofi A et al. The effect of spa therapy in chronic low back pain; a randomized controlled, single blind follow up study. *Rheumatol Int* 32:3163-3169. 2012.
- Verhagen, A. P., Bierma-Zeinstra, S. M., Boers, M., Cardoso, J. R., Lambeck, J., de Bie, R. A. Balneotherapy for rheumatoid arthritis. *Cochrane Database Systematic Reviews*. 2004; (1) : CD000518.
- Verhagen, A. P., Bierma-Zeinstra, S. M., Boers, M., Cardoso, J. R., Lambeck, J., de Bie, R. A., et al. Balneotherapy for osteoarthritis. *Cochrane Database Systematic Reviews* 2007; (4): CD006864
- Wigler I, Elkayam O, Paran D et al. Spa therapy for gonarthrosis: a prospective study. *Rheumatol Int* 1995;15; 65-8
- Yurkturan, M., Yurkturan M., Alp, A., Nasircilar, A., Bingol, U., Altan, L. and Sarpdere, G. Balneotherapy and tap water therapy in the treatment of knee osteoarthritis. *Rheumatology International*; 27; 19-27.

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