



Hot Springs, Health and Wellbeing?

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Recap - last year at ASPA: quality evidence of health benefit



Systematic Reviews

Review	Disease states	Number of RCTs
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

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)

For the academically inclined:

Yes, the high quality studies were randomised, controlled and blinded.

New evidence: 2014



1) 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."

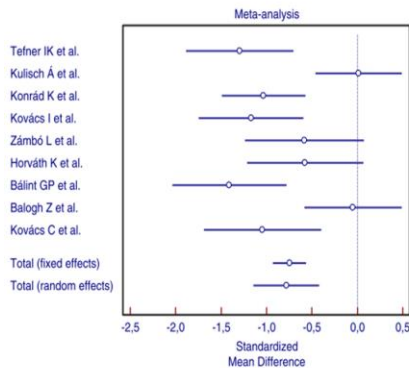


Fig. 2 Visual analogue scale (VAS) intensity of pain on loading

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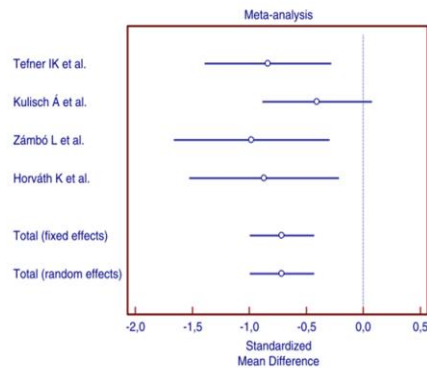


Fig. 3 VAS intensity of pain at rest

2) Naumann and Sadaghiani findings

Therapeutic benefit of balneotherapy and hydrotherapy in the management of fibromyalgia syndrome: a qualitative systematic review and meta-analysis of randomized controlled trials

Meta-analyses showed moderate evidence for a large reduction of pain at the end of treatment with BT in mineral/thermal water, regardless of whether within a spa center (SPA) or not.

Moderate evidence was seen for a medium improvement in HRQOL (FIQ).

Moderate evidence for a large improvement was seen for tender point count.

Johannes Naumann*† and Catharina Sadaghiani†
Arthritis Research &
Therapy 2014, 16:R141 doi:10.1186/ar4603

•**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**

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FAQS



1. What causes the benefit, is it the heat, relaxation, water or minerals?
2. How do the water and or minerals deliver the health benefit?
3. What health benefits do heat and relaxation offer?
4. How do these results translate to the reality of commercial spas?
5. Are all hot springs equal in effect?
6. How do hot springs compare to other spa therapies that deliver health benefits?

FAQ1: Is it the water, the minerals, the heat, relaxation or all of these?

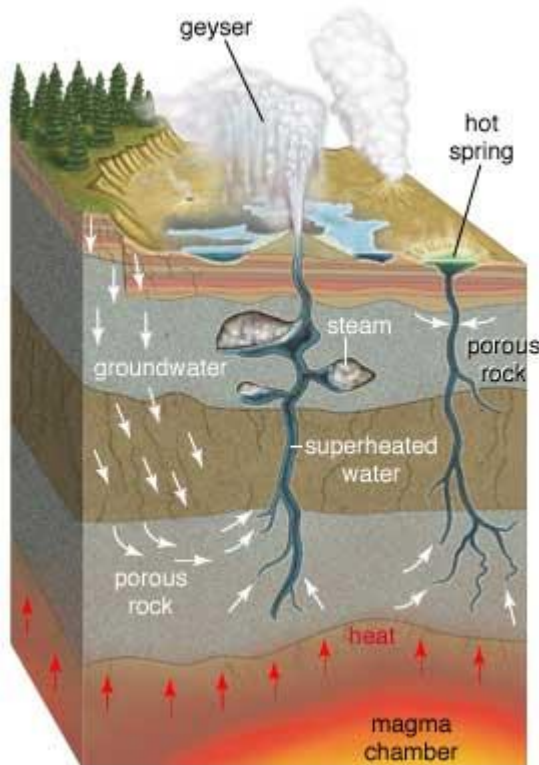


- Balneotherapy in the studies is usually delivered as a 15-day course of 30-min daily sessions
 - with thermal water compared with tap water of similar colour, temperature and odour (placebo treatment)



- So heat and relaxation are ruled out as they are common to both arms of the studies.
- It must be the water and/or the minerals in the water

FAQ2: How do the water and or minerals deliver the health benefit?



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- **Hot Springs water is purified by high temperatures**

- When water is superheated its spectrographic signature is cleansed, removing any taint of chemical pollutants.

- *“Water emerging from hot thermal depths is truly refreshed water. It becomes ready to act in a new way, with the latest creative instructions coming to it”*

- Iain Trousdell <http://www.foundationforwater.org/>*

- **Health giving dissolved minerals and trace elements are absorbed through the skin**

- Superheated water absorbs minerals and trace elements as it rises to the surface.

- These are absorbed through the bathers’ skin. Skin absorption is well studied and is used in commercial drugs such as nicotine patches

- A study of 19 individuals in the UK found that daily bathing in hot baths with Epsom salts raised blood concentrations of magnesium by 40% over 7 days

- Waring R.H.. Report on magnesium sulfate across the skin. School of Biosciences, University of Birmingham. <http://www.mqwater.com/transdermal.shtml>.*

FAQ3: What, if any, health benefits do heat and relaxation offer?



- Heat: increases the concentration of beta-endorphin, a natural painkiller.
- Heat: prevents inflammation.
- Heat: also induces sweating and detoxification.

(<http://health.howstuffworks.com/skin-care/beauty/skin-treatments/balneotherapy3.htm>)

- Relaxation: Clinical evidence shows that it assists in managing asthma and delivers small improvements in blood pressure and depression.

*National Centre for Complementary and Alternative Medicine
(<http://nccam.nih.gov/health/stress/relaxation.htm>)*



FAQ4: How do these results translate to the reality of commercial spas?



- Few commercial bathing spas offer packages of 15 consecutive days bathing. Nonetheless we can state that:

With the benefits of relaxation and heat added to those from bathing in purified water mixed with minerals, visiting hot springs spas on a regular basis will improve and assist in maintaining health

FAQ5: Are all hot springs equal in effect?



- We don't know, but I expect there will be some differences
- It's complex, depending on:
 - osmotic qualities,
 - the mineral concentration,
 - the PH level,
 - the mineral form
 - the fluid conditions of the individual soaking.

<http://www.eytonsearth.org/balneology-balneotherapy.php>



FAQ6: How do hot springs spas' health benefits compare to other spa treatments?



- **Massage**
 - Uncertain benefit compared to hot springs. Many studies of differing quality and often unfavourable outcomes.
- **Heat sauna**
 - Less effective than hot springs: heat sauna benefits derived from heat, relaxation and detoxification.
- **Infra red sauna**
 - Uncertain benefit compared to hot springs. Near and far infra red radiation have effects beyond heat, relaxation and detoxification
- **Salt sauna**
 - Uncertain benefit compared to hot springs. A marketed improvement in asthma symptoms, but evidence base is primarily Russian

Summary



- Hot springs bathing improves health
- The benefit is derived from the water and/or its mineralisation
 - In addition to heat and relaxation
- It has probably the strongest case across the array of healthy spa therapies