

THERAPEUTIC EFFECTS OF THERMAL MUD AND HOT SPRING THERAPY IN ARTHRITIC PATIENTS: A REVIEW

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Abstract:

Arthritis is a long-term condition that causes pain, swelling, and stiffness in the joints, making it hard to move around. It affects millions of people around the world and can really take a toll on daily life. While medicines like NSAIDs and DMARDs are commonly used, they can sometimes have side effects over time. Because of this, more people are looking into other ways to manage the condition, like alternative or non-drug treatments.

Thermal mud therapy and hot spring therapy, often called balneotherapy or pelotherapy, have been used for a long time to help with rheumatic and musculoskeletal problems. These treatments involve using mineral-rich mud or soaking in warm, mineral-filled water. The good effects are thought to come from heat, pressure, and the minerals themselves. Heat can help increase blood flow and relax muscles, while the minerals and other substances might affect inflammation and the body's immune system. Studies show that these therapies can help reduce pain, improve how well joints move, and make daily activities easier for people with arthritis. This review looks at what therapeutic mud is made of, how it works, the research supporting it, and its possible benefits for people with arthritis.

Keywords: Arthritis, Thermal mud therapy, Alternative treatment, Balneotherapy, Hotspring therapy,

1. INTRODUCTION:

Arthritis is a group of conditions that affect the joints and the tissues around them, causing swelling, pain, stiffness, and trouble moving. The two most common types are osteoarthritis (OA) and rheumatoid arthritis (RA), which are especially common in adults and older people around the world. Osteoarthritis happens when the cartilage in the joints breaks down over time. Rheumatoid arthritis, on the other hand, is an autoimmune condition where the body's immune system attacks the joints, leading to long-term inflammation.[1]

Traditional treatments for arthritis include painkillers, steroids, and medicines that slow the disease's progression. These drugs can help ease symptoms, but using them for a long time might cause problems like stomach issues, heart risks, and a weaker immune system. Because of this, more people are turning to other methods to help manage long-term joint problems [2].

Thermal mud therapy and hot spring therapy are old methods used in spa medicine to help treat muscle and joint problems. These treatments are often called balneotherapy and involve using mineral-rich mud or soaking in warm mineral water. Studies today suggest these therapies can help ease pain, make joints more flexible, and improve how well people can move, especially for those with arthritis [3].

Mud therapy has long been linked to natural healing methods. In naturopathy, people use earth or clay to help the body return to balance and boost its own ability to heal. Ancient civilizations used mud for its healing and restorative effects. Later, doctors like Emanuel Felke helped bring back the use of mud in Europe and highlighted how natural materials can support good health [4].

Mud is closely linked to Prithvi, or Dharatee, one of the five main elements in the Panchamahabhutas system of traditional medicine. People have known for a long time that mud can help keep the body healthy and bring back energy. In naturopathy, mud therapy uses wet earth or clay applied to the body in a planned way to help balance the body and support healing. Ancient cultures used mud for its healing effects, and they valued it for its ability to restore health [5].

In later years, Emanuel Felke, a German naturopath, played a big role in bringing mud therapy back into popularity. He was often called the "Clay Pastor." Also, Adolf Just, a leader in natural healing, believed that many illnesses come from being out of touch with nature. He suggested using natural things like earth, water, and sunlight to stay healthy and recover from illness. These ideas are still used today in modern naturopathic mud therapy for keeping people well and treating different health issues [6].

Types of Products Used in Balneotherapy

Balneotherapy uses natural materials like clay, mud, and peat, which hold heat very well. These can be warmed up and put on the body to help relax muscles, ease stiffness, and take away tension [7]. Even though they're often grouped together, each one has its own unique makeup and effects. Clay is mostly made up of minerals from broken-down rocks. Because it absorbs things well, it's one of the most effective materials for detoxifying and giving a boost during balneotherapy. It helps pull out impurities from the skin and gets blood moving better in the area.[8]

Mud is mostly made up of minerals, but it also has small amounts of organic stuff and trace elements. These organic parts help reduce inflammation and ease pain, which makes mud useful for dealing with muscle and joint problems like arthritis. Peat, on the other hand, has a lot more organic material. It forms slowly over thousands of years from decomposed plants. Because it's so rich in organic content, peat is considered the most effective of the three. Some studies from Europe have found that peat can reduce inflammation, relieve pain, improve blood flow, fight viruses, boost the immune system, and help balance hormones. All these qualities make it helpful in spa treatments and rehabilitation programs [9].



figure 1. Types of products used in Balenotherapy

2. Thermal Mud and Hot Spring Therapy

Thermal mud therapy, also called pelotherapy, uses natural mud or clay that has been sitting in mineral-rich hot water. The mud is usually warmed up and then put on sore joints (arthralgia) or used in mud baths. Hot spring therapy means soaking in naturally warm water that has minerals like sulfur, calcium, magnesium, sodium, and bicarbonates in it.[10]

Therapeutic mud, also known as peloid, usually has three main parts: solid material, liquid, and living organisms. The solid part is mostly made up of clay minerals like kaolinite or bentonite. The liquid part comes from mineral water, and the living part can include bacteria and organic stuff that form as the mud ages. These treatments are commonly used in spas and rehab centers worldwide to help with muscle and joint problems, sports injuries, and long-term rheumatic conditions.[11]

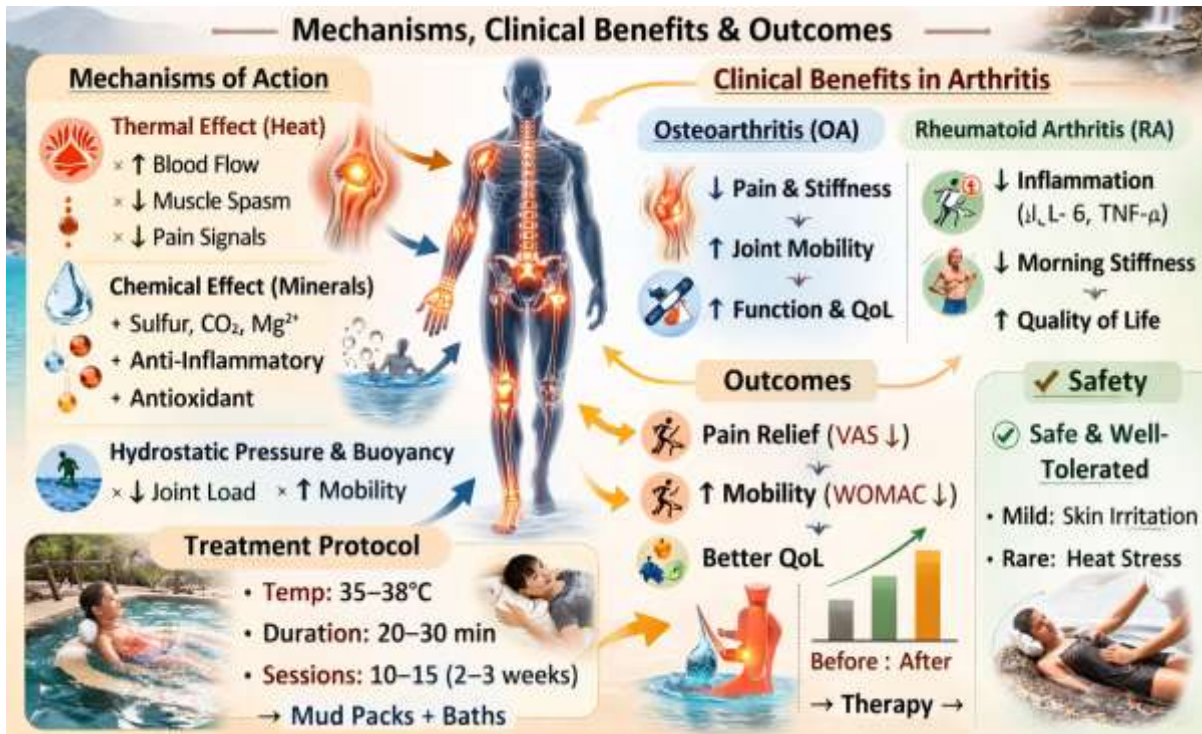


Figure 2. Therapeutic effects of thermal mud and hot spring therapy in arthritic patients – mechanism, clinical Benefits and outcomes

3. Composition of Therapeutic Mud

The healing power of mud used in spa treatments mostly comes from what it's made of. Therapeutic mud usually has clay minerals like kaolinite and bentonite, plus silica and aluminum silicates. It also has small amounts of elements such as sulfur, magnesium, calcium, iron, potassium, and sodium [12].

As the mud ages, it mixes with hot mineral water and starts to develop living things like tiny algae and bacteria. These might help explain why mud therapy can reduce inflammation and fight damage caused by free radicals. The mix of ingredients in therapeutic mud changes depending on where it's from, the type of soil, and the minerals in the water used during its development.[13]

The healing power of the mud used in spa treatments mostly comes from what's in it—like minerals and organic stuff. The mud usually has clay minerals such as kaolinite, bentonite, silica, and aluminum silicates, plus small amounts of sulfur, magnesium, calcium, iron, potassium, and sodium. As the mud ages, it mixes with hot mineral water and starts to develop living things like algae and tiny organisms. These might help explain why mud therapy can reduce inflammation and fight damage from free radicals [14]. The exact composition of therapeutic mud varies depending on geographical origin, soil composition, and mineral content of the thermal water used in the maturation process.

Table 1. Composition of Balenotherapy

Composition	Categories	Main types	Commercially name	Properties	Uses
Mainly mineral	clay	kaolinite	Kaoline, china white	Thermal, relaxing, circulatory, stimulant, excess oil and draw out impurities	As a thermal agent to warm and relax the body, as a base for treatment

		Illite	French green	Suspends to form an emulsion to hold cosmetic substance	Products for esthetics
		semecitite	Bentonite fullers earth MAS	Together, acts as a carrier for other therapeutic products	Products for esthetics
	Mud	Sulfur containing and “matured”	Dead sea euganaean piestany many other	Anti-inflammatory, circulatory stimulant, immune boosting, thermal detoxifying, relaxing, others	Arthritis, muscle pain or soreness, inflammation, joint pain, revitalization, esthetics, others
Mainly organic	Low moor peat	Mosses and other plants	Moor mud many others	Anti-inflammatory, circulatory stimulant, antiviral, antiseptic	Arthritis, muscle pain or soreness, joint pain, inflammation
	High moor peat	Mainly mosses	Many European types	Immune boosting, endocrine balancing, thermal, relaxing, others	Relaxation, revitalisation, esthetics, others

4. How It Works

4.1 Heat Effects:

The heat from the mud and hot spring water boosts blood flow around the affected joints. Better blood flow helps deliver more oxygen and nutrients to the tissues and removes waste products more efficiently. The heat also helps relax muscles and ease joint stiffness, making it easier to move and be more flexible [15].



4.2 Physical Effects: Soaking in mineral water creates pressure and buoyancy. These forces take some of the weight off the joints, making it easier to move. Less stress on the joints means patients can move with less pain and better ability to function [15].

Figure 3. Therapeutic effects of thermal mud and hot spring therapy in arthritic patients – Mechanism of action

4.3 Chemical Effects:

Some minerals in healing mud and hot water can get into the skin a little and affect how the body works. Research suggests that spa treatments might lower certain substances linked to inflammation, like TNF- α , prostaglandins, and interleukins, which are involved in arthritis [16].

4.4 Neuroendocrine and Immunological Effects:

Being in hot water can cause the body to release hormones like cortisol, endorphins, and ACTH. These help reduce pain and fight inflammation. Mud therapy might also affect the immune system and help manage inflammation in conditions like arthritis [16].

5. Clinical Evidence of Mud Therapy in Arthritis

Several studies have looked at how mud therapy and spa treatments help with arthritis. One review found that spa therapy greatly reduces pain and helps with stiff joints and daily activities in people with osteoarthritis. Research shows that putting mud packs on the knee can ease pain and make it easier to walk for those with knee osteoarthritis. Older people with osteoarthritis who had regular mud baths saw better movement in their joints and lower levels of inflammation. These results suggest that mud therapy might help them move better and feel healthier overall.[17]

6. Therapeutic Benefits

Thermal mud and hot spring therapy can help people with arthritis in many ways. They can ease joint pain and relax tight muscles. They also make it easier to move joints and improve flexibility. These treatments may reduce swelling and boost blood flow to the affected areas. They can also help with daily activities and make it easier to

move around. Plus, they can help you feel more relaxed and better mentally. Some people may even need less pain medicine.[17]

7. Benefits of Thermal Mud and Hot Spring Therapy:

Pain Relief:

The heat from the mud and hot spring water helps relax muscles and boost blood flow, which can ease joint pain for people with arthritis.

Reducing Joint Stiffness:

The warmth from the therapy makes tissues more flexible and eases stiffness in the joints, making it easier for patients to do everyday tasks [18].

Anti-Inflammatory Effects:

Minerals like sulfur, magnesium, and calcium found in the mud may help reduce inflammation by affecting the body's natural responses.

Improved Joint Mobility

Repeated mud therapy sessions might help improve joint flexibility and make it easier to move, especially for people with knee osteoarthritis.

Better Quality of Life

Spa therapy can help people feel more relaxed and less stressed, which can boost their overall sense of well-being if they have long-term musculoskeletal issues.

Less Need for Medicine

Some studies show that people who get spa therapy may need smaller amounts of painkillers or anti-inflammatory medicines after their treatments.

A Safe and Natural Option

Thermal mud therapy is a natural way to treat health issues without surgery or other invasive methods, making it a good option to use along with other treatments for chronic conditions.

8. Disadvantages of Thermal Mud and Hot Spring Therapy:

Not Enough Proof:

Some studies show good results, but many have small numbers of people or other problems with how they're done. This makes it hard to be sure about the benefits [20].

Short-Term Relief:

The help from spa treatments might not last long. You may need to keep getting treatment to stay feeling better.

Not Right for Everyone:

People with serious heart issues, high blood pressure that's not under control, infections, or open sores shouldn't use thermal therapy [21].

Hard to Get and Expensive:

Not all areas have thermal spas or natural hot springs. Also, the cost of traveling or paying for treatment can be a problem. Possible Health Risks Staying in hot mud or water too long can make you dehydrated or feel dizzy, especially for older people.

Possible Skin Reactions:

Sometimes, minerals or tiny organisms in natural mud can cause slight skin irritation or an allergic reaction.

9. Safety and Limitations:

Thermal mud and hot spring treatments are usually safe, but you should still take care. People with serious heart problems, high blood pressure that isn't under control, infections, or open sores should stay away from spa

treatments. Also, most studies on these treatments have looked at only a small number of people, so more big studies are needed to see if they work well over time.

10. Conclusion:

Thermal mud therapy and hot spring therapy offer good options for helping manage arthritis. The treatment works by using warm, mineral-rich mud and water, which can help reduce pain, improve movement in the joints, and make daily life easier for people with osteoarthritis and other similar conditions. More research is needed, but these treatments could be useful additions to standard care for arthritis.

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