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Leech Therapy

Leech therapy is one of the oldest medical procedures and is now primarily studied in the context of **orthopaedic conditions**. The clinical evidence in humans includes a substantial body of work, among which are a number of controlled studies. The most notable finding: The majority of controlled studies focus on the **musculoskeletal system**, whilst other areas of application have scarcely been rigorously investigated.

503

STUDIES IN
TOTAL

231

IN HUMANS

23

OF WHICH
CONTROLLED

20

IN ANIMALS

8

IN THE LAB

Figures from the IHR study database · Last updated 2026-10-15

How to Read This Dossier

ESTABLISHED

measured in humans, with a comparison group

PLAUSIBLE

supported by mechanism, animal studies or observation

HYPOTHESIS

a likely connection that still needs to be tested

Leech therapy at a glance

ORIGIN:

Leech therapy is a biological procedure from traditional medicine in which medicinal leeches (e.g., *Hirudo medicinalis*) are applied locally to the skin. They withdraw blood and tissue fluid while releasing salivary secretions containing anticoagulant, inflammation-modulating, and vasodilatory substances. Today, it is primarily used in naturopathy and complementary orthopaedics.

EVIDENCE BASE:

503 evaluated studies · 23 controlled human trials · 208 observational studies · 47 review articles · 20 animal studies · 5 cell culture studies

STRONGEST EVIDENCE:

- **Orthopaedics – Osteoarthritis** (knee, thumb saddle joint, epicondylitis) Several randomised controlled trials (RCTs) showed significant pain reduction and functional improvement in knee and thumb saddle joint osteoarthritis, as well as epicondylitis, following a single leech therapy session. Effects lasted up to 91 days and were stronger in the short term than topical NSAIDs, though studies were not blinded.
- **Soft tissue reconstruction – Flap surgeries and replantations** Observational studies and reviews document success rates of 65–85% in cases of venous outflow obstruction in flap surgeries. The therapy is considered an effective salvage option but requires close monitoring due to risks such as transfusion requirements and infections.
- **Safety and tolerability:** Systematic reviews report primarily local adverse effects, including itching, post-treatment bleeding, infections (e.g., *Aeromonas hydrophila*), and allergic reactions. Severe systemic effects are scarcely investigated, and the quality of evidence is rated as moderate.
- **Inflammatory processes:** – Knee osteoarthritis An unblinded RCT using liposomal leech saliva extract showed pain reduction and functional improvement after 30 days. Preclinical models suggest potential anti-inflammatory effects in animals and cells, but these mechanisms remain to be confirmed in humans.

LIMITATIONS:

- **Applications outside the musculoskeletal system** Cardiovascular diseases, dermatological conditions, or metabolic disorders are supported only by a few observational studies or case reports. Causal conclusions cannot be drawn.
- **Long-term data and standardisation** Studies on effects beyond six months are lacking. The therapy is difficult to standardise due to variations in saliva composition and leech origin.
- **Blinding and placebo control** Most RCTs are not blinded and do not compare against placebo or established therapies (e.g., physiotherapy, injections).

CLASSIFICATION:

Leech therapy is a traditional biological procedure with the strongest evidence for short-term pain reduction and functional improvement in orthopaedic musculoskeletal conditions, while other applications and long-term effects remain insufficiently investigated.

1. What Leech Therapy Is and How It Is Performed

Leech therapy is a **biological procedure** in which medicinal leeches (*Hirudo medicinalis* or related species) are applied to the skin to locally withdraw blood and tissue fluid. The leeches attach themselves and release **salivary secretions** containing anticoagulant, inflammation-modulating, and vasodilatory substances. Originating from traditional medicine, the therapy is now primarily used in **naturopathy** and **complementary orthopaedics**. It is typically performed on an outpatient basis, with leeches detaching on their own or being removed after feeding. The treatment usually lasts 30 to 90 minutes and may be accompanied by local reactions such as itching, redness, or post-treatment bleeding.

For understanding the evidence base, it is crucial to recognise that the **composition of leech saliva** is complex and variable. It contains over 100 bioactive substances, including **hirudin** (a thrombin inhibitor), **hyaluronidases**, **apyrases**, and **bdellins**, whose concentrations vary depending on the species, husbandry, and individual physiology of the leeches. Furthermore, the **therapeutic effect** cannot be attributed to individual molecules but rather to the interplay of multiple factors: mechanical relief through blood withdrawal, local enhancement of blood flow, and immunomodulatory effects of the salivary components. Studies therefore often measure **clinical parameters** such as pain reduction or joint function rather than the concentration of individual active substances.

2. What the Studies Show in Detail

The key human studies and major reviews—organised by application, including population, duration, preparation, outcome measures, and results as reported in the original publications. Numbers are included only where provided in the studies.

Distribution of controlled human trials by application—the numbers are not additive, as a single study may be assigned to multiple categories:

APPLICATION	CONTROLLED STUDIES
Musculoskeletal system	13
Safety and tolerability	12
Bones and joints	11
Inflammatory processes	3

APPLICATION	CONTROLLED STUDIES
Cardiovascular system	3
Metabolism	2
Dermatology	2
Cognition and mental health	1

Bones and Joints – Osteoarthritis (Knee, Thumb Saddle Joint, Epicondylitis)

In a randomised controlled trial involving 51 patients (mean age 62.5 ± 10.2 years in the leech therapy group, 65.5 ± 6.7 years in the control group), a single application of 4–6 locally applied leeches was compared with 28 days of topical diclofenac therapy. The primary endpoint was the pain score (Western Ontario and McMaster Universities Osteoarthritis Index, WOMAC) on day 7. Leech therapy reduced the pain score from 53.5 ± 13.7 to 19.3 ± 12.2 , while the diclofenac group showed a reduction from 51.5 ± 16.8 to 42.4 ± 19.7 (group difference: -23.9 [95% CI: -32.8 to -15.1]; $p < 0.001$). Secondary endpoints, such as function and stiffness, also favoured leech therapy, with effects lasting until day 91. A limitation was the lack of blinding, and the control group did not receive a placebo intervention ¹.

The primary endpoint—the change in the overall pain score (mean of VAS for resting pain, movement pain, and grip pain) on day 7—showed a reduction from 59.6 ± 13.8 to 27.1 ± 20.6 in the leech therapy group, while the diclofenac group changed from 50.6 ± 13.3 to 46.9 ± 18.5 (group difference: -26.5 [95% CI: -40.3 to -12.7]; $p = 0.0003$). Secondary endpoints, such as functional disability (DASH questionnaire), quality of life (SF-36), and grip strength, also improved significantly in favour of leech therapy, with sustained effects until day 60. The study was not blinded, and patient expectations or analgesic use did not influence the results ².

A randomised controlled trial involving 113 patients with advanced knee osteoarthritis compared a single leech therapy session ($n = 38$), a double application spaced four weeks apart ($n = 35$), and a sham treatment using an 'artificial leech' ($n = 40$). Outcomes were documented using KOOS and WOMAC scores, as well as a visual analogue scale (VAS) for pain. All three groups showed improvements in scores, with effects in the leech therapy groups (single and double applications) remaining statistically significant throughout the 26-week follow-up period. The reduction in analgesic requirements was also significant. The study was not blinded, and the control group did not receive an active comparator therapy, which limits the interpretation of the results ³.

A systematic review and meta-analysis of three randomised controlled trials (RCTs) and one non-randomised controlled study involving a total of 237 patients with knee osteoarthritis demonstrated strong evidence for immediate (SMD = -1.05 ; $p < 0.01$) and short-term pain reduction (SMD = -1.00 ; $p < 0.01$), as well as immediate improvement in physical function (SMD = -0.72 ; $p < 0.01$) and joint stiffness (SMD = -0.88 ; $p = 0.04$). Long-term effects on joint stiffness (SMD = -0.62 ; $p < 0.01$) and physical function (SMD = -0.46 ; $p < 0.01$) were moderate. The studies exhibited a low risk of bias; however, long-term data beyond six months were lacking ⁵.

A randomised study involving 40 patients with chronic epicondylitis compared a single application of 2–4 leeches with a 30-day topical diclofenac therapy. The primary endpoint—the change in the pain sum score (mean of VAS for movement pain, grip pain, and resting pain) on day 7—showed a reduction from 143.7 ± 36.9 to 95.3 ± 45.1 in the leech therapy group, whereas the diclofenac group exhibited a change from 131.6 ± 29.6 to 134.7 ± 70.7 (group difference: -49.0 [95% CI: -82.9 to -15.1]; $p = 0.0075$). Secondary endpoints, such as functional disability (DASH questionnaire) and grip strength, also improved in favour of leech therapy, with sustained effects up to day 45. The study was not blinded, and the control group did not receive a placebo intervention ⁶.

HYPOTHESIS The consistent results from multiple RCTs suggest that leech therapy may show promise for pain reduction and functional improvement in various forms of osteoarthritis (knee, thumb saddle joint, epicondylitis). The effects appear more pronounced in the short term compared to topical NSAIDs, although the lack of blinding in most studies limits the strength of these findings. The mechanisms—whether through local anticoagulation, anti-inflammatory, or analgesic effects of salivary components—remain unclear.

Long-term studies (> 6 months) are still pending, as are direct comparisons with other established therapies (e.g., intra-articular injections, physiotherapy) or placebo-controlled studies with a blinded design.

Soft Tissue Reconstruction – Flap Surgeries and Replantations

An observational study involving 8 patients (1.8% of 450 free flap surgeries in the head and neck region) examined the efficacy of a standardised protocol using leech therapy for venous outflow obstruction that could not be surgically corrected. All 8 flaps survived, with an average of 215 leeches applied per patient over 6.6 days. The study indicates that leech therapy can serve as an effective salvage option for venous congestion, though it is associated with relevant risks such as transfusion requirements and infections ¹².

A systematic review including 41 studies and an additional case series of 43 patients analysed the success rates of leech therapy for venous insufficiency in flap surgeries. Success rates ranged between 65% and 85% (83.7% in the case series). The optimal application frequency was 2–8 hours, and the average therapy duration was 4–10 days. Transfusions were required in 50% of cases. Antibiotic prophylaxis against *Aeromonas hydrophila* was recommended, and local complications such as infections or prolonged bleeding occurred. The review indicates the benefit of leech therapy as an adjunctive measure but emphasises the need for close monitoring and supportive care ¹³.

HYPOTHESIS Leech therapy appears to be an effective salvage option for venous congestion in flap surgeries or replantations, particularly when surgical revisions are not possible or have failed. However, the therapy is associated with significant risks, including anaemia, infections, and transfusion requirements, necessitating careful patient selection and monitoring. The mechanisms—local anticoagulation and improved venous outflow—are plausible, though standardised protocols for application frequency, duration, and supportive measures are lacking.

Controlled human trials on leech therapy specifically in soft tissue reconstruction are limited, as are standardised protocols for application, antibiotic prophylaxis, and transfusion strategies.

Inflammatory Processes

A randomised controlled study involving 30 patients with knee osteoarthritis investigated the efficacy of a liposomal gel containing leech saliva extract (LSE) compared to no additional therapy. Patients applied the gel for 30 days, and efficacy was evaluated using Lequesne and VAS questionnaires. Questionnaire scores for pain decreased by approximately 50%, and scores for joint stiffness and mobility improved significantly ($p < 0.001$). Questionnaire scores for patients' quality of life also increased. The study was not blinded, lacked an active control group, and did not isolate the effect of the liposomal formulation from LSE. Additionally, details on the exact composition of the extract and the dosage of active ingredients were lacking ⁷.

A review on *Hirudo medicinalis* (Shuizhi) summarises the phytochemical and pharmacological properties of leech saliva, covering over 51 compounds, including pteridines, phosphatidylcholines, and bioactive peptides. While the review highlights potential effects of these substances—such as anticoagulation, antithrombotic, anti-atherosclerotic, and anti-inflammatory actions, as well as improvements in haemorheology—it encompasses multiple agents and is not specific to leech therapy. It notes that the anti-inflammatory effects of these compounds may stem from the inhibition of inflammatory mediators like prostaglandins or cytokines, but lacks concrete clinical studies on leech therapy's efficacy in inflammatory conditions outside osteoarthritis.

HYPOTHESIS The anti-inflammatory properties of leech saliva may be explained by the inhibition of inflammatory mediators or improvements in microcirculation. The available data suggest potential for local inflammatory processes, though clinical studies on systemic or chronic inflammatory diseases are lacking.

Randomised controlled studies on the efficacy of leech therapy or its extracts in inflammatory diseases outside osteoarthritis remain to be conducted, and mechanistic studies to elucidate the anti-inflammatory effects are still an open question.

Chronic Pain Syndromes (e.g., Chronic Low Back Pain)

Secondary endpoints, such as functional impairment measured by the Roland-Morris Disability Questionnaire and quality of life assessed via the SF-36, also showed significant improvements in favour of leech therapy in the studied cohort. These surrogate outcomes persisted until day 56, but their clinical relevance remains to be confirmed.

HYPOTHESIS Leech therapy may represent an effective option for chronic low back pain, potentially through local analgesic or anti-inflammatory effects of salivary components. However, the lack of blinding and the absence of a placebo control limit the strength of these findings. It also remains unclear whether the effects are attributable to specific active substances or non-specific mechanisms (e.g., counter-irritation).

Blinded, placebo-controlled studies on leech therapy for chronic pain syndromes remain to be conducted, as do direct comparisons with other established therapies (e.g., acupuncture, manual therapy).

Safety and Tolerability

A randomised controlled study involving 50 men with idiopathic infertility examined the efficacy and safety of weekly leech therapy over three months. The leech therapy group ($n = 25$) showed improvements in sperm concentration (from 57.7 ± 17.1 to 63.4 ± 13.1 million/mL; $p = 0.006$), progressive motility, and normal morphology compared to the control group ($n = 25$). DNA fragmentation decreased, and no severe adverse events occurred. Local reactions such as itching or mild bleeding were reported but not quantified. These findings suggest a potential effect but require confirmation in larger studies.

A systematic review and meta-analysis on leech therapy for knee osteoarthritis (4 RCTs with 264 patients) reported a significantly higher rate of adverse events in the leech therapy group compared to control groups. The most common side effects were local reactions such as itching, bleeding, infections (e.g., due to *Aeromonas hydrophila*), and allergic reactions. The quality of evidence was rated as moderate, indicating that further research may alter estimates of effects and side effects ⁹.

HYPOTHESIS Leech therapy is associated with local side effects such as itching, bleeding, and infections, which are related to the application and salivary components. Systemic effects such as anaemia or allergic reactions are rare but relevant. The safety of the therapy depends heavily on the indication, duration of application, and accompanying prophylaxis (e.g., antibiotics).

Systematic assessments of the frequency and severity of adverse events in relation to the indication, duration of application, and accompanying measures (e.g., antibiotic prophylaxis) are still pending. Additionally, long-term safety data on leech therapy are not yet available.

Overall Picture

Leech therapy showed effects in several randomised controlled trials for the treatment of pain and functional limitations associated with osteoarthritis (knee, thumb saddle joint, epicondylitis) as well as chronic low back pain. The effects were more pronounced in the short term (up to 3 months) compared to topical NSAIDs or physiotherapy, though the mechanisms—whether through local anticoagulation, anti-inflammatory, or analgesic effects of salivary components—remain unclear. In soft tissue reconstruction (flap surgeries, replantations), leech therapy is employed as a salvage option for venous congestion, with success rates of 65–85%, albeit with relevant risks such as anaemia, infections, and transfusion requirements.

Evidence for leech therapy in other areas (e.g., systemic inflammatory processes, cognitive or metabolic disorders) is still pending. Furthermore, most studies lack blinded designs, placebo controls, and direct comparisons with established therapies. The safety of the therapy depends on the indication and duration of application, with local side effects such as itching, bleeding, and infections being common.

Methodology of the evidence base

The existing studies on leech therapy include randomised controlled trials (RCTs), systematic reviews, meta-analyses, and a larger number of observational studies. Typical study designs for osteoarthritis in controlled trials compare single or multiple leech applications with topical NSAIDs, physiotherapy, or placebo-like controls (e.g., simulated treatment). Follow-up periods generally range from 4 weeks to 6 months, though long-term data (> 6 months) are lacking. Primary endpoints often include pain scores (VAS, WOMAC) or functional scores (KOOS, DASH), while secondary endpoints encompass quality of life, analgesic consumption, or laboratory inflammatory parameters. In soft tissue reconstruction, observational studies with small sample sizes ($n = 8$ –43)

evaluate success rates (flap survival), transfusion requirements, and complications (infections, anaemia). Systematic weaknesses include the absence of blinded designs, placebo controls, and standardised protocols for application frequency, duration, and supportive measures (e.g., antibiotic prophylaxis). Additionally, mechanistic studies to elucidate the modes of action are lacking.

Leech therapy: efficacy or placebo effect?

Most controlled studies on leech therapy investigate

PAIN REDUCTION IN OSTEOARTHRITIS

, a subjective measure susceptible to **placebo effects**. While some studies demonstrate **significant differences** compared to control groups, **blinding** is often incomplete: patients and therapists are usually aware of whether leech therapy is being administered. Moreover, many studies lack **active comparator groups** (e.g., with established pain therapies), leaving it unclear whether the observed effects are specifically attributable to leeches or to non-specific factors such as **attention or expectation bias**.

A further issue is the

HETEROGENEITY OF STUDY PROTOCOLS

. The number of leeches used, duration of application, and follow-up periods vary widely. Some studies employ **topical gels derived from leech saliva**, while others use live leeches—direct comparability is thus not feasible. Additionally, **dose-response studies** are lacking, which could clarify whether more leeches or more frequent applications yield better outcomes in the investigated areas. While **meta-analyses** of leech therapy for knee osteoarthritis reach positive conclusions, they highlight these **methodological limitations**.

3. How Robust Is the Research?

Research on leech therapy encompasses a range of human studies, including several controlled trials. Controlled studies focus on **musculoskeletal disorders**, particularly **osteoarthritis of the knee** and **thumb saddle joint**. Further areas of interest include **safety aspects** and **bone diseases**. Other applications, such as **inflammation**, **cardiovascular diseases**, or **skin conditions**, are represented by only a few controlled studies each. Observational studies predominate, while basic research primarily analyses the **molecular mechanisms** of leech saliva.

The robustness of the data varies by application. Controlled studies on musculoskeletal conditions exhibit **methodological strengths**: they are randomised and use standardised **pain and functional scales**. However, **sample sizes are often small**, and long-term data are lacking. **Safety studies** primarily document local reactions such as post-treatment bleeding or infections, with systemic effects scarcely investigated. For other applications (e.g., cardiovascular diseases), data rely almost exclusively on **observational studies or case reports**, which do not permit causal inferences. Reviews further emphasise that **standardisation of therapy** is challenging, as leeches from different sources vary in salivary composition.

4. Common Claims—and What the Data Support

CLAIM	EVIDENCE BASE
Leech therapy for cardiovascular diseases	Only a few controlled studies exist, including one with Hirulog (a synthetic thrombin inhibitor). The current data do not allow any conclusions to be drawn regarding
Leech therapy for chronic inflammation	Several controlled studies exist, but none address systemic inflammatory diseases such as rheumatoid arthritis. The evidence is limited to local inflammatory
Leech therapy for wound healing or in plastic surgery	No controlled studies. The data originate from observational studies and case series , which do not permit causal conclusions.
Leech therapy for fatigue or cognitive disorders	['Only a handful of controlled studies with limited evidential value . No robust data available.']

5. The Most Robust Studies

Ranked by evidential strength, not by prominence. The full evaluation includes significantly more studies; only the most reliable are listed here.

Controlled Human Studies

- ¹ Effectiveness of leech therapy in osteoarthritis of the knee: a randomised, controlled trial (2003)
- Hirulog in the treatment of unstable angina. Results of the Thrombin Inhibition in Myocardial Ischemia (TIMI) 7 trial (1995)
- ² Effectiveness of leech therapy in women with symptomatic arthrosis of the first carpometacarpal joint: a randomised controlled trial (2008)
- Complementary or alternative therapies for osteoarthritis (2006)
- ³ Assessment of leech therapy for knee osteoarthritis: a randomised study (2008)
- ⁴ Randomised controlled trial with medical leeches for osteoarthritis of the knee (2012)
- ⁵ A systematic review and meta-analysis of medical leech therapy for osteoarthritis of the knee (2014)
- ⁶ Effectiveness of leech therapy in chronic lateral epicondylitis: a randomised controlled trial (2011)
- ⁷ Effectiveness of topical gel derived from medical leech (*Hirudo medicinalis*) saliva extract in patients with knee osteoarthritis: A randomised clinical trial (2018)
- ⁸ The effectiveness of leech therapy in chronic low back pain (2018)
- ⁹ The efficacy and safety of medical leech therapy for osteoarthritis of the knee: A meta-analysis of randomised controlled trials (2018)
- ¹⁰ Comparison of the effectiveness of medicinal leech therapy and TENS in the treatment of primary osteoarthritis of the knee: A randomised controlled trial (2017)
- *Hirudo* (leech) for proliferative vitreoretinopathy: A protocol for systematic review and meta-analysis (2021)
- Efficacy and safety of hirudotherapy for improving sperm quality parameters in male infertility: A randomised controlled trial (2026)
- Sennosides vs magnesium hydroxide vs polyethylene glycol for the treatment of constipation in anorectal malformation: A randomised crossover trial (2025)
- ¹¹ The clinical efficacy of herbal medicines containing leeches in the treatment of coronary heart disease: A systematic review and meta-analysis (2025)

Observational Studies in Humans

- *Hirudo medicinalis* and the plastic surgeon (2004)
- Standardised protocol for artery-only fingertip replantation (2010)
- ¹² Leech therapy for patients with surgically unsalvageable venous obstruction following revascularised free tissue transfer (2002)
- ¹³ Leech therapy in flap salvage: Systematic review and practical recommendations (2017)
- ¹⁴ Medicinal leech therapy (hirudotherapy): A brief overview (2010)
- ¹⁵ The use of medicinal leeches in the salvage of flaps with venous congestion (1992)
- ¹⁶ The role of the leech in medical therapeutics (1996)
- ¹⁷ Recommendations for the use of leeches in reconstructive plastic surgery (2014)

6. Summary

1) **What is supported by evidence:** Leech therapy shows efficacy in controlled studies for orthopaedic conditions of the musculoskeletal system, particularly in osteoarthritis of the knee and thumb saddle joint, as well as epicondylitis. Pain reduction and functional improvement are more pronounced in the short term (up to 3 months) compared to topical NSAIDs. In soft tissue reconstruction, it is considered an effective salvage option for venous outflow obstruction, albeit with relevant risks such as infections or the need for transfusion. Safety data primarily document local adverse effects, while systemic effects remain scarcely investigated. Evidence for other applications (e.g., cardiovascular diseases) is limited to observational studies or case reports.

2) **What is plausible and its potential implications:** **Hypothesis:** The therapeutic effects of leech therapy may arise from the interplay of mechanical (bloodletting), immunomodulatory (salivary components), and circulation-enhancing mechanisms. The anti-inflammatory properties of the saliva (e.g., inhibition of prostaglandins or cytokines) suggest potential for local inflammatory processes, though this has not been systematically investigated beyond osteoarthritis. **Hypothesis:** Similar mechanisms might apply to chronic pain syndromes (e.g., back pain), but blinded studies are lacking. The absence of standardisation in saliva composition and application protocols complicates the comparability of results and may lead to inconsistent effects. **Hypothesis:** In the long term, the therapy could be established as a complementary option in orthopaedics, provided that placebo-controlled studies with blinded designs confirm the short-term effects.

3) **What a study would need to clarify:** Blinded, placebo-controlled randomised controlled trials (RCTs) with adequate sample sizes are required to directly compare leech therapy with established treatments (e.g., intra-articular injections, physiotherapy) and collect long-term data (> 6 months). Mechanistic studies should elucidate the role of individual salivary components (e.g., hirudin, hyaluronidases) in pain reduction and anti-inflammatory effects. For soft tissue reconstruction, standardised protocols for application frequency, antibiotic prophylaxis, and transfusion strategies are necessary. Furthermore, systemic effects (e.g., on immunomodulation or haemodynamics) must be investigated to comprehensively assess the safety profile. Finally, studies on applications outside the musculoskeletal system, beyond case reports, are still pending.

7. Unresolved Questions

- **Long-term effects:** It remains unclear whether the observed effects in osteoarthritis persist over months or years. Long-term studies are lacking.

- **Mechanisms:** Which components of saliva are responsible for the clinical effects has not been conclusively determined. Most studies measure **clinical parameters** but not molecular markers.
- **Standardisation:** How the leeches' husbandry, their origin, or individual differences affect therapy has scarcely been investigated.

Frequently Asked Questions

Can leech therapy be used for rheumatoid arthritis?

The clinical evidence is **still developing and inconsistent**. There are no controlled studies on rheumatoid arthritis. Some observational studies report **pain relief**, but these findings are not robust. Theoretically, the therapy might influence **local inflammatory processes**, though systemic effects are unlikely. Given the **immune modulation** involved in rheumatoid arthritis, caution is advised, as the therapy could **promote infections**.

What is the risk of infection with leech therapy?

Local infections are the **most common complication**, particularly due to the bacterium *Aeromonas hydrophila*, which resides in the leech's gut. Most infections are **mild to moderate** and respond to antibiotics. Severe systemic infections are **rare** but documented. **Safety studies** indicate that the risk can be reduced through **sterile leech handling** and **prophylactic antibiotic administration**. Nevertheless, a **residual risk** remains, which must be weighed against the potential benefits.

Can leech therapy be combined with other treatments?

There are **no controlled studies** on combining leech therapy with other treatments. In theory, leech therapy could be combined with **physical therapies** (e.g., physiotherapy) or **analgesics**, though interactions have not been studied. Caution is advised with **anticoagulants**, as leech therapy increases **bleeding tendency**. Combining it with **immunosuppressive therapies** could further elevate the risk of infection.

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International Health Research

Research, put in context. Every statement leads to the original paper; the decision in the individual case rests with the treating professional.
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