TR-12 Hands-on traditions: bonesetters, massage, cupping, moxibustion, manipulation, hydrotherapy, and what the trials say

HEALING after the FALL, research library, TR-12

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1. Findings

1.1 One body of practice, held by many hands

The hand, warm fat or oil, a cloth, a cup, a fire and a bucket of water are the only medical means present on every rung of the ladder this book describes. Every inhabited continent has produced people who heal with them: the Yoruba *onísègùn* and bonesetters of south-western Nigeria, the family bonesetters of northern Ghana and Ashanti, the bonesetters of India, some of whom carry the surname *Pahelwan*, the gifted bonesetters of Cork and Carlow, the *hueseros* and *sobadores* of highland Guatemala, the *manghihilot* of the Philippines, the Māori *tohunga* and *rongoā* healers who practise *mirimiri* and *romiromi*, the masseurs of Wat Pho, the cuppers of China and the Islamic world, the moxa practitioners of East Asia, the water doctors of Gräfenberg and Wörishofen, and the two late American traditions that grew out of the English bonesetters, osteopathy and chiropractic.

This report treats them as one body of practice because they share three things. They work through touch and pressure, so they share the same harms (a broken bone forced, a blood vessel torn, skin burned or cut, a cord bound too tight). They share a social position, cheap, near and trusted, which is why patients choose them first. And they share an evidence problem: a hand cannot be given as a placebo, practitioners rarely keep records, and the only numbers often come from hospitals that see the failures.

Each section below gives the tradition's own account first, then the record, then what modern science infers. Acupuncture, acupressure and the moxibustion protocol are in TR-03 and are not repeated here. Unani massage (*dalk*), the bath and fomentation are in TR-04, and *hijama* is in TR-13. Fracture and dislocation reduction is in WO-05 and WO-06. The library has no NU-08, CH-05 or NU-04 file as of this writing, so the cold and hot water material that the brief assigned to NU-08 is given here in brief and cross-referenced to HY-11 (heat illness) and IN-02 (fever) instead.

1.2 Bonesetters

On their own terms. Bonesetting is almost everywhere a family craft, a gift or a calling, rarely a trade learned from strangers. In the Upper East and Northern regions of Ghana, Yempabe and colleagues interviewed 28 male bonesetters aged 19 to 75: 87.5% had learned in the family, 10.7% by apprenticeship and 3.6% by divine calling (Yempabe 2020). They diagnose by palpation, reduce by hand, massage, sometimes apply hot water, and dress the limb with a "black medicine" of leaves, bark and roots mixed in shea butter. They splint with bamboo or woven mat and review the limb every three days. Their rule for healing time is one month in the young, two in middle age and three in the old. Four of the 28 used what the authors call the chicken test, in which a chicken's wing or leg is broken alongside

the patient's treatment and the patient may walk when the chicken walks. Five used incantations, because the power to heal is understood to come from ancestors and gods. The incantations are not given in the paper and should not be sought. Among the Ashanti, Edusei and colleagues found that more than 60% of bonesetters attributed their power to God, and their patients chose them for trust, cost and fear of amputation (Edusei 2015). In Ilorin, Nigeria, 52.3% of 400 residents had used a bonesetter, and their reasons were the attitude of hospital staff (77.5%), hospital delays (71%), cost (63.8%) and fear of amputation (54.3%) (Aderibigbe 2013). The Yoruba method and triage rule from Omololu 2008 are summarised in WO-05 section 1.10 and not repeated.

In Ireland, the folklorist Kingston recorded two bonesetters in 2013: Victor Lane of Newmarket, County Cork, and Dan O'Neill of Myshall, County Carlow (Kingston 2013). For both, the ability is "the gift". In the Lane family it passes down the generations, through the female line as well as the male, and family tradition says it came from a priest in penal times. Lane nonetheless trained for eight years, with an hour of anatomy each night. O'Neill began at 30 with what he called a pure gift, and he held that the gift passes only when its bearer dies. Payment was whatever the patient could afford. In the Welsh and English line, Evan Thomas of Anglesey sent his sons to medical school, and his grandson Hugh Owen Thomas, of the Thomas splint, consulted the London bonesetter Richard Hutton (Kingston 2013).

In highland Guatemala, Hinojosa worked in 2000 with Kaqchikel Maya bonesetters in San Juan Comalapa and Tz'utujiil Maya bonesetters in San Pedro la Laguna (Hinojosa 2003). The Comalapa bonesetters describe their work as empirical, a knowledge their hands possess. They oil the skin so the hands can move, press gently, watch the face for pain, and read swelling, tenderness and heat. Most injuries they diagnose are a *golpe* (a deep bruise) or a *safadura* (a sprain), which they treat with firm massage and movement over one to three visits. Fractures are reduced by traction with helpers and then splinted with removable materials so that the limb can be re-examined. In San Pedro the vocation is revealed in dreams, and the bonesetter works with a sacred object found at the time of the calling, which the ethnography describes. Its use belongs to its owner and is treated here as restricted (SY-04). The book should not describe it further.

The record. WO-05 section 1.10 already sets out the Nigerian and pan-African complication record and this report builds on it rather than repeating it (THRIVING library, WO-05). In short, Unadkat 2025 found ranges of malunion or non-union from 16.1 to 64.3%, gangrene from 2.8 to 29.6% and amputation from 2.8 to 60% across the series, and Onuminya 2000 in Jos found that 60 of 70 trauma amputations followed bonesetter care. Two corrections to the brief's leads. "Onuminya 2004, Nigerian Journal of Medicine" could not be confirmed. The 2004 Onuminya paper is "The role of the traditional bonesetter in primary fracture care in Nigeria", South African Medical Journal 2004, 94(8):652-8, and its abstract could not be read. The paper titled "Traditional bone setter's gangrene" is Onuminya 1999 in International Orthopaedics. The Nigerian Journal of Medicine paper in this field is Nwadiaro 2007, cited in WO-05 [VERIFY].

The Ilorin paper adds outside series: a Hyderabad, Pakistan, series of 58 patients with 43% malunion or non-union, and a Nigerian series in which 4 of 15 patients with bonesetter gangrene died (Aderibigbe 2013, secondary citations). In India, about 70,000 bonesetters are estimated to treat about 60% of bone trauma, and Isaacs-Pullins and colleagues, observing six of them, judged their approach "similar to modern" practitioners in its basic steps (Isaacs-Pullins 2022). The Kerala *Puttur kattu* series of 52 patients had 71% satisfied and no gangrene (Panda 2011, via WO-05).

The English record is older and more revealing. On 5 January 1867 the surgeon James Paget lectured in the BMJ on "cases that bone-setters cure", and his argument was repeated by Bennett in 1884 (Bennett 1884). Paget said the bonesetters had built their reputation where eminent surgeons had failed, chiefly in stiff joints after splinting, adhesions and old sprains, where surgeons had prescribed rest and the bonesetter forced movement. He also warned that indiscriminate wrenching would end in mischief. Wharton Hood, who learned from Hutton, published the adhesion theory in 1871 (Hood 1871). Hutton died at Watford on 6 January 1871, aged 70, and the Lancet, as summarised in his Wikipedia entry, said his failures were many and that he found a dislocation in almost everyone. Prichard reported a death from fat embolism after bonesetting in the Bristol Medico-Chirurgical Journal in 1884,

which I could not read in detail (Prichard 1884).

What they do well, and what the inference is. Every hospital series is a failure series, a point WO-05 makes and this report endorses. No community series counts the bonesetter's successes, so no true complication rate exists. What the record shows they do well is consistent across Paget, Hinojosa and the Ghanaian interviews: they are near, cheap and trusted, they handle the soft-tissue injury and the stiff joint with confident movement, and many already re-examine the limb every few days and refer open fractures (82.1% in Ghana, Yempabe 2020). What maims is also consistent: the tight circumferential splint over a swelling limb, the missed open fracture, the delayed referral, and incisions and pastes on broken skin. The training studies in WO-05 (Onuminya 2006, Eshete 2005) show that a few days of teaching cut gangrene from 10% to 2.5% and amputations by half. The inference for the book is that the bonesetter's hands are worth keeping and the bonesetter's bindings are not.

1.3 Massage

On their own terms. *Nuad Thai*, Thai massage, was inscribed on UNESCO's list of the intangible cultural heritage of humanity in December 2019 (Bangkok Post 2019). Its teaching texts were carved in stone at Wat Pho in Bangkok on the order of Rama III in 1832, with about 60 diagrams. The body is understood as carrying *lom*, wind or vital force, along *sen* lines, and illness as a blockage that pressure along the lines releases. Jivaka Komarabhacca, physician to the Buddha in tradition, is honoured as its father, which is legend rather than history (secondary summaries, [VERIFY] at source level).

Hilot in the Philippines is practised by the *manghihilot*, who may also be the *magpapaanak*, the village midwife. The tradition understands health as the balance of four elements and recognises illness caused by spirits (*engkanto*) (Wikipedia, Hilot). The anthropologist F. Landa Jocano described three kinds of *manghihilot* in a Philippine municipality, and diagnosis by a mirror or by a banana leaf warmed in coconut oil (Jocano, via secondary summary, [VERIFY]). Hilot is recognised under the Traditional and Alternative Medicine Act, Republic Act 8423 of 1997, overseen by the Philippine Institute of Traditional and Alternative Health Care (RA 8423 1997). The only study I found is an exploratory interview of 10 mothers (Solimen 2024).

In *rongoā Māori*, *mirimiri* is light massage and *romiromi* deep manipulation of tissue (Te Whatu Ora). Glenis Mark, Kerry Chamberlain and Amohia Boulton interviewed 17 rongoā healers in 2009 and 2010 and found that healers understand themselves as mediators of healing rather than its source, working in spiritual, physical and relational dimensions together (Mark 2017). Mark's own phrase for the research stance was sharing the healing while keeping the *tapu*. The Tohunga Suppression Act of 24 September 1907 drove the practice underground until its repeal by the Maori Welfare Act of 1962 (Wikipedia, Rongoā). Te Paepae Matua mō te Rongoā was formed in 2007, and the 2023 action plan consulted more than 500 practitioners (Te Whatu Ora). What is tapu in these practices is not described here, as SY-04 directs.

South Asian newborn oil massage is near-universal in rural Uttar Pradesh and Bangladesh, traditionally with mustard oil (*Brassica juncea*, seed oil). I did not read an ethnography of the reasons families give for it [VERIFY].

The record for adults. In the Cochrane review of massage for low back pain (Furlan 2015), against inactive controls, massage reduced short-term pain with a standardised mean difference of −0.75 (−0.90 to −0.60, 7 studies, 761 people). Against active controls the difference was −0.37 (−0.62 to −0.13, 12 studies, 964 people). There was no long-term effect on function. The evidence was low or very low in certainty. The only adverse effect reported was increased pain, in 1.5 to 25% of participants, with no serious events. The largest single trial, Cherkin 2011 in Seattle, randomised 401 adults to ten weekly one-hour sessions of relaxation or structural massage, or to usual care. At 10 weeks the Roland Disability score was 2.9 points better with relaxation massage and 2.5 better with structural massage, against a clinically meaningful threshold of 2, and more than a third of massage patients called their pain much better or gone against 1 in 25 with usual care. By 52 weeks the groups had largely converged (Cherkin 2011). For neck pain, Sherman 2014 randomised 228 people and found that 30-minute sessions did no better than the wait list, while 60-

minute sessions two or three times a week for four weeks did (Sherman 2014). The dose matters, and the two trials agree on the hour.

Moyer's meta-analysis of 37 studies found that a course of massage reduced trait anxiety (g = 0.75) and depression (g = 0.62), effects comparable to psychotherapy, and delayed pain (g = 0.31). A single session reduced state anxiety, blood pressure and heart rate but not immediate pain or cortisol (Moyer 2004).

For Thai massage, Keeratitanont 2015 reviewed small trials in chronic back pain, myofascial pain and scapulocostal syndrome and found pain relief lasting up to 15 weeks (abstract and secondary summary). Chatchawan 2005 compared Thai with Swedish massage in 180 patients with back pain over six sessions and found them broadly equal (abstract only, [VERIFY]). Wamontree 2015 found that self-massage with a stick, taught to 60 patients with upper back trigger points, did as well as or better than ibuprofen. The Spanish health technology agency judged the evidence of high risk of bias and without safety data (AETS 2020). For hilot and mirimiri there are no outcome studies of any kind. The general massage evidence applies to them by inference only.

The record for infants. Tiffany Field's group in Miami developed the protocol most trials use: moderate-pressure stroking of the head, back and limbs, then passive flexion and extension, for 15 minutes, three times a day, for 5 to 10 days (Field 2010). Across the trials, preterm infants gained 21 to 48% more weight and left hospital 3 to 6 days earlier. Field reports a Cochrane review by Vickers and colleagues (2004) giving about 5 g a day of extra gain. Moderate pressure produced more weight gain than light stroking, which infants find aversive, and coconut oil more than mineral oil. Field notes that oil is absorbed through the skin and raises triglycerides (Field 2010). Two independent sources therefore agree on the dose shape (Field's trials and the Cochrane review she cites), though I did not read the Cochrane review itself.

The oil matters more than the stroke in poor settings. In Dhaka, Darmstadt and colleagues randomised infants under 33 weeks to sunflower seed oil (*Helianthus annuus*, seed oil) massage and found 41% fewer hospital-acquired infections, 56% fewer if started on the first day (Darmstadt 2005), and a 26% reduction in mortality in the same programme (LeFevre 2010). Mustard oil, by contrast, delays recovery of the skin barrier (Darmstadt 2005, secondary summaries). But the larger cluster trial in Shivgarh, Uttar Pradesh, randomised 276 clusters to 10 ml of sunflower oil three times a day and found no overall effect on mortality (adjusted odds ratio 0.96, 0.84 to 1.11). In the per-protocol analysis, mortality was 58% lower than with exclusive mustard oil, and 52% lower in infants of 1,500 g or less, but only 36% of control families used mustard oil exclusively (Kumar 2021). The two trials disagree, and the honest reading is that sunflower oil is at least no worse than mustard oil and may save the smallest babies.

The inference. Massage reliably relieves pain for days to weeks, reduces anxiety and low mood, and helps preterm infants gain weight. It does not realign vertebrae, break up adhesions in the sense the tradition claims, or change structure, and its effects on pain fade within months. Because it is pleasant and cheap, its main danger after the Fall is opportunity cost and the occasional catastrophe described in the harm test.

1.4 Cupping, coining and scraping

On their own terms. Cupping is one of the most widely shared practices in this report: Chinese *ba guan*, Unani and Islamic *hijama* (TR-13), Greek and European wet cupping until the nineteenth century, and Vietnamese, Mexican and Eastern European domestic forms. In the Chinese account, the suction moves stagnant *qi* and blood and draws out wind and cold. In the Unani account, wet cupping removes corrupt blood (TR-13). Vietnamese *cạo gió*, coining, scrapes the skin with a coin and oil to release wind, and Chinese *gua sha* does the same with a smooth tool. The red marks are the point: the tradition reads them as evidence that something has been drawn out.

The record. Cao, Li and Liu reviewed 135 randomised trials from 1992 to 2010, almost all small and of low quality and most of wet cupping, and found benefit chiefly when cupping was added to other treatment (Cao 2012). Lauche and colleagues in Essen randomised 50 people with chronic neck pain to five dry cupping sessions over two weeks or a wait list and found pain 22.5 mm lower on a 100 mm scale, without blinding (Lauche 2011). Their later trial

of home cupping massage found it no better than progressive muscle relaxation (Lauche 2013). The best pooled estimate, Cramer 2020, included 18 trials and 1,172 people with chronic pain: against no treatment the effect was large (SMD −1.03), but against sham cupping it was −0.27 (−0.58 to 0.05), not significant (Cramer 2020). Kim 2011 found only 7 poor-quality trials for pain (Kim 2011). The inference is that cupping does about what any attentive touch does, and that most of its measured effect is not specific to the cup.

Harms. Wet cupping draws blood from small incisions, and the US National Center for Complementary and Integrative Health lists anaemia from repeated wet cupping, intracranial bleeding after scalp cupping, burns from fire cupping, and hepatitis B and C from shared instruments (NCCIH). The Dutch public health institute catalogued the blood-borne infection risks of wet cupping in 2023 (RIVM 2023). Scars and burns are the commonest reported injuries. TR-13 records one death and 14 neurological complications in the hijama literature.

Marks misread as abuse. The circles left by cups and the stripes left by coining are regularly mistaken for beating. At the child-abuse service of the Meyer children's hospital in Florence, 6 of 418 children referred for suspected abuse between 2015 and 2022 had mimics, and 3 of those were cupping marks (Focardi 2024). Coining in a Vietnamese boy of 17 was reported as a mimic in 2000 (West J Med 2000). Cupping marks fade in one to two weeks, and the case reports advise excluding a bleeding disorder or anticoagulant first (Cureus 2021). After the Fall, the risk runs the other way as well: a healer who reads every bruise as cupping may miss a beaten child. Ask who did it, with what, and when, and check that the story fits the marks.

1.5 Hands in pregnancy: moxibustion, version and massage

TR-03 covers moxibustion for breech in full, including the 2023 Cochrane update (13 studies, 2,181 women, a modest reduction in non-cephalic birth against usual care and sham, low certainty) and the protocol at BL67 (THRIVING library, TR-03). One disagreement with the brief: the brief calls moxibustion "the one grade A traditional procedure". The 2012 review found no clear benefit, and the 2023 update found a small, low-certainty benefit. It is grade A only in the sense that randomised evidence exists, and it is not the strongest hands-on obstetric procedure.

The strongest is external cephalic version, turning a breech baby through the mother's abdomen by hand. In 8 trials and 1,305 women it reduced non-cephalic birth (RR 0.42, 0.29 to 0.61) and caesarean section (RR 0.57, 0.40 to 0.82) (Hofmeyr 2015). Midwives and *parteras* in Mexico and Guatemala and *hilot* midwives in the Philippines are reported to turn babies by hand, but I found no study of traditional version and its outcomes [VERIFY]. Version in hospital is done with the ability to deliver at once if the baby's heart slows, and that ability is missing below the district rung. Antenatal perineal massage is covered in MA-01 (THRIVING library, MA-01).

1.6 Manipulation: the bonesetters' heirs

On their own terms. Andrew Taylor Still, a frontier doctor in Missouri, announced osteopathy in 1874 as a system in which the body heals itself when its structure, above all the free flow of blood, is restored by the hand. He founded the American School of Osteopathy at Kirksville in 1892 (AACOM 2024). Daniel David Palmer, a magnetic healer in Davenport, Iowa, gave the first chiropractic adjustment on 18 September 1895 to the janitor Harvey Lillard, who was said to have recovered his hearing after Palmer pushed a displaced vertebra back into place (Palmer College Library). The date and the story are disputed, and Lillard's daughter later gave a different account. Palmer taught that displaced vertebrae, subluxations, obstruct "innate intelligence" travelling through the nerves. Both men drew on the English bonesetters' practice, and Palmer drew on magnetic healing. Osteopathy in the United States has since merged into conventional medicine [VERIFY], while osteopathy elsewhere and chiropractic remain manual professions.

The record. Rubinstein and colleagues, in the BMJ in 2019, pooled 47 trials and 9,211 people with chronic low back pain. Against recommended therapies such as exercise, spinal manipulation reduced pain by 3.17 points on a 100-point scale at one month (−7.85 to 1.51) and 3.09 at six months (−5.42 to −0.77), below the 10-point threshold the authors took as small. Against sham, the estimate was −7.55 (−19.86 to 4.76), of low quality. Against non-

recommended therapies the difference was about 7.5 points. Manipulation and gentler mobilisation did not differ in four trials (Rubinstein 2019). For acute back pain, Paige 2017 pooled 15 trials and 1,699 patients and found about 10 points of pain relief on 100 (−15.6 to −4.3) and a modest gain in function, with 50 to 67% of patients reporting minor transient harms (Paige 2017). Rubinstein's earlier Cochrane review of acute back pain found no difference from sham in 20 trials and 2,674 people (Rubinstein 2012). The inference: manipulation helps back pain about as much as exercise, heat or massage, which is modestly, and the high-velocity thrust adds nothing measurable to gentle mobilisation.

The stroke question. Cassidy and colleagues examined 818 vertebrobasilar strokes in Ontario across more than 100 million person-years. Under the age of 45, patients were about three times as likely to have visited either a chiropractor or a family doctor in the days before the stroke. Over 45 there was no association with chiropractic. The authors concluded that people with an early, painful vertebral artery dissection seek help for neck pain and headache, and that the visit does not cause the stroke (Cassidy 2008). The incidence implied is about 0.8 per 100,000 a year (my calculation, [VERIFY]). Critics at Science-Based Medicine argued that the study could not exclude manipulation completing a dissection already under way (Science-Based Medicine, author and date not recorded, [VERIFY]). Ernst's review of 2001 to 2006 found vertebral artery dissection the commonest serious harm, and mild harms in 30 to 61% of patients (Ernst 2007), and his 2010 review counted 26 published deaths (Ernst 2010). Bolton and Thiel replied that the review rested on case reports (Bolton 2007), and Tuchin's re-examination of the 32 cases found errors in age, sex and outcome (Tuchin 2012). In children, Vohra and colleagues found 14 direct adverse events, 9 of them serious, including a subarachnoid haemorrhage and paraplegia, and 20 indirect harms from delayed diagnosis of meningitis, neuroblastoma, rhabdomyosarcoma and diabetes (Vohra 2007).

The pattern to carry: rare catastrophe from a neck thrust, and more common catastrophe from treating a symptom whose cause was never sought. Māori practice had its own version of this argument: in 2016 a Rotorua healer was investigated over a spinal manoeuvre and argued for the right to use it (Newshub 2016).

1.7 Water

On their own terms. Vincenz Priessnitz, of Gräfenberg in Austrian Silesia (now Jeseník, Czech Republic), began treating neighbours with cold water around 1819 (Priessnitz spa). His methods were sweating in blankets followed by a cold plunge, cold wet compresses for sprains and bruises, douches falling 1.5 to 3.5 m, with about 2.4 litres of water drunk a day. Sebastian Kneipp (17 May 1821 to 17 June 1897), a Bavarian priest, believed he had cured his own tuberculosis around 1849 by cold bathing after reading Sigmund Hahn's treatise, and published *Meine Wasserkur* (*My Water Cure*) in 1886 at Wörishofen (Wikipedia, Kneipp). His system rests on five pillars: water, plants, exercise, diet and order of life, and its water applications are short and cold, followed by rewarming [VERIFY]. Water is also sacred in many traditions. The sweat lodge of the Lakota and other Plains and Woodland peoples is a ceremony, not a therapy, and its conduct belongs to those who hold it (SY-04). TR-04 covers the Unani bath.

The record. Ortiz and colleagues reviewed 20 randomised trials of Kneipp hydrotherapy in 4,247 people: 46 of 132 comparisons favoured hydrotherapy, 81 showed no difference, and the risk of bias was high (Ortiz 2023). The Cochrane review of balneotherapy for osteoarthritis found 7 trials, 498 patients, and weak evidence (Verhagen 2008). For acute low back pain, a heat wrap reduced pain by about 1 point on a 0 to 5 scale at five days compared with an oral placebo in two trials of 258 people, and exercise added to the benefit. There was too little evidence on cold (French 2006). The Finnish sauna study of 2,315 men in Kuopio found sudden cardiac death 22% lower with two to three sessions a week and 63% lower with four to seven, an association in an observational cohort and not proof (Laukkanen 2015).

Cold water is life-saving in one situation: exertional heat stroke. At the Falmouth Road Race, 274 runners with heat stroke over 18 years (mean rectal temperature 41.4 °C) were immersed in ice water, cooled at 0.22 °C a minute, and all survived (DeMartini 2015). With later cases the series reached 454, all survivors. The rule from the athletic trainers' association is "cool first, transport second", to below 39.2 °C within 30 minutes. HY-11 gives the cooling tables and is

not repeated (THRIVING library, HY-11). For fever, tepid sponging lowers temperature briefly but causes shivering and discomfort, and alcohol rubs are harmful. IN-02 covers this (THRIVING library, IN-02).

Hot water kills too. Japan records about 19,000 bath-related deaths a year, most in the old and in winter, with more deaths on days when the air temperature swings by 14 °C or more (J Physiol Anthropol 2022). That cold houses are the cause is my inference [VERIFY], and 6,909 bathtub drownings in 2023, 90% of them in people aged 65 or over (nippon.com 2024). The worst case of heat used as ritual by outsiders was at Sedona, Arizona, in October 2009, where James Arthur Ray, a self-help teacher with no standing in any tradition, packed about 60 people into a commercial imitation of a sweat lodge. Three died, and Ray was convicted of negligent homicide and sentenced to two years (NPR 2011).

The inference. Water's real powers are physical: heat relaxes muscle and eases pain for hours, cold quenches heat stroke, and the hot bath or sweat in a cold season can kill the frail through a fall in blood pressure. Claims of detoxification, of hardening the constitution and of cure for chronic disease are not supported.

1.8 What a lay healer may do, and never

Lay healers may: massage muscles of the back, neck, shoulders and limbs for pain and distress, at moderate pressure, for up to an hour. Teach self-massage and stretching. Massage the newborn and preterm baby with sunflower or coconut oil to Field's protocol. Apply warm (not hot) wraps for back pain and cold-water immersion for heat stroke. Apply dry cups to the back muscles of a healthy adult if the family wishes, knowing the effect is mostly non-specific. Mobilise a stiff joint gently after a splint comes off, as Paget's bonesetters did, within the pain the patient accepts. Place a loose, padded, removable splint and check it daily (WO-05).

Lay healers may never: thrust-manipulate the neck. Manipulate the spine of a child, an old person, or anyone with fever, weight loss, cancer history, recent trauma or new neurological signs. Bind a fresh limb injury tightly. Massage over a swollen, hot, red calf or a recent fracture. Cut the skin for wet cupping with an unboiled blade or one used on another person. Fire-cup near hair or on a drowsy patient. Give a hot bath or sweat to the frail old, the pregnant or an infant. Attempt version of a breech baby where there is no means of immediate delivery. Use another people's ceremony as treatment.

2. Evidence grades

Practice	Grade	Note
Traditional bonesetting with tight splint, untrained	X	Hospital failure series, gangrene and amputation (WO-05)
Trained bonesetter, loose splint, referral	B	Training halves complications (Onuminya 2006, Eshete 2005)
Mobilising the stiff joint after splinting	C	English bonesetters, Maya sobadores, physiotherapy
Massage, low back and neck pain, short term	A	Small to moderate, low certainty, fades by 6 to 12 months
Massage, anxiety and depression	A	Moyer 2004, comparable to psychotherapy
Preterm infant massage, weight gain	A	Field protocol, Cochrane 2004
Sunflower oil emollient, preterm infection and death	A, contested	Dhaka positive, Shivgarh null overall
Nuad Thai, back pain	A, low	Small trials, high bias
Hilot, mirimiri, romiromi	D	No outcome studies, general massage evidence by inference

Practice	Grade	Note
Dry cupping, chronic pain	A, non-specific	Beats no treatment, not sham
Wet cupping with shared blades	X	Hepatitis B and C, anaemia
Coining, gua sha	D	Mimics abuse
Moxibustion for breech	A, low	See TR-03
External cephalic version	A	Halves caesarean, needs back-up
Spinal manipulation, chronic low back pain	A	Equal to exercise, not better
Neck thrust manipulation by a lay healer	X	Rare dissection, no added benefit over mobilisation
Spinal manipulation of children	X	Serious harms and missed diagnoses
Kneipp hydrotherapy	A, low	Mostly no difference
Superficial heat, acute back pain	A	Moderate
Cold-water immersion, heat stroke	B	454 of 454 survived (see HY-11)
Hot bath or sweat in the frail old	X	Japanese bath deaths

3. Means ledger

Practice	Hands alone	Hearth	Garden and still	Village (300)	District (3,000)	Hospital before the Fall
Fracture and joint care	Palpation, traction, gentle mobilisation	Padded wooden splint, warm wraps	Plaster or resin casts [VERIFY], crutches from the forge	Trained lay setter, daily splint checks, referral rule	Sterile room for open fractures, amputation when unavoidable	X-ray, fixation, theatre
Massage	Full adult and infant protocols	Oil warmed by the fire	Sunflower or coconut oil pressed	Taught to every family, timed courses	Part of rehabilitation	Physiotherapy
Infant oil massage	Stroking and limb movement	Clean oil, warm room	Sunflower oil pressed and stored	Skin-to-skin plus massage for the small baby	Infection records	Neonatal unit
Cupping	None	Glass or bamboo cups, heat	Boiled instruments	Dry only, single-person cups	Wet only if blades sterile [VERIFY]	Not offered
Breech	Version by hand, no back-up	Moxa from dried *Artemisia argyi* (TR-03)	Same	Moxibustion, refer breech	Version with ability to deliver	Version, caesarean
Manipulation	Mobilisation	Heat before	Same	Mobilisation only, no neck thrust	Same plus red-flag screening	Same plus imaging

Practice	Hands alone	Hearth	Garden and still	Village (300)	District (3,000)	Hospital before the Fall
Water	Shade, fanning, wet cloth	Cold tub, hot wrap, sweat bath	Thermometer if salvaged	Cooling station for heat stroke	Rectal thermometer, ice if any	Ice, fluids, intensive care

What each rung changes: at the hearth and village the gain is in teaching and discipline, a loose splint checked daily, the hour-long massage course, the oil that does not harm the skin, the cold tub ready. The district adds the sterile room, the means to act on a failed version, and someone to sort the red flags. Imaging and fixation, which the hospital adds, change the fracture outcome most and cannot be had below it.

4. Harm test

Bonesetting. Kills or maims through tight bindings over swelling, causing compartment syndrome, Volkmann's contracture and gangrene, through missed open fractures that turn septic, and through delay. Signs: pain beyond what the injury explains, pain on stretching the fingers or toes, numbness, pale or blue digits, a foul smell under the splint. Action: cut the binding off at once and refer (WO-05). Historical harms: Onuminya's 60 of 70 trauma amputations in Jos, Prichard's fat embolism death of 1884.

Massage. Rare but grave. A man of 39 had bilateral vertebral artery dissection during Thai massage (EuSEM 2018 abstract, via ABMP 2020). A man of 20 had a spinal epidural haematoma from C6 to T2 after Thai massage (Vanichkulbodee 2019, via ABMP 2020). A woman 25 weeks pregnant had a pulmonary embolism after leg massage that left her in coma (BMC Pregnancy Childbirth 2020). Ernst's review of 16 case reports and 4 series found stroke, displaced ureteral stent, embolisation of a kidney, haematoma, nerve damage, pulmonary embolism, ruptured uterus and thyrotoxicosis, mostly after exotic techniques or massage by lay people (Ernst 2003). Posadzki and Ernst updated this with 40 reports of 138 adverse events (Posadzki 2013, via ABMP 2020). Never massage: a swollen, hot, tender calf (possible clot), a recent fracture, skin infection or burn, the neck with force, the abdomen of a pregnant woman except by a trained midwife, anyone on anticoagulants with deep pressure, a known or suspected cancer site with deep pressure [VERIFY]. Signs it is going wrong: sudden headache, dizziness, double vision, slurred speech, weakness, breathlessness or chest pain during or after treatment. Stop and refer.

Infant massage. Mustard oil damages the barrier. Oil can be aspirated or enter the eyes. A cold baby loses heat while unclothed. Light stroking is aversive to preterm infants and moderate pressure is not. Signs: colour change, pauses in breathing, limpness, rash. Stop, wrap warm, hold skin-to-skin.

Cupping. Burns from fire cups, infection and hepatitis from blades, anaemia from repeated bleeding, bleeding in the anticoagulated or those with bleeding disorders, intracranial bleeding after scalp cupping. Never in pregnancy over the abdomen or lower back [VERIFY], in children, over broken or infected skin, on the scalp or face, in anyone with a bleeding disorder. Signs: blistering, spreading redness, fever, fainting.

Manipulation. Vertebral artery dissection and stroke after neck thrust, cauda equina syndrome after lumbar manipulation [VERIFY], fracture of osteoporotic or cancerous vertebrae, and missed infection or tumour. Signs: new severe neck pain or headache, dizziness, double vision, difficulty swallowing or speaking, numbness of the face or limbs, loss of bladder or bowel control.

Water. Heat collapse, falls and drowning in the old in hot baths, scalds, cold shock with breath-holding and arrhythmia in sudden cold immersion of the frail, hypothermia if cooling continues too long after heat stroke (HY-11). Never: hot bath or sweat in the frail, the pregnant, infants or anyone with heart disease. Signs: dizziness, confusion, chest pain, shivering that does not stop.

5. Red flags

These signs mean the patient may die or be disabled without what the village cannot give. Most are general clinical teaching rather than figures from the sources read, so the list is marked [VERIFY] as a whole. - After any limb injury or binding: severe pain beyond the injury, pain on stretching the digits, numbness, cold or blue digits, a black or foul limb. Remove bindings, elevate to heart level only, and carry to the district at once. If amputation is beyond reach, give the strongest pain relief available and keep the person clean, warm and accompanied. - With back pain: numbness between the legs, loss of bladder or bowel control, weakness of both legs, fever, weight loss, a history of cancer, pain that is worse at night and at rest, or trauma in the old. Do not manipulate or massage deeply. Refer. - During or after neck treatment: sudden headache, dizziness, double vision, difficulty speaking or swallowing, drop attacks, unsteadiness. Lay the person flat and seek the district. - In a child with marks on the skin: marks that do not match the story, marks in different stages of healing, a frightened or withdrawn child. Do not accept "cupping" or "coining" without asking and examining. - In the infant: poor feeding, cold, limpness, pauses in breathing. No massage is a substitute for warmth and feeding. - In heat stroke: confusion and a hot skin after exertion. Cool at once, before anything else. If the person cannot be cooled and remains unconscious, the outcome is grave whatever is done.

6. The case against

Edzard Ernst, the first professor of complementary medicine at Exeter, is the leading critic across this whole field. His reviews of massage, spinal manipulation and chiropractic deaths conclude that the risks of neck manipulation outweigh its modest benefits (Ernst 2007, 2010). His critics, Bolton and Thiel and later Tuchin, argued that his reviews rest on case reports and contain errors (Bolton 2007, Tuchin 2012), which weakens the counts but not the pattern of harm. Richard Deyo, in his editorial on Paige 2017, accepted a modest benefit of manipulation for acute back pain but warned that it is no better than other conservative options [VERIFY: editorial read only as summary]. The Cochrane reviewers themselves, Furlan for massage and Rubinstein for manipulation (the latter a chiropractor), conclude that the evidence is low in certainty and the benefits small and short. Rubinstein's finding that thrust adds nothing to gentle mobilisation is the strongest argument against the professional identity of chiropractic.

The case against the bonesetter is made best by Nigerian surgeons, Onuminya, Dada, Omololu and others, whose series fill the WO-05 tables. The case against them, in turn, is that they see only failures. The case against cupping is Cramer's sham comparison. The case against hydrotherapy is that its literature comes largely from spa and Kneipp institutions, and that the one balanced review finds mostly no difference (Ortiz 2023). Bottey in 1893 called Kneipp's cures dangerous in most cases (via Wikipedia, Kneipp).

There is also a case against the hospital. Paget's lecture of 1867 conceded that surgeons left joints stiff with too much rest, and that the bonesetter's movement was the better medicine. Hospital neglect, delay and cost are the reasons Ilorin residents gave for choosing the bonesetter (Aderibigbe 2013). The village should not exchange a hand that sometimes maims for a referral that never arrives.

7. 10-line summary

1. Traditional bonesetters maim mainly through tight bindings, missed open fractures and delay, and training halves gangrene and amputation.
2. Their real strength is near, trusted care and confident movement of soft-tissue injuries and stiff joints.
3. Massage relieves back and neck pain for weeks, at about an hour a session, weekly or more often.
4. Massage reduces anxiety and depression as much as psychotherapy in pooled trials.
5. Preterm babies massaged 15 minutes three times a day gain more weight, and sunflower oil may cut infection.
6. Dry cupping beats no treatment but not sham, and wet cupping with shared blades spreads hepatitis.
7. External cephalic version is the strongest hands-on obstetric procedure, and moxibustion's benefit is small and uncertain.

8. Spinal manipulation helps chronic back pain about as much as exercise, and the neck thrust adds risk without benefit.
9. Cold-water immersion saves nearly every case of exertional heat stroke if started at once.
10. Hot baths and sweats kill the frail old, and the Kneipp literature is mostly null.

8. Open questions

- What is the true complication rate of bonesetting in the community, counting successes? No population-based study was found.
- Do hilot, mirimiri or romiromi have outcome effects beyond those of massage in general? No study exists, and any study should be led by their practitioners.
- Does sunflower oil save preterm lives? Dhaka and Shivgarh disagree.
- Does neck manipulation cause dissection or only meet it? Cassidy's design cannot settle this.
- What do traditional parteras and hilot midwives achieve with version by hand? No record found.
- The Japanese *sekkotsu* and *judo seifuku* bonesetting tradition was not researched.
- Is there a safe, specific benefit of wet cupping that survives sham control? TR-13 says no good trial exists.

9. Sources to read in full

1. Oths KS, Hinojosa SZ (eds), *Healing by Hand: Manual Medicine and Bonesetting in Global Perspective*, AltaMira 2004 (not read).
2. Hinojosa SZ, *Maya Bonesetters*, University of Texas Press 2020 (not read, title as recorded [VERIFY]).
3. Rubinstein et al. 2019, BMJ (read).
4. Furlan et al. 2015, Cochrane (abstract read).
5. Cramer et al. 2020, Journal of Pain (summary read).
6. Kingston 2013, Béascna (read).
7. Yempabe et al. 2020, Pan African Medical Journal (read).
8. Field 2010, Infant Behavior and Development (read).
9. Hood 1871, *On Bone-setting (so-called)* (partly read).
10. Ortiz et al. 2023, BMJ Open (read).

10. At the bedside after the Fall

Household. Minimum viable version: every adult can give an hour's back or neck massage, a newborn massage with clean oil, a warm wrap for back pain, and a cold tub or soaked sheets for heat stroke. Every adult knows the five things a hand must never do (neck thrust, tight binding, deep pressure on a swollen calf, cutting the skin with a shared blade, a hot bath for the frail). Needs: a jar of sunflower or coconut oil, clean cloths, a tub or barrel, a wooden splint kit with padding. First failure to expect: a family member binding a broken arm too tightly overnight because it "needs to be held". Teach the night check.

Village of 300. Minimum viable version: one or two lay healers, ideally the family bonesetter and masseuse who already hold the trust, trained in the WO-05 referral rule, the loose splint and the red flags, and given a book to record every case. Needs: splint and padding stock, cups that are never shared or are boiled, a thermometer if one can be salvaged, a cooling station in summer, the newborn oil protocol taught to every mother. First failure to expect: a confident bonesetter refusing to refer an open fracture, or a massage given over an undiagnosed clot. Records make both visible.

District of 3,000. Minimum viable version: a nurse or doctor who reviews every bonesetter's cases monthly, a sterile room for open fractures and amputation, a midwife who can attempt version with means to deliver, and a rehabilitation programme of exercise and massage after fractures. Needs: the village records, a rectal thermometer,

ice if any can be made or stored, transport. First failure to expect: hostility between the trained and the traditional, which drives patients back to concealment. Onuminya's and Eshete's training model, run with respect, is the remedy.

11. Protocols

P1. Before laying hands on anyone (two minutes) - [ ] Ask: what happened, when, and has it happened before? - [ ] Ask about fever, weight loss, cancer, blood-thinning medicine, pregnancy, recent fall or injury. - [ ] Look for swelling, heat, redness, a wound, deformity, a calf that is swollen and tender. - [ ] For back pain, ask about numbness between the legs and control of bladder and bowel. - [ ] Any yes in the last two steps: no deep pressure, no manipulation, follow section 5.

P2. Massage for back or neck pain - [ ] Course: one session of about 60 minutes, weekly for 10 weeks (Cherkin 2011), or two or three times a week for 4 weeks for the neck (Sherman 2014). Sessions of 30 minutes did not work for the neck. The two trials differ in frequency (weekly against two or three times a week) but agree on the hour. - [ ] Warm the room and the oil. The patient lies or sits supported. - [ ] Pressure: firm enough to move the muscle, never more than the patient calls a good ache [VERIFY: tolerance from general practice, not from the trials]. - [ ] Work the large muscles beside the spine, the shoulders and buttocks. Never press on the front of the neck or thrust the neck. - [ ] Teach the patient one stretch and a self-massage with a stick or ball for daily use (Wamontree 2015). - [ ] Stop at once for dizziness, sudden headache, numbness or chest pain. - [ ] Expect relief for weeks, not cure. If no better after the course, stop and seek a cause.

P3. Newborn and preterm oil massage - [ ] Only for a baby who is feeding, breathing regularly and warm. The room must be warm. - [ ] Oil: sunflower or coconut, pressed clean, stored covered. Not mustard oil. Volume: 10 ml three times a day in the Shivgarh trial (Kumar 2021). Darmstadt's volume was not read [VERIFY]. - [ ] Wash and warm the hands. Avoid the eyes, nose, mouth and umbilical stump. - [ ] Stroke with moderate pressure (enough to move the skin over the muscle, not light tickling) for 5 minutes over the head, neck, back and limbs, then 5 minutes of slow bending and straightening of arms and legs, then 5 minutes of stroking again, about 15 minutes in all (Field 2010). - [ ] Three times a day for 5 to 10 days, longer at home if the baby thrives. - [ ] Stop and wrap the baby skin-to-skin for colour change, pauses in breathing or limpness.

P4. Heat and cold for pain - [ ] Back pain in the first days: a warm wrap or bottle, wrapped in cloth, for hours, and keep moving (French 2006). - [ ] Never water from a just-boiled kettle against the skin, never heat over numb skin or on a sleeping infant, and check the skin every 20 minutes [VERIFY]. - [ ] Cold for a fresh sprain may ease pain, but the trials found too little evidence to say so for back pain (French 2006).

P5. The overheated worker or runner (heat stroke) - [ ] Confusion and hot skin after exertion in heat: cool first, transport second. - [ ] Immerse to the neck in the coldest water available, stirring it, until the person is lucid or below 39.2 °C if a thermometer exists, aiming to get there within 30 minutes (DeMartini 2015, NATA). Full detail in HY-11. - [ ] If no tub: soaked sheets changed often, with fanning (HY-11 gives the rates, [VERIFY] interval). - [ ] Take out when shivering begins or the mind clears, to avoid overcooling.

P6. After a splint comes off - [ ] Day one: move each joint of the limb gently through the range the patient allows, about ten times, three times a day (my inference from general practice, not from a trial [VERIFY]). - [ ] Warm the limb first in water or a wrap. - [ ] Each day, a little further. Never force a joint that has been broken in or near (WO-05 section 1.9). - [ ] Pain that rises day by day, or new swelling, means stop and re-examine.

P7. Dry cupping, if the family insists - [ ] Healthy adult only. Not in pregnancy, children, bleeding disorders, on anticoagulants, or on broken skin. - [ ] Cups used on one person only, or boiled. No fire near hair, clothing or alcohol. - [ ] Back muscles only. The trial course was five sessions over two weeks (Lauche 2011). Cup times were not read [VERIFY]. - [ ] No cutting of the skin at the village rung. - [ ] Record on the child's or patient's card that marks are from cupping, with the date, so they are not misread.

P8. Checking a splint a bonesetter has applied (from WO-05) - [ ] Within the first night and every morning: pain, colour, warmth, feeling and movement of the fingers or toes. - [ ] Any one wrong: cut the bindings off at once, then reapply loosely over padding. - [ ] Open wound under a splint: remove, clean, refer.

12. Numbers to carry

1. Gangrene after untrained against trained bonesetter: 10% against 2.5% (Onuminya 2006, via WO-05).
2. Massage dose that works: about 60 minutes, at least weekly. 30 minutes failed for neck pain.
3. Massage for back pain: short-term SMD −0.75 against no treatment, nothing by a year.
4. Preterm massage: 15 minutes, three times a day, 5 to 10 days, 21 to 48% more weight gain.
5. Sunflower oil: 41% fewer infections in Dhaka, no overall mortality effect in Shivgarh. Never mustard oil.
6. Spinal manipulation against exercise: about 3 points on 100, below the 10 that counts as small.
7. External cephalic version: caesarean RR 0.57.
8. Heat stroke: cool at once, below 39.2 °C in 30 minutes, 454 of 454 survived at Falmouth.
9. Cupping marks fade in one to two weeks.
10. Japan: about 19,000 bath-related deaths a year, most in the old in winter.

References

1. Aderibigbe SA et al. Use of traditional bone setters: preferences and practices in Ilorin, Nigeria. Journal of Preventive Medicine and Hygiene 2013, 54:35-40. https://www.jpmh.org/index.php/jpmh/article/download/369/343/355 (full text read)
2. AACOM. Celebrating 150 years of osteopathic medicine. American Association of Colleges of Osteopathic Medicine 2024. https://aacom.org/news-reports/news/2024/06/24/celebrating-150-years-of-osteopathic-medicine (web page read)
3. AETS (García Carpintero et al.). Safety and efficacy of Thai massage as a therapeutic intervention in clinical pathologies. Agencia de Evaluación de Tecnologías Sanitarias, Instituto de Salud Carlos III 2020. https://database.inahta.org/article/23841 (summary read)
4. ABMP. Low risk does not equal no risk: an overview of reports of adverse events. Massage and Bodywork magazine, May/June 2020. https://www.abmp.com/massage-and-bodywork-magazine/issues/mayjune-2020/low-risk-does-not-equal-no-risk-overview-reports-adverse-events (secondary summary of case reports, including EuSEM 2018, Vanichkulbodee 2019 and Posadzki and Ernst 2013)
5. Bangkok Post. UNESCO lists nuad Thai as an intangible cultural heritage. Bangkok Post 2019. https://bangkokpost.com/thailand/general/1815379/unesco-lists-nuad-thai-as-an-intangible-cultural-heritage (news report read)
6. Bennett WH. The Art of the Bone-setter: A Testimony and a Protest. 1884, Project Gutenberg 50568. https://gutenberg.org/files/50568/50568-h/50568-h.htm (full text read, including Paget's 1867 lecture as quoted)
7. Bolton JE, Thiel HW. Adverse effects of spinal manipulation (letter). Journal of the Royal Society of Medicine 2007, 100(10):446. https://pmc.ncbi.nlm.nih.gov/articles/PMC1997264/ (read)
8. Cao H, Li X, Liu J. An updated review of the efficacy of cupping therapy. PLoS ONE 2012, 7(2):e31793. https://doi.org/10.1371/journal.pone.0031793 (abstract and secondary summary read)
9. Cassidy JD et al. Risk of vertebrobasilar stroke and chiropractic care: results of a population-based case-control and case-crossover study. Spine 2008, 33(4 Suppl):S176-83. https://pubmed.ncbi.nlm.nih.gov/18204390/ (abstract read)
10. Cherkin DC et al. A comparison of the effects of 2 types of massage and usual care on chronic low back pain: a randomized, controlled trial. Annals of Internal Medicine 2011, 155(1):1-9. https://search.pedro.org.au/search-results/record-detail/30454 (abstract and press summaries read)
11. Cramer H et al. Cupping for patients with chronic pain: a systematic review and meta-analysis. Journal of

Pain 2020, 21(9-10):943-56. https://pubmed.ncbi.nlm.nih.gov/31982686/ (abstract and secondary summary read)

12. Cureus. Case report on cupping and coining marks as mimics of injury. Cureus 2021. https://assets.cureus.com/uploads/case_report/pdf/35585/1612430640-1612430633-20210204-18203-129x6wa.pdf (read, authors not recorded [VERIFY])
13. Darmstadt GL et al. Topical applications of sunflower-seed oil and mortality and infection in preterm infants in Bangladesh: randomised controlled trial. Lancet 2005, 365:1039-45. https://pubmed.ncbi.nlm.nih.gov/15781099/ (abstract and press summaries read)
14. DeMartini JK et al. Effectiveness of cold water immersion in the treatment of exertional heat stroke at the Falmouth Road Race. Medicine and Science in Sports and Exercise 2015, 47(2):240-5. https://www.nata.org/sites/default/files/effectivenesscoldwaterimmersion.pdf (read)
15. Edusei AK et al. Traditional bonesetting in Ashanti: practitioners and users. African Journal of Disability 2015, 4(1). https://doi.org/10.4102/ajod.v4i1.97 (abstract read, title as recorded [VERIFY])
16. Ernst E. The safety of massage therapy. Rheumatology 2003, 42(9):1101-6. https://www.qxmd.com/r/12777645 (abstract read)
17. Ernst E. Adverse effects of spinal manipulation: a systematic review. Journal of the Royal Society of Medicine 2007, 100:330-8. https://www.epistemonikos.org/en/documents/5f1c68baf48944d5da018173be36ac73e4b4f920 (abstract read)
18. Ernst E. Deaths after chiropractic: a review of published cases. International Journal of Clinical Practice 2010, 64(8):1162-5. https://pubmed.ncbi.nlm.nih.gov/20642715/ (abstract read)
19. Field T, Diego M, Hernandez-Reif M. Preterm infant massage therapy research: a review. Infant Behavior and Development 2010, 33(2):115-24. https://pmc.ncbi.nlm.nih.gov/articles/PMC2844909 (full text read)
20. Focardi M et al. "Mimics" of injuries from child abuse: case series and review of the literature. Children 2024, 11(9):1103. https://www.mdpi.com/2227-9067/11/9/1103 (abstract and summary read)
21. French SD et al. A Cochrane review of superficial heat or cold for low back pain. Spine 2006, 31(9):998-1006. https://researchers.mq.edu.au/en/publications/a-cochrane-review-of-superficial-heat-or-cold-for-low-back-pain/ (abstract read)
22. Furlan AD et al. Massage for low-back pain. Cochrane Database of Systematic Reviews 2015, CD001929.pub3. https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD001929.pub3/information (abstract read)
23. Hinojosa SZ. Bonesetting and the Maya: vocation in highland Guatemala. FAMSI report 2003, research year 2000. https://www.ancientamericas.org/sites/default/files/99018Hinojosa01.pdf (full text read, title as recorded [VERIFY])
24. Hofmeyr GJ, Kulier R, West HM. External cephalic version for breech presentation at term. Cochrane Database of Systematic Reviews 2015, CD000083.pub3. https://cochranelibrary.com/cdsr/doi/10.1002/14651858.CD000083.pub3/pdf/CDSR/CD000083/CD000083_abstract.pd (abstract read)
25. Hood W. On Bone-setting (so-called). Macmillan 1871. https://www.atsu.edu/museum-of-osteopathic-medicine/wp-content/uploads/2019/04/OnBonesettingHoodWhartonMD1871.pdf (partly read)
26. Isaacs-Pullins S et al. Traditional bonesetters in India. Kansas Journal of Medicine 2022. https://journals.ku.edu/kjm/article/download/18580/16741 (read, title as recorded [VERIFY])
27. Japanese bathing deaths review. Journal of Physiological Anthropology 2022. https://doi.org/10.1186/s40101-022-00278-0 (abstract read, authors not recorded [VERIFY])
28. Keeratitanont K, Jensen MP, Chatchawan U, Auvichayapat P. The efficacy of traditional Thai massage for the treatment of chronic pain: a systematic review. Complementary Therapies in Clinical Practice 2015, 21(1):26-32. https://search.pedro.org.au/search-results/record-detail/45559 (abstract and secondary summary read). Chatchawan U et al. 2005, Journal of Bodywork and Movement Therapies 9(4):298-309,

https://dx.doi.org/10.1016/j.jbmt.2005.02.001 (abstract only)
29. Kim JI et al. Cupping for treating pain: a systematic review. Evidence-Based Complementary and Alternative Medicine 2011. https://pmc.ncbi.nlm.nih.gov/articles/PMC3136528 (abstract read)
30. Kingston R. A tale of two bone-setters. Béascna 2013, 8:89-102. https://www.ucc.ie/en/media/research/corkfolkloreproject/folkloredept/KingstonATaleofTwoBone-setters.pdf (full text read)
31. Kumar A et al. Effect of emollient therapy on clinical outcomes in preterm neonates in Shivgarh, Uttar Pradesh: a cluster randomised trial. PLoS Medicine 2021. https://pmc.ncbi.nlm.nih.gov/articles/PMC8478176 (full text read, title as recorded [VERIFY])
32. Lauche R et al. The influence of a series of five dry cupping treatments on pain and mechanical thresholds in patients with chronic non-specific neck pain: a randomised controlled pilot study. BMC Complementary and Alternative Medicine 2011, 11:63. https://doi.org/10.1186/1472-6882-11-63 (abstract read)
33. Lauche R et al. Effectiveness of home-based cupping massage compared to progressive muscle relaxation in patients with chronic neck pain: a randomized controlled trial. PLoS ONE 2013, 8(6):e65378. https://doi.org/10.1371/journal.pone.0065378 (abstract read)
34. Laukkanen T et al. Association between sauna bathing and fatal cardiovascular and all-cause mortality events. JAMA Internal Medicine 2015. https://doi.org/10.1001/jamainternmed.2014.8187 (abstract and secondary summaries read)
35. LeFevre A et al. Cost-effectiveness of skin-barrier-enhancing emollients among preterm infants in Bangladesh. Bulletin of the World Health Organization 2010, 88(2):104-12. https://scielosp.org/pdf/bwho/2010.v88n2/104-112/en (read in part)
36. Mark G, Chamberlain K, Boulton A. Acknowledging the Māori cultural values and beliefs embedded in rongoā Māori healing. International Journal of Indigenous Health 2017, 12(1):75-92. https://mro.massey.ac.nz/items/fddcc51d-c140-4c19-942b-dadb6ed4fbc7/full (repository record and abstract read)
37. Moyer CA, Rounds J, Hannum JW. A meta-analysis of massage therapy research. Psychological Bulletin 2004, 130(1):3-18. https://news.harvard.edu/gazette/wp-content/uploads/2012/01/moyer.pdf (full text read)
38. NCCIH. Cupping. National Center for Complementary and Integrative Health. https://nccih.nih.gov/news/cupping (web page read, date not recorded)
39. Newshub. Māori healer fights for right to use chiropractic techniques. Newshub 2016. https://www.newshub.co.nz/home/health/2016/06/maori-healer-fights-for-right-to-use-chiropractic-techniques.html (news report read)
40. nippon.com. Bathtub drowning deaths in Japan. nippon.com 2024. https://nippon.com/en/japan-data/h02224 (read)
41. NPR. Self-help guru sentenced to two years in prison over sweat lodge deaths. NPR 2011. https://www.npr.org/sections/thetwo-way/2011/11/18/142519292/self-help-guru-sentenced-to-two-years-in-prison-over-sweat-lodge-deaths (news report read)
42. Ortiz M et al. Clinical effects of Kneipp hydrotherapy: a systematic review of randomised controlled trials. BMJ Open 2023, 13:e070951. https://bmjopen.bmj.com/content/13/7/e070951 (read)
43. Paige NM et al. Association of spinal manipulative therapy with clinical benefit and harm for acute low back pain: systematic review and meta-analysis. JAMA 2017, 317(14):1451-60. https://pmc.ncbi.nlm.nih.gov/articles/PMC5470352 (read)
44. Palmer College Library. D.D. Palmer and the first adjustment. https://library.palmer.edu/ddpalmer/DDPalmerAdjustment (web page read)
45. Pregnancy pulmonary embolism after leg massage, case report. BMC Pregnancy and Childbirth 2020. https://pmc.ncbi.nlm.nih.gov/articles/PMC7178622/ (read, authors not recorded [VERIFY])
46. Prichard A. Death from fat embolism after bonesetting. Bristol Medico-Chirurgical Journal 1884. https://pmc.ncbi.nlm.nih.gov/articles/PMC5029358/ (record seen, details not read, title as recorded [VER-

IFY])
47. Priessnitz spa. History of hydrotherapy in Gräfenberg hill. Priessnitz Spa, Jeseník. https://priessnitz.cz/en/leisure/13-history-of-hydrotherapy-in-grafenberg-hill.html (web page read)
48. Republic Act 8423, Traditional and Alternative Medicine Act of 1997. Republic of the Philippines. https://lawphil.net/statutes/repacts/ra1997/pdf/ra_8423_1997.pdf (record seen)
49. RIVM. Inventarisatie van infectierisico's bij wet cupping. Infectieziekten Bulletin 2023. https://www.rivm.nl/weblog/inventarisatie-van-infectierisicos-bij-wet-cupping-ib-01-2023 (read)
50. Rubinstein SM et al. Spinal manipulative therapy for acute low-back pain. Cochrane Database of Systematic Reviews 2012, CD008880.pub2. https://cochranelibrary.com/cdsr/doi/10.1002/14651858.CD008880.pub2/information (abstract read)
51. Rubinstein SM et al. Benefits and harms of spinal manipulative therapy for the treatment of chronic low back pain: systematic review and meta-analysis of randomised controlled trials. BMJ 2019, 364:l689. https://pmc.ncbi.nlm.nih.gov/articles/PMC6396088 (full text read)
52. Science-Based Medicine. Chiropractic and stroke: evaluation of one paper. https://sciencebasedmedicine.org/chiropractic-and-stroke-evaluation-of-one-paper/ (read, author and date not recorded [VERIFY])
53. Sherman KJ et al. Determining the optimal dose of massage therapy for chronic neck pain. Annals of Family Medicine 2014, 12(2):112-20. https://www.annfammed.org/content/12/2/112.abstract (abstract via secondary summaries, title as recorded [VERIFY])
54. Solimen et al. Exploratory study of hilot among mothers. Health Sciences Research Journal 2024. https://journals-archive.smu.edu.ph/wp-content/uploads/2026/04/1.-Solimen-et.-al.docx.pdf (read, title as recorded [VERIFY])
55. Te Whatu Ora Health New Zealand. Rongoā Māori. https://tewhatuora.govt.nz/health-services-and-programmes/maori-health/rongoa-maori (web page read)
56. Tuchin P. A replication of the study "Adverse effects of spinal manipulation: a systematic review". Chiropractic and Manual Therapies 2012. https://pmc.ncbi.nlm.nih.gov/articles/PMC3502141 (read)
57. Verhagen AP et al. Balneotherapy for osteoarthritis: a Cochrane review. Journal of Rheumatology 2008. https://pure.eur.nl/en/publications/balneotherapy-for-osteoarthritis-a-cochrane-review/ (abstract read)
58. Vohra S, Johnston BC, Cramer K, Humphreys K. Adverse events associated with pediatric spinal manipulation: a systematic review. Pediatrics 2007, 119(1):e275-83. https://pubmed.ncbi.nlm.nih.gov/17178922/ (abstract read)
59. Wamontree P et al. Effects of traditional Thai self-massage using a Wilai Massage Stick versus ibuprofen in patients with upper back pain associated with myofascial trigger points. Journal of Physical Therapy Science 2015, 27:3493. https://dx.doi.org/10.1589/jpts.27.3493 (abstract read)
60. West Journal of Medicine. Coining in a Vietnamese adolescent as a mimic of abuse. Western Journal of Medicine 2000. https://pmc.ncbi.nlm.nih.gov/articles/PMC1070868 (read, author not recorded [VERIFY])
61. Wikipedia. Hilot. https://en.wikipedia.org/wiki/Hilot (read, secondary, including Jocano's typology)
62. Wikipedia. Rongoā. https://en.wikipedia.org/wiki/Rongo%C4%81 (read, secondary)
63. Wikipedia. Sebastian Kneipp. https://en.wikipedia.org/wiki/Sebastian_Kneipp (read, secondary, including Bottey 1893)
64. Wikipedia. Robert Howard Hutton. https://en.wikipedia.org/wiki/Robert_Howard_Hutton (read, secondary, including the Lancet obituary)
65. Yempabe T et al. Traditional bonesetting practice in northern Ghana. Pan African Medical Journal 2020, 37:248. https://www.panafrican-med-journal.com//content/article/37/248/full (full text read, title as recorded [VERIFY])