

# Evidence-Based Reflexology

## A Pathway to Health

**Sala Horowitz, Ph.D.**

**R**eflexology, a “[b]odywork technique that uses reflex points on the hands and feet” to stimulate the body’s own healing mechanism, is designed to bring the body into balance by applying pressure at points corresponding to areas of the body. As in acupuncture, the intent of stimulating particular points is to eliminate obstructed energy channels that are presumed to cause pain and disease, according to Joseph J. Jacobs, M.D., M.B.A., a former director of the National Institutes of Health Office of Alternative Medicine (now the National Center of Complementary and Alternative Medicine), in Bethesda, Maryland.<sup>1</sup>

After tracing the ancient cultural and modern medical roots of reflexology, this article summarizes recent evidence-based research on this technique’s therapeutic applications. The primary focus is on foot rather than hand reflexology in relation to preventive health and as an adjunct treatment for pain and other health problems.

### Background

#### *Ancient Antecedents*

The earliest apparent reference to therapeutic footwork is in the form of a pictograph on the tomb (circa 2300 BC) of an Egyptian physician, depicting healers massaging patients’ hands and feet. The accompanying hieroglyphics, which have been translated as “Do not let it be painful,” and the evident response “I do as you say,” support the idea that this image represents a medical procedure rather than a regular massage or beauty treatment.<sup>2</sup>

Many cultures also traditionally regarded the feet as a spiritual link to Mother Earth and her healing powers. Early Buddhist and Indian art depicts what appears to be therapeutic footwork and symbols on the feet coinciding with reflex points. Japanese reflexologists trace their method of *sokushinjutsu* pressure point therapy to practices that originated in India some 5000 years ago and that were later disseminated to China and Japan by Buddhist monks.<sup>3</sup>

Around 2500 BCE, Traditional Chinese Medicine (TCM) developed the concept of *qi* (life force energy) that flows through a complex system of meridians or acupuncture points. These ener-

gy channels, which can be manipulated to rebalance energy flow, begin in and extend down to, the feet and hands. This concept is similar to the theory of zones developed in modern Western medicine as the foundation for reflexology practice.

#### *Zone Therapy*

Just as with its use in ancient times, reflexology’s first application in modern health care was for pain relief. The term reflexology was coined in 1917 by the Russian physician Vladimir Behterev, who, like many other Russian physicians of the era, adhered to the hypothesis that health can be affected by external stimuli and be restored by intercepting erroneous instructions from the brain for particular functions.

William Fitzgerald, M.D. (1872–1942), an American ear and throat specialist, was influenced by nineteenth and twentieth century discoveries about the nervous system and observed that direct pressure to one area can produce a localized anesthetic effect in another part of the body.

Although Chinese acupuncture points were unknown to Western medicine at the time, Dr. Fitzgerald developed a similar concept of zone therapy. His system divided the body into 10 longitudinal zones, five on each side of the midline of the body, running from the top of the head down to the feet. The feet represent a three-dimensional microcosm of the body, with zones linked to particular organs.

Firm application of pressure to a toe or finger representing one of these 10 zones can relieve pain in the presumed mirrored region of the body. This effect enabled Dr. Fitzgerald to perform minor surgery without using local analgesics, such as cocaine, that were common at that time.

Together with Dr. Edwin F. Bowers, who named the technique zone therapy, Dr. Fitzgerald described this holistic healing modality in 1917<sup>4</sup> and this work was expanded upon by Joseph Riley, D.C., and Eunice Ingham, a physiotherapist. Dr. Riley discussed zone therapy in some of his books, including the seminal *Zone Therapy, or Relieving Pain at Home* (1917).<sup>4</sup> Ms. Ingham is credited with introducing reflexology in its modern form in the United States and Europe. She wrote two important works in the field: *Stories the Feet Can Tell* (1938)<sup>5</sup> and *Stories the Feet Have Told* (1945).<sup>5</sup> Her trainees instructed many early influential reflexology practitioners.<sup>6</sup>

## Modern Reflexology

In contemporary reflexology, the feet and hands are divided further into four transverse sections. The first transverse zone, bounded by a line called the cervical line, stretches from the tips to the bases of the toes and fingers and is related to the neck area and above. The second transverse zone, bounded by the diaphragm line and related to the organs of the thoracic cavity, encompasses the ball of the foot and padded area beneath the fingers. The third transverse zone, located at the fifth metatarsal, is called the "waistline," and relates to the abdominal cavity. The fourth transverse zone, or pelvic line, is measured from this waistline to the bulge found on the side of the ankle.<sup>7</sup>

Many reflexologists now incorporate the meridians of TCM into the zones described by Dr. Fitzgerald. Other reflexologists believe that what he actually discovered empirically are six main meridians located in the feet. In modern scientific terms, stimulation of these reflex or acupuncture points is thought to release pain-blocking endorphins and perhaps other neurotransmitters. Some practitioners consider reflexology's ability to induce deep relaxation as its main benefit.<sup>8</sup> Measurements by Doppler sonography suggest that reflexology increases renal blood flow.<sup>9</sup> This holistic approach also takes into account nutrition, posture, and mindfulness. Foot and hand charts are used as guidelines for interpretation. (See figure entitled *Reflexology map*.)

Certain reflex points (which are numbered similarly to TCM meridian points), as a result of their relationship to the uterus, are proscribed in pregnancy.

Today, there are a number of organizations that promote professional standards and education in the field. (See box entitled *Resources*.)

### Health Pathways: A Modern Revival of a Traditional Exercise

Japanese legends allude to samurai warriors walking on the rounded surfaces of cut pieces of bamboo to promote vigor and strength and the sole of the feet was equated with the soul. This tradition of health ways or walkways, known as *takefumi* ("stepping upon bamboo"), has been revived.

Father Josef Eugster, a Jesuit priest, helped spur a renewal of interest in Chinese footwork traditions that utilized cobblestones. In the 1980s, a Japanese cosmetics factory created a 250-foot exercise walk consisting of an irregular rectangle containing three types of gravel within a flat mortar path. The stimuli gradually become stronger, working from finer to larger gravel.

Such health pathways can be replicated from bamboo, wooden dowels, a broomstick, a polyvinyl chloride pipe, or similar materials, along with gravel or river rocks, sand, and a doormat. The pathways are said to increase strength in the muscles of the feet, legs, abdomen, and lower back; boost energy levels and endurance; and facilitate deep sleep.

A similar European tradition, known variously as reflexomassage, the Barefoot Path, or do-it-yourself reflexology, which began about the same time as zone therapy, focused on the body-wide effects of the feet.<sup>10</sup>

## Foot Versus Hand Reflexology

With its 26 bones and complex support architecture of muscles, tendons, ligaments, and nerves, the human foot is exquisitely sensitive to touch. The reflex points are also larger and easier to locate and treat in the feet than in the hands. Approximately 80 percent of adults develop foot disorders, although it is a "chicken-and-egg question" whether the origin of the problem is external or internal.<sup>7</sup> Therefore, most reflexologists concentrate on the feet.

However, hand reflexology is suitable for some clients, in certain emergency situations and can be performed unobtrusively for self-care (e.g., to avert motion sickness).<sup>3</sup> Some reflexologists focus on auricular therapy (i.e., stimulating the outer ears as representatives of the reflex points). For example, auricular therapy in combination with TCM is used to treat addictions.

### Reflexology Basics

A typical session lasts 45–60 minutes and entails having the client (or receiver) sit or lie comfortably—often in a reclining chair with a support cushion under the area to be worked on. In addition to taking detailed medical histories of clients, practitioners assess the appearance and temperature of the feet and nails, and examine sensitivity to pain. In this way, health problems may be detected at an early stage.

Reflexology clients include females and males from infancy to old age and also include people with disabilities, populations that are especially receptive to sensory stimulation. Sessions may be briefer and more gentle with patients who are very young and very old. Patients with infectious foot conditions, poor circulation, cardiac problems, or certain other conditions are not considered good candidates for reflexology.

While pregnant women may benefit from reflexology, particularly for easing the pain of childbirth, there is some debate among practitioners about whether they should treat women with high-risk pregnancies or who are in the first trimester. Clients are referred to their doctors if health problems arise. (See box entitled *Reflexology Indications and Contraindications*.)

Techniques used in reflexology sessions include supporting, holding, and pressure techniques for addressing specific problems. Supporting and holding techniques include toe stretching and rotation, and working the dorsal and medial or lateral edge of the foot. Techniques applying more or less pressure with the thumb, finger, knuckles, or palm, include alternating pressure, rotating or pivoting on a point, rubbing or friction, kneading, thumb- or finger-walking, and "hooking." Hooking is a technique used to access a very deep reflex point (e.g., the liver or spleen point) or when greater precision is desired.<sup>3</sup>

Congruent with the Nobel Prize-winning discovery in the early twentieth century that the electrical intensity of a nerve depends on the size of the nerve rather than the strength of the stimulus, pressure applied in reflexology can be gentle and still be effective.<sup>11</sup>

Practitioners generally begin with preliminary relaxation sequences which may include massage and/or a warm footbath with essential oils. But reflexology per se, unlike massage, stimu-

lates the body from within rather than from without for longer-lasting benefits. And, while reflexology may be combined with other holistic therapies, applying different techniques together may produce overstimulation. Foot manipulation may produce a temporary "healing crisis" of worsening symptoms that arise from toxins, which are thought to be flushed by stress release.

Reflexologists sometimes speak about discerning gritty crystal-like deposits (presumed to be calcium deposits), which are felt below the skin and are broken down by manipulating the feet. However, it is not always clear that these substances signify imbalances in the body.

Practitioners also emphasize the self-responsibility aspect of this ACM treatment. As one reflexologist cautions clients: "When your shoulders ache because you don't take enough work breaks, it is of little use massaging the reflexes on your feet and assiduously working SI 9 and SI 10. These may ease the present pain, but they won't... prevent you from getting repetitive strain injury. As any practitioner will advise, you need to change the things that are causing your health problems."<sup>3</sup> Commercially available reflexology aids, such as foot rollers and balls for handwork, are recommended primarily for self-help.

While acupuncture is increasingly being covered by health insurance, reflexology services tend not to be reimbursable at present despite the field's advocacy of high professional standards.

### Oregon Research Institute Studies

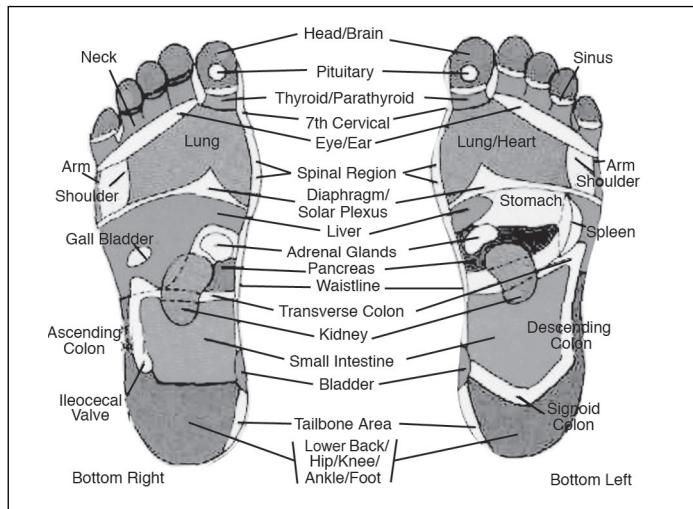
Fuzhong Li, Ph.D., and K. John Fisher, Ph.D., research scientists at the Oregon Research Institute (ORI) in Eugene, Oregon (see box entitled Resources), conducted an 8-week pilot study in 2002 on stone-stepping, a popular exercise in China. Rooted in TCM and reflexology principles, stone-stepping involves walking barefoot or in stocking feet on cobblestone paths or textured mats. Walking on such surfaces is believed to stimulate pressure points on the soles of the feet. The mats used in this study are approximately 6 feet by 1.5 feet, and are made of a felt material covered with irregularly shaped, egg-sized plastic stones.

The men and women in the randomized study, ages 60 to 88 ( $N = 40$ ), who engaged in cobblestone walking 3 times per week for 45-minute sessions, experienced significant improvements, compared to a control group, in several indicators of physical and mental well-being, including reductions in resting diastolic blood pressure, pain, and daytime sleepiness; greater perceived control over falls and ability to perform activities of daily living; and increased psychosocial well-being.<sup>12</sup>

Dr. Fisher, who was a member of the study team, concluded that: "These are very exciting results. We know that exercise improves the health of older adults, yet many conventional exer-



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**Reflexology map.**

### Reflexology Indications and Contraindications

#### Indications

- Adjunct to conventional analgesics and other treatments for adults and children
- Adjunct to other alternative and complementary medicine modalities
- Reduction of postoperative need for medication
- Relief of pain from headaches, childbirth, and other conditions
- Provision of palliative care and supportive touch for patients in terminal stages of cancer
- Easing effects of stress and boosting the immune system to prevent illness
- Emergency first aid
- Self-care
- Improving overall quality of life

#### Contraindications

- Foot infections or wounds
- Circulatory and cardiac problems
- Recent surgery
- High-risk pregnancies
- Any serious health condition without prior consultation with a physician

cise programs... are difficult to do or unappealing to many elderly people. Mat walking is simple, convenient, readily accessible, and a novel experience for all participants."<sup>12</sup> Dr. Fisher also noted that, unlike *t'ai chi*, another traditional Chinese exercise, cobblestone mat-walking does not require learning special techniques.<sup>13</sup>

As a consequence of the promising preliminary results of this first controlled study on cobblestone-walking, the ORI has been funded by the National Institute of Aging to study this form of exercise for older adults further. The full-scale study's protocol consists of 48 training sessions to be implemented 3 times per week for a 4-month period. Stone-steppers will be compared to a control group who will participate in walking in a more conventional manner. The study, expected to be completed in the fall of 2004, will involve about 100 participants (Dr. Fisher, personal communication, April 2, 2004).

## Resources

### American Reflexology Certification Board (ARCB)

P.O. Box 740879  
Arvada, CO 80006-0879  
Phone: (303) 933-6921  
Fax: (303) 904-0460  
Web site: [www.arcb.net](http://www.arcb.net)

Since 1991, the ARCB has been promoting high national standards of education for certification for professional practitioners of reflexology.

### Association of Reflexologists (AoR)

27 Old Gloucester Street  
London WC1N 3XX  
England  
Phone: +44-870-567-3320  
Web site: [www.aor.org](http://www.aor.org)  
e-mail: [info@aor.org.uk](mailto:info@aor.org.uk)

The AoR, a member of the International Council for Reflexologists, is a nonprofit organization that provides information on reflexology worldwide. Members are qualified practitioners and people who are undergoing training for professional certification.

### Oregon Research Institute (ORI)

1715 Franklin Boulevard  
Eugene, OR 97403  
Phone: (503) 484-2123  
Fax: (503) 484-1108  
Web site: [www.ori.org](http://www.ori.org)

The ORI is a nonprofit behavioral research center that studies human behavior in order to develop ways to alleviate medical and social problems. Founded in 1960, the ORI receives the majority of its funding from the National Institutes of Health. The ORI conducted the first controlled studies of cobblestone walking.

### Reflexology Association of America (RAA)

4012 Rainbow Street, K-PMB#585  
Las Vegas, NV 89103-2059  
Phone: (978) 779-0255  
Fax: (978) 779-0855  
Web site: [www.reflexology-usa.org](http://www.reflexology-usa.org)

The mission of the nonprofit RAA is to promote scientific and professional advancement of reflexology by supporting research and quality standards of practice.

### The Reflexology Data Collection Network

Online resource only  
Web site: [www.reflexology-research.org](http://www.reflexology-research.org)

This U.K.-based network encourages international collection of data in a central database in order to facilitate large-scale evaluations of the effectiveness of reflexology, and, thus, advance accreditation of reflexologists within the health care system.

## Critical Reflections on Reflexology

Like many alternative and complementary medicine modalities, reflexology lacks the well-established support of an extensive research base. The mechanisms underlying reflexologic diagnosis and treatment are unknown and not well-studied.

The postulated reflexology pathways have not been validated anatomically, physiologically, or by any scientifically accepted energetic method. Claims for the benefits of reflexology are based, for the most parts, on the cumulative experiences of practitioners and recipients of reflexology diagnoses and treatments. In the absence of well-defined mechanisms, it is difficult for third-party, objective observers to evaluate the benefits, or lack thereof, of reflexology.

The reflexologist's definition of "stress" often differs from that of, say, an orthopedic surgeon or physical therapist, which adds to the difficulty in comparing therapeutic results of reflexology with those of conventional medical interventions.<sup>a,b</sup> Randomized, blinded, controlled studies on reflexology have yielded ambiguous or negative results in trials of treatment for bronchial asthma,<sup>c</sup> menopausal symptoms,<sup>d</sup> and pain related to cancer.<sup>e</sup>

<sup>a</sup>White AR, Williamson J, Hart A, Ernst E. A blinded investigation into the accuracy of reflexology charts. *Complement Ther Med* 2000;8:166–172; <sup>b</sup>Raz I, Rosengarten Y, Carasso R. Correlation study between conventional medical diagnosis and the diagnosis by reflexology (nonconventional) [in Hebrew]. *Harefuah*. 2003;142(8–9):600–605,646; <sup>c</sup>Ref 28; <sup>d</sup>Ref. 16; <sup>e</sup>Ref. 23.

hours for first-stage labor, 16 minutes for second stage, and 7 minutes for stage 3 labor.

These figures compare well with textbook averages of 16–24 hours for the first stage of labor and 1–2 hours for the second. The Reflexology Department of the National Maternity Hospital in Dublin, Ireland, reported that reflexology has been successfully used in obstetrics for helping to regulate contractions, induce sleep, expel retained placentas, and relieve urinary retention.<sup>2</sup>

In a single-blinded, randomized, controlled Australian study on 55 pregnant healthy women with foot edema in the third trimester, lymphatic system reflexology, general relaxation reflexology, and rest all significantly reduced swelling. But patients preferred the specifically targeted reflexology.<sup>14</sup>

Reflexology is also being used for treating premenstrual syndrome (PMS) and menopausal symptoms as well as in neonatal units.

In a randomized placebo-controlled study of 35 women with PMS symptoms, women who were assigned to be treated with foot, hand, and ear reflexology reported significantly fewer symptoms than the control group undergoing sham reflexology treatments. The patients had kept a daily diary monitoring somatic and psychologic symptoms for 2 months prior to treatment, during the 8 weeks of weekly 30-minute treatments, and for a 2-month follow-up period.<sup>15</sup>

Clinical experience suggesting that reflexology had greater benefit than nonspecific foot massage for women who were experiencing menopausal symptoms (e.g., anxiety, depression, hot flashes, and night sweats) was not supported in a randomized controlled trial. The study involved 76 women and was conducted at the School of Complementary Health in Exeter, United Kingdom. Yet, both groups in the trial experienced some relief from their symptoms over a period of 19 weeks.<sup>16</sup>

## Clinical Applications in Women's Health

In the early part of the twentieth century, Dr. Fitzgerald had advocated reflexology for decreasing pain during childbirth.<sup>7</sup> In 1989, Dr. Gowri Motha, a holistic obstetrician practicing in London, England, reported that pregnant women who had a course of 10 reflexology sessions experienced shorter-than-average labor times. Women ages 20–25 years averaged 5–6

## Chronic and Palliative Pain Management

Healing touch therapies such as reflexology have become popular in holistic medical settings designed to address other medical problems, particularly for pain management.<sup>17</sup> For example, reflexology is integrated into some surgical units of the Columbia University Medical School in New York City. The Columbia Integrative Medicine Program of the Department of Surgery deems foot reflexology an ideal therapy for postoperative patients and for patients in intensive care units, because other, more sensitive parts of the body can be left undisturbed.

Reflexology is also a popular modality among patients with cardiac problems at the Complementary Cardiac Care Unit at the Columbia-Presbyterian Medical Center in New York City, with nearly 60 percent of patients in the unit requesting reflexology and massage.<sup>2</sup>

A meta-analysis of research on reflexology included a well-designed clinical trial in which patients with lower-back pain who received genuine reflexology along with their usual medication and physiotherapy reported less pain and greater mobility than members of a control group who were given sham reflexology.<sup>18</sup> Similarly, 25 of 40 patients suffering with chronic pain associated with herniated disks reported pain reduction after as few as three reflexology treatments.<sup>19</sup> Reflexology has eased pain and reduced the need for medication in patients suffering from headaches (migraine and tension).<sup>20</sup>

*The American Cancer Society Journal* reported that one third of patients with cancer sought out reflexology as an ACM approach.<sup>2</sup> Reflexology is playing an increasing role in treating patients in the palliative stage of cancer. In the United Kingdom, information on reflexology may be provided to patients in cancer support groups, and reflexology is one of the treatment options often available at complementary therapy centers within hospitals.

U.K. hospices are also utilizing reflexology as a way to control pain and improve the quality of the remaining life of patients with terminal cancer. In a Scottish survey, 20 hospice patients with cancer reported being satisfied with reflexology when they could get this treatment—which is available in less than half of such facilities.<sup>21</sup> A study of 12 patients in Glasgow revealed improved quality of life whether the patients were treated with true or sham reflexology; however, the patients who got actual reflexology reported the most improvement.<sup>22</sup>

In a pilot study in the United States, 36 patients with metastatic cancer found immediate pain relief upon getting foot reflexology, though the relief did not last beyond 3 hours.<sup>23</sup> Likewise, a sample of 23 patients with breast or lung cancer (most female and age 65+) found that foot reflexology reduced pain and anxiety; the researchers concluded that this modality has implications for nursing care and patient self-care.<sup>24</sup> Caregivers as well as patients often find this form of healing touch comforting physically, emotionally, and spiritually.

## Other Clinical Applications

Mental health applications of reflexology have been reported to result in improvements in patients' quality of life. For instance, the outcomes of treatments given by a reflexologist and coun-

## Recommended Reading

*Clinical Reflexology: A Guide for Health Professionals*

Edited by Peter A. Mackereth, M.A., and Denise Tiran, M.Sc.  
Edinburgh: Churchill Livingston, 2002

*Illustrated Elements of Reflexology*

By Beryl Crane  
London: Thorsons, 2003

*Reflexology: Health at Your Fingertips*

By Barbara Kunz and Kevin Kunz  
New York: DK Publishing, 2003

selor in a British walk-in clinic to 74 patients with unspecified mental health diagnoses during 1996–1997 were compared. Of the 49 patients who received reflexology, all but two reported greater levels of relaxation, decreased levels of anxiety, enhanced awareness of the effects of anxiety, and feeling able to change that state.<sup>2</sup> Clinical case reports also support the efficacy of reflexology in individuals who have learning disabilities.<sup>25</sup>

In a randomized controlled study completed by 53 Israeli patients with multiple sclerosis, an 11-week course of reflexology on specific points on the feet resulted in significant alleviation of some motor, sensory, and urinary symptoms that were still evident at 3-month followup.<sup>26</sup>

A study of 50 children with chronic constipation/encopresis treated with six 30-minute sessions of reflexology resulted in increased bowel movements and fewer problems with fecal incontinence. The children's parents found reflexology a satisfactory alternative to such stressful traditional treatments as enemas.<sup>27</sup>

However, small-scale studies on reflexology therapy for treating asthma<sup>28</sup> and irritable bowel syndrome<sup>29</sup> did not yield significant results beyond a placebo effect.

## Conclusions

The healing touch of reflexology can be applied, by practitioners and by patients, in people of all ages. With its long history of diverse clinical applications, affinity with acupuncture, and accruing positive research outcomes such as that provided by the landmark ORI study, further scientific validation of this alternative and complementary medicine modality is clearly warranted. Reflexology may indeed serve as a stepping stone to better health. □

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