

## **Reflexology**

### Background/Definition

Reflexology consists of applying pressure to different areas of the feet, hands and ears to relieve pain and stress in the body (Kannathal, et. al. 2004). Although methods overlap with massage, reflexology focuses on stimulating precise nerve endings that correlate with internal organs, glands and muscles (Lakasing, 2010; Kannathal, et. al. 2004).

According to Bisson (2001), the known history of reflexology dates as far back as ancient Egypt, around 2,500 B.C, from which hieroglyphic scenes depicting such treatment have been discovered. Much later, in late 14th century Europe, a similar form of reflexology called Zone Therapy was also developed and practiced. Modern reflexology owes its initial formulation to Dr. William Fitzgerald (1872-1942) who discovered a type of zone therapy being used by several Native American communities.

Also during this time a woman named Eunice Ingham working with Dr. Joe Riley wrote a series of books on reflexology, starting with *Stories the Feet Can Tell* in 1938. More recently, in Toronto in 1990, the founding members of the Ontario College of Reflexology hosted the first International Council of Reflexologists conference.

### Theory

Reflexology theory has roots in Traditional Chinese Medicine (TCM), specifically the belief that there are twelve pathways or meridians in which qi (chi or ki) flows through the body from the head to the hands and feet. Each meridian is connected with an organ system, with organs arranged in six pairs (Crane, 2012).

Practitioners claim that by stimulating these pathways or zones they are able to rebalance the body's energy flow, which improves the functioning of organs within these zones (Lakasing, 2010). To influence this flow with the aim of healing, reflexologists manipulate acupressure points, or acupoints; these particular locations have been identified in TCM as most efficacious for influencing the flow of qi in the body (Crane, 2012).

Crane (2012) also notes that the acupoints in the extremities, hands and feet, are considered the most powerful. It is believed that certain organs are connected to certain areas of the feet, particularly the soles, and by using "maps" to direct stimulation these areas can be targeted as initiating points for healing. These maps are based upon the idea that the channels of energy that flow through the body longitudinally have five endings in each foot (Ernst, 2009).

Kunz (1993) provides a more "Westernized" explanation of reflexology's underlying mechanism, focusing on foot reflexology specifically. Kunz explains the reflexes and relationships of areas in the feet correspond to the anatomy of the body. Since this image of the physical organization of the body is projected onto the feet, applying various

pressure techniques to areas of the feet is said to produce a relax response to corresponding areas of the body, bringing greater equilibrium and reducing overall tension in the body. Ultimately, feet reflect bodily response to “the stresses of gravity and movement” and therefore are both measures of overall stress and areas to target for treatment of the entire body.

In addition, Kunz (1993) notes that fundamental to this process is an understanding of zone theory, a system that identifies relationships throughout the body. Within this mapping of the body, ten equal longitudinal zones run from the top of the head to the tip of the toes. (one for each finger and toe). Since feet mirror the body and stimulation of any part of the zone affects the entire zone, focusing on applying pressure techniques to the feet is supposed to direct treatment changes throughout the body.

### Procedure

Reflexology is performed using the thumb and forefinger to apply pressure to different “reflex zones,” usually of the foot, to restore balance to the body. According to some reflexology theorists this balancing process is believed to help “detoxify” the body by clearing calcium, lactate or uric acid crystals which are reabsorbed and eliminated (Wang, et. al. 2008). While the extensive network of nerve pathways have been recently posited as the underlying aspect of this treatment, some practitioners still identify a re-balancing of qi as the pertinent causal mechanism (Crane, 2012).

A session usually lasts about an hour with the practitioner first taking an inventory of foot conditions, identifying pressure areas for manipulation and pressure threshold levels (Bisson, 2001).

Training in reflexology is offered throughout the United States. Organizations that provide training and/or certification include: The American Reflexology Certification Board, The National Holistic Institute, The American Academy of Reflexology, Reflexology Association of America, International Institute of Reflexology, International Council of Reflexologists, and many more.

Most training and certification programs require many hours of practice and passing a final test. The American Reflexology Certification Board requires a minimum of 110 hours of training to qualify for a final foot exam. Training includes history and theory of reflexology, study of the structure of the legs and feet, study of the reflex map of feet, business ethics and standards, study of meridians and of the relaxation response.

### Review

Three systematic reviews on the literature available for reflexology declared existing data inconclusive to support the use of reflexology as an effective treatment for any medical condition (Ernst, 2009; Ernst, Posadzki & Lee, 2011; Wang, et. al., 2008).

Wang, Tsai, et al. (2008) note that one study which examined reflexology's efficacy for treatment of urinary symptoms in individuals with multiple sclerosis did show convincing results. Ultimately, they do not recommend "routine provision" of reflexology for treatment of any of the conditions examined in the systematic review. They cite small sample sizes, ambiguous control conditions (using foot massage which has been shown to induce a relaxation response), and inadequate outcome measurements as some of the major methodological flaws they found to be inherent in these studies.

Jones, et. al. (2013) conducted a systematic review specifically looking at studies testing for a hemodynamic effect. Upon review, the authors did acknowledge an effect on selected hemodynamic variables, but cite lack of control for nonspecific effects (i.e. of general massage) as a key limitation to the validity and generalizability of the data. They call for future research on hemodynamic changes that focuses on isolating reflexology as the specific active factor.

In a systematic review of reflexology as a symptomatic treatment for breast cancer all studies included reported positive results, however the authors of the review indicate a serious lack of rigorous protocols in these studies and therefore suggest that the evidence of reflexology efficacy in this area remains unconvincing; they suggest further study using "rigorous" randomized controlled trials (Kim, et. al., 2010). In addition to lack of controls for various levels of bias, these authors also pointed to small sample sizes, inadequate control for nonspecific effects, a lack of power calculations, and short follow-up or treatment periods as markers of the inconclusive nature of the data. Ernst, Posadzki, and Lee (2011) also point out all of the above methodological deficiencies in their systematic review of reflexology treatment studies in general.

With these systematic reviews of current research in mind, the studies that report to have singularly demonstrated positive outcomes include treatment for: premenstrual symptoms in women, constipation, stress and pain in patients with mild to moderate dementia, pain reduction in cancer patients, anxiety reduction in breast and lung cancer patients, and for elevating motor, sensory and urinary symptoms in multiple sclerosis patients (Oleson, 1993; Bishop, et. al. 2003; Hodgson, 2008; Stephenson, et. al., 2007; Stephenson, Weinrich et. al. 2000; Siev-Ner, et. al. 2003).

Siev-Ner et. al. (2003) found statistically significant improvements in their outcome measure for urinary symptoms associated with multiple sclerosis, the results of which held up to the systematic review by Wang, Tsai, et. al. (2008). The strength of this study comes from baseline uniformity in experimental and control groups, explicit and valid outcome measures, follow-up tests, as well as well-defined control treatment. This control treatment involved nonspecific massage of the calf, while treatment groups received calf massage in conjunction with foot reflexology. Both groups were told they were receiving reflexology treatment. This helped control for expectation, and the authors note that the sham treatment protocol also helped control for relaxation and/or touch therapy. Similar control procedures in future reflexology studies offer a more rigorous methodological approach, a characteristic that various systematic reviews have found to be lacking.

While Oleson & Floco (1993) reported positive results, they note the difficulty in developing adequate placebos that provide sham treatment without any potentially therapeutic effects for pre-menstrual symptoms. In order to improve outcome measures, Hodgson & Andersen suggest that since recent evidence has shown that salivary alpha-amylase may represent an objective neuroendocrine measure for changes in affect and pain intensity, using this biomarker in future reflexology studies in this treatment area could be a way to improve validity of outcome measures.

The study by Stephenson, et. al. (2007) investigating reflexology treatment efficacy for cancer pain and anxiety showed positive results, although their reporting is followed by a similar cautionary narrative noting limitations such as, short treatment periods, high attrition rates, lack of long-term follow-ups, etc. However, they add one interesting angle in their discussion in regards to the psychological aspect of the treatment. In their study, the patient's partner was trained to administer reflexology and this patient-partner interaction was reported to have positive psychological effect on the cancer patient. This may point to another potential area of future reflexology treatment research.

While the above studies test and uphold the apparent efficacy of reflexology, a group of studies also reported inconclusive evidence and advise further research performed with improved methodologies (Brygge, et. al., 2001; Williamson, et.al., 2002; Poole, et al., 2007; Ross, et. Al., 2002; Tovey, 2002; Mollart, 2003).

Brygge, et. al., (2001) cite compliance difficulties (interrupted treatments) resulting in post hoc data exclusions as one variable that may make their data untrustworthy. Even in light of this, they reported confidence that clinical significance of reflexology treatment efficacy had not been demonstrated with their data.

Williamson, et. al. (2002) did test psychological outcomes for women with menopausal symptoms and reported inconclusive evidence. However, their study included numerous self-reported limitations such as: poor blinding protocol, participant drop-outs, short follow-up, questionnaire procedure issues, and placebo effects related to non-specific effects like touch, attention, and expectation.

Most studies that showed little to no efficacy also include similar caveats to those studies that report significant efficacy. For example, while Ross et. al. report no difference in mood and symptoms in cancer patients from foot reflexology as opposed to simple foot massage, they indicate that small size makes their data difficult to generalize.

Tovey (2002) reported no significant effect for treatment of Irritable Bowel Syndrome, but indicates various sampling issues as potentially significant confounding variables. The author also makes an emphatic call for more research, citing a serious lack of available sound data: "There is clearly a need for substantially more research, using a range of controlled and naturalistic approaches, before definitive conclusions can be reached."

In general, the majority of studies reviewed in this report call for more research. While the mechanism is not well understood, or even well investigated, this call for further studies primarily focuses on the efficacy of reflexology treatment. To summarize, the areas of needed methodological improvement include; larger and more diverse patient samples, controlling for placebo and nonspecific effects, longer treatment and follow-up periods, improved control treatment, and valid outcome measures.

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