

## The Effect of Foot Reflexology on the Reduction of Chronic Low Back Pain

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Received 4 September 2011      Accepted 12 December 2011

### Abstract

**Introduction:** Over 80% of people experience low back pain at least once in their life, which may turn into chronic low back pain over time. Since most of the patients tend to take non-aggressive and non-medicinal treatments with low health risks and complications, this study aims at investigating the effect of foot reflexology as a safe, refreshing treatment on the reduction of chronic low back pain. Previous studies by foreign scholars have confirmed that reflexology may reduce chronic low back pain; however, few domestic studies have examined this issue. Therefore, the main objective of the present study was to answer the question whether foot reflexology affects the reduction of chronic low back pain.

**Material and Methods:** The study takes on a practical and quasi-experimental design. The participants were 24 male patients with chronic low back pain as diagnosed by physicians and criteria of research. The subjects were randomly assigned into one of the two equal groups: people of experimental or control group. As a pre-test, Pain intensity using the VAS (visual analog scale) was measured and the reflexology on the experimental protocol was applied. While the treatment was being performed on the experimental group, the control group received no therapeutic treatment and were engaged in their routines. To process the raw data, SPSS software, version 18 was used. Subsequently, dependent t-test (inter-group comparison) and P- values were used to interpret the data and examine the significance of research hypotheses. Besides, one-way ANOVA and LSD test were used to compare the means of the groups.

**Results:** The findings of the study confirmed the efficacy of foot reflexology in reducing chronic low back pain ( $P<0.005$ ) and indicated a significant difference between the mean pain intensity in the experimental group as measured by VAS index before and after the foot reflexology treatment ( $P<0.005$ ). Accordingly, the mean low back pain in experimental group was 5.95 in the pretest and 4.05 in the posttest, which indicated 31% pain reduction.

**Discussion and Conclusion:** According to the positive outcomes of this procedure, it is concluded that reflexology can be regarded as a non-aggressive, supplementary procedure in treating patients with chronic low back pain.

**Keywords:** Reflexology, Foot massage, Chronic low back pain

### Introduction

Over 80% of people experience low back pain at least once in their life [1]. Pain and discomfort in the back are the common symptoms of many skeletal and non-skeletal diseases which are highly prevalent in the society. Most of the patients with acute low back pain suffer from a muscular-skeletal disorder which mends within one to four weeks automatically with no specific treatment. However, medical examinations should be performed to find serious conditions or cases that require emergency

medical treatments. The majority of such pains, due to various causes, become chronic and persist throughout the lifetime [2]. The present study centers on the main question whether a safe, non-aggressive procedure like foot reflexology (which is a specialized massage) can be used to treat or reduce the chronic low back pain, and if so, to what extent?, and whether this extent is significant or not?

Most of the current therapeutic procedures in treating chronic low back pains are medicinal and aggressive and bear certain complications. On the other hand, patients would like to achieve safer, non-aggressive procedures. Besides, the findings of the previous studies suggest that surgery is not

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beneficial to most of the patients with chronic low back pain [3]. Therefore, it seems necessary to study this issue in our country, in order to both help these patients and develop such non-aggressive therapy in the country. On the whole, the main objective of the present study is to investigate the effects of 30 sessions of foot reflexology on the reduction of chronic low back pains.

Foot reflexology refers to particular massages performed on the reflexive areas of the bottom of the foot which are associated with different parts of the body. That is, each point on the sole reflects a particular part of the body. Each area on the sole has its specific type of massage. For example, areas associated with the reflexes of the spine on the sole need specific massage types and areas pertaining to heart reflexes are differently massaged as, various parts of the body need their specific massage [4, 5, 6]. Chronic low back pain refers to the pains in the low back which persist for more than 12 weeks [7]. Sedatives may provisionally soothe the chronic pain but they do not treat the pain, and they may become part of the problem over the course of time [8]. According to another source, once a low back pain persists for over two months, it becomes chronic. In fact, chronic low back pain is developed due to the lack of treatment or resistance to the treatment of acute low back pain [2].

The research hypothesis in this domestic study proposes that foot reflexology reduces the intensity of chronic low back pains and improves the patients' health. In a foreign study titled "reflexology in the management of low back pain", Quinn et al (2008) found that reflexology may positively affect the treatment of low back pain. They reported that the pain intensity score decreased to an average extent in the experimental group [9]. Poole et al (2001) also studied the patients with chronic low back pain to investigate the effect of reflexology. In their study titled "evaluating the efficacy of reflexology for the management of low back pain", they suggested that reflexology is a supplementary procedure for the management of low back pain [10]. Bennedbaek et al (2001) studied 63 patients with low back pain and colic. They reported that reflexology could treat 33 patients successfully. According to their findings, there was a significant difference between the control and experimental groups before and after the reflexology treatment [11].

## Material and Methods

The present study is a practical research which takes on a quasi-experimental design.

### Statistical population and sample

Based on terms and conditions of the study, patients had to be made homogeneous. The population consisted of male patients with chronic low back pain as diagnosed by a specialist. Their age ranged from 20 to 50 years. They were non-athletes who had no serious sports activity or championship participation over the last 3 years. Other criteria for the inclusion of patients as the population of the study included a BMI between 18 and 25 and the persistence of low back pain for at least 12 weeks to be regarded as chronic. From the population, a sample of 24 patients was selected based on simple random sampling and were subsequently divided into two equal, groups: the control and experimental group. It should be noted that all patients participated in the study voluntarily and with personal consent.

### Instrument

The patients' pain intensity was measured before and after the reflexology treatment using VAS test (pain intensity test). To do the VAS test, the patients indicated their pain intensity on a 10-centimeter line which was not scaled or numbered but had a definite head and tail based on the least and most pain intensity. Then the tester measured and recorded the indicated point on the line using centimeter scale. An index of zero indicated no pain and 10 showed the most intense pain [12, 7]. The foot reflexology protocol was performed by the researcher on the experimental group under the surveillance of a physiotherapist for 30 sessions (10 weeks, 3 sessions each, each session 30 minutes). the patients had to lie down supinely on a bed in a quiet, bright location and remain in a completely relaxed state. Then the sole was gently massaged, and after that, with the heel held in one hand, the reflex points of low back and spine [figure 1] on the sole were given alternate ripple and smoke massages in a reciprocating motion [4, 13, 14, 15]. This treatment was performed for 30 minutes on the feet (15 minutes for each foot). Based on the reflexology code, at the end of each session, the patients were asked to take much water and liquids over the next 24 hours [13].

In this study, the foot reflexology treatment given to the experimental group and the extent of pain reduction in patients with chronic low back pain were the independent and dependent variables, respectively. The control group also witnessed the mutual effects of these two variables on each other. To analyze the data, a pretest and a posttest were used. SPSS software, version 18 was used to process the raw data. Subsequently, dependent t-test (inter-group comparison) and P values were used to interpret the data and examine the significance of research hypotheses. Besides, one-way ANOVA and LSD test were used to compare the means of the groups.

#### **Reliability and validity of the test**

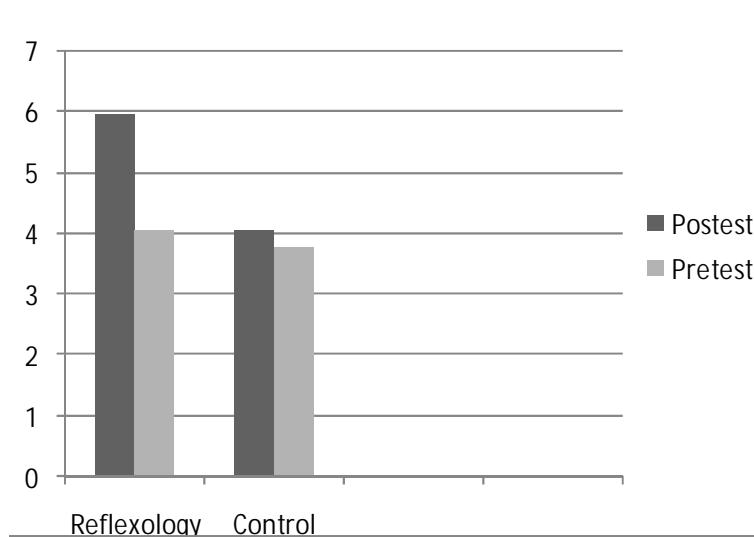
According to Wall and Melzak, VAS is a valid and reliable scale for measuring the pain intensity [16]. In his book, Magee also affirms the validity of the scale [12]., The American College of Sports Medicine (ACSM) also confirms the aforesaid statements regarding the validity and reliability of the scale and suggests it as a non-aggressive test [7]. Some foreign and domestic researches which have drawn on this method to measure the pain intensity and have yielded favorable results [17, 18, 19, 20, 21, 22, 23] also confirm the reliability and validity of VAS scale.



**Figure 1:** The reflex points of low back and spine are marked with dark color as different from other reflex points of the body

**Table 1:** Comparing the mean difference of pain intensity between the pretest and posttest in the two groups of reflexology and control

Group	Pre Test	Post Test	Difference	T-value	P-value
<b>Reflexology</b>	5.95	4.05	1.90	5.006	P< 0.001
<b>Control</b>	4.03	3.75	0.28		



**Figure 2:** Comparing the mean difference of pain intensity between the pretest and posttest in the two groups of reflexology and control

## Results

The findings of the study endorsed the efficacy of foot reflexology in the reduction of chronic low back pain ( $P<0.005$ ). There was a significant difference between the mean pain intensity based on the VAS scores in the experimental group before and after the foot reflexology program ( $P<0.005$ ). Accordingly, the experimental group's mean of low back pain was 5.95 in the pretest and 4.05 in the posttest, which indicated 31% reduction in the pain. However, during this time, the control group's mean of low back pain decreased from 4.03 in the pretest to 3.75 in the posttest, which indicated only 6% reduction.

## Discussion and Conclusion

The present study aimed at investigating the effect of 30 sessions of foot reflexology on the reduction of chronic low back pain. In a foreign research, Quinn et al (2008) concluded that reflexology may positively affect the treatment of low back pain. They found that the pain intensity score decreased to an average extent in the experimental group [9]. However, they did not affirm the definite efficacy of the reflexology and reported an average reduction in the patients' chronic low back pain. Poole et al (2001) studied the patients with chronic low back pain to investigate the effect of reflexology. They suggested that reflexology is a supplementary procedure for the management of low back pain [10]. Evidently, these researchers draw on their

findings to suggest reflexology as a supplement to other therapeutic procedures and do not consider reflexology as the absolute treatment. Besides, Bennedbaek et al (2001) studied 63 patients with low back pain and colic. They reported that reflexology could treat 33 patients successfully. According to their findings, there was a significant difference between the control and experimental group before and after the reflexology treatment [11]. Since over half of their participants positively responded to the reflexology treatment, they obtained a considerable validity index for this non-aggressive treatment.

Functions and mechanisms of reflexology is still an aura of ambiguity. However some theories have been put forward in this regard including: the gate control theory of pain, nerve impulse theory, increase of endorphins and encephalon secretion that result in improved pain control, improvement of lymphatic flow and strengthening the immune system, improvement of nerves and blood flow and excretion of toxins from the body that ultimately improve the patient's treatment.

## Conclusion

Regarding to the positive outcomes of this procedure in the present study, the consistency of the present findings with the findings of some foreign researchers [9, 10, 11] and the inclination of similar patients toward such non-aggressive treatments, it is concluded that reflexology can be regarded as a non-aggressive, favorable procedure

in treating patients with chronic low back pain safely and with no complications. In other words, the researchers' hypothesis was accepted ( $P<0.005$ ).

### Acknowledgements

We would like to extend our sincere thanks to all the participants as well as all those who involved in this study.

### References

- 1-Brost BC, Goldeberg RL, Mercer BM, Iams JD, Meeis PJ, Moawad AH (1997). The Preen predication of cesarean delivery with increases in maternal weight and mass index. *Am J Obstet Gynecol* 177(2):33-37.
- 2-Hamilton H (1998). Getting rid of low back pain Publishers: Arjmand, pp: 23-44.
- 3-Last AR, Hulbert K (2009). Chronic low back pain: evaluation and management. *American Family Physician* 15(79):1067-74.
- 4-Mohebbi Sh, Yazdan Panah Y (2010). *Reflexology*. Publishers: Yalda qalam, pp: 3-8.
- 5-Lynn J (1997). Using complementary therapies: reflexology. *Professional Nurse* 11:321-322.
- 6-Mackeret P (1997). Clinical supervision for potent practice. *Complementary Therapies in Nursing and Midwifery* 3:38-41.
- 7-Myers JN, et al (2004). Clinical Exercise Physiology. ACSM 118-127.
- 8-Blairbulls E (1996). Getting rid of chronic low back pains .Publishers: Delarang, pp: 71-94.
- 9-Quinn F, Hughes CM, Baxter GD (2008). Reflexology in the management of low back pain: a pilot randomized controlled trial. *Complement Ther Med* 16(1):3-8.
- 10-Poole H, Murphy P, Glenn S (2001). Evaluating the efficacy of reflexology for the management of chronic low back pain. 8th Annual Symposium on Complementary Health Care, Exeter, England, December , pp: 6-8.
- 11-Bennedbaek O, Viktor J, Carlsen KS, et al (2001). Infants with colic. A heterogeneous group possible to cure? Treatment by pediatric consultation followed by a study of the effect of zone therapy on incurable colic. *Ugeskr Laeger* 163(27):3773-3778.
- 12-Magee DJ (2008). *Orthopedic Physical Assessment*. USA ,pp: 1-9.
- 13-Byers D (1987). Better health with foot reflexology. Publishers: FL: Ingham, pp: 15-19.
- 14-Ingham E (1951). Stories the feet have told through reflexology. Publishers: FL: Ingham, pp: 66-83.
- 15-Ingham E (1938). Stories the feet can tell through reflexology. Publishers: FL: Ingham,pp: 11-20.
- 16-Wall P, Melzak R (2000). *Text book of pain*. Edinburgh. Publishers: Churchill Livingstone, pp: 1-18
- 17-Eqebali M (2010). Investigating the effect of reflexology on the nurses' low back pain working in Isfahan Medical University hospitals, M.A thesis, faculty of Medical College Isfahan
- 18-Akbari A et al (2008). The effect of movement control exercises on the people with low back pain comparing with typical exercises. *Zanjan Medical University Science and Research Journal* 16(62):1-16.
- 19-Mehrdad R, et al (1384/2005). Sports and laser therapy in the treatment of chronic low back pain. *Journal of medical college of Tehran Medical University* 63(4):322-330.
- 20-Kimberly AW, et al (2005). Effect of Iyengar yoga therapy for chronic low back pain. *USA Pain* 115:107-117.
- 21-Maher CG (2004). Effective physical treatment for chronic low back pain. *Orthop Clin N Am* 35:57- 64.
- 22-Aure OF, et al (2003). Manual Therapy and Exercise Therapy in Patients With Chronic Low Back Pain. *SPINE* 28(6):525-532.
- 23-Price DD, McGrath PA, Rafii A, Buckingham B (1983). The validation of visual analogue scale as ratio scale measures for chronic and experimental pain. *Pain* 17:45-56.