

# Prospective Evaluation of Biofield Energy Therapy for Burdensome Symptoms of Burn Injury: A Pilot Study

Goodwin PK, Travis TE, Jordan MH, Flanagan KE, Pavlovich AR and Shupp JW\*

The Burn Center, Department of Surgery, MedStar Washington Hospital Center, MedStar Health Research Institute, 110 Irving Street NW, Suite 3B-55, Washington, D.C. 20010, USA

## Abstract

**Background:** Burn injuries are associated with a variety of symptoms including pain, pruritis, anxiety and fatigue. Current pharmacotherapy is able to alleviate one or more of these symptoms, but typically requires different drugs for each symptom. An ideal therapy would be one in which several of these symptoms could be assuaged or eliminated by a single intervention. Biofield Energy Therapy is a unique complementary therapy that was designed to help modulate this myriad of symptoms.

**Methods:** A population of burn patients underwent Biofield Energy Therapy and were surveyed for levels of pain, pruritis, anxiety and fatigue prior to and after the therapy sessions. Additionally skin perfusion measurements were collected using a Field Laser Perfusion Imager before and after therapy.

**Results:** Survey responses revealed multi-symptom improvement for most patients as well as general satisfaction with Biofield Energy Therapy and interest in further therapy sessions. Likewise, skin perfusion measurements increased following the period of therapy in a subset of patients.

**Conclusions:** There is a need for new modalities targeted to treat the symptoms associated with burn injury. Biofield Energy Therapy may serve as an adjunct treatment for injured patients. This pilot study suggests that Biofield Energy Therapy should be evaluated further for use in burn care settings.

**Keywords:** Biofield energy therapy; Burn injury; Field laser perfusion imaging

## Introduction

The acceptance and use of complementary and alternative therapies in the United States is growing. As patients and health care providers explore the variety of modalities not usually associated with traditional Western medicine, it is important to assess their potential benefits through prospective clinical studies. The National Institutes of Health National Center for Complementary and Alternative Medicine (NCCAM) defines complementary and alternative medicine (CAM) as “a group of diverse medical and health care systems, practices, and products that are not generally considered part of conventional medicine [1]”.

The complexity of symptoms experienced by burn patients makes them a unique population in which to assess the utility of complementary and alternative therapies. Each year, approximately 1.25 million people in the United States sustain a burn injury [2]. Compared to patients burned prior to 1970, people now more commonly survive burn injuries. Before 1970, a burn injury greater than one third of the total body surface area (TBSA) was usually fatal [3], whereas a recent 10 year review of the National Burn Repository database showed that a 60-70% TBSA burn now has a survival rate of approximately 53% [4]. While advances have clearly been made in increasing the survival rates of burn patients, this success has not necessarily led to an improved ability to alleviate the longer-term symptoms of burn injury.

Pain is an overwhelmingly common symptom in burn patients [5] and is still known to be undertreated [2]. The pathophysiologic process of burn injury causes intense, repeated activation of the pain-related nociceptors in the burn-injured tissue [5] as well as hyperalgesia [6]. Unrelieved pain after burn injury may beget larger concerns for patients and providers, as chronic pain can lead to further sensory disorders [2] as well as mental health issues [5]. There is tremendous variability in pain experienced by burn patients and we currently have no evidence that age, sex, socio-economic status, ethnicity, occupation

or education are reliable predictors of pain [7]. There is, however, promising evidence that genetic factors may contribute to the way burn patients experience pain [8]. Whatever the cause of pain, coping and treatment mechanisms are always needed.

Stress and anxiety are overwhelmingly common following burn injury, impacting both the psychological and physical recovery of the patient [2]. It has been shown that anxiety, depressive, and avoidant symptoms seen later on in burn recovery are able to be predicted by levels of the same issues earlier on in recovery [9]. Pain and anxiety stimulate catecholamine release and these hormones can have catabolic effects on total body metabolism. Catabolism has many adverse effects on burn patients including weight loss, decreased immunity, and poor wound healing and graft take. Consequently, pain and anxiety may chronically and indirectly increase the complications of burns beyond psychological implications. Better, earlier management of these symptoms could greatly benefit this patient population.

Another common sequela of burn injury is pruritis, which is experienced by up to 87% of burn injured patients [2]. The natural tendency to scratch or rub pruritic areas is problematic as these abrasive motions may damage fragile, healing skin or newly placed skin grafts [2]. Additionally, pruritis is associated with depressive symptoms,

\*Corresponding author: Jeffrey W Shupp, MD, The Burn Center, Department of Surgery, MedStar Washington Hospital Center, MedStar Health Research Institute, 110 Irving Street NW, Suite 3B-55, Washington, D.C. 20010, USA, Tel: 202-877-7738; E-mail: Jeffrey.W.Shupp@medstar.net

Received December 17, 2013; Accepted February 13, 2014; Published February 15, 2014

**Citation:** Goodwin PK, Travis TE, Jordan MH, Flanagan KE, Pavlovich AR, et al. (2014) Prospective Evaluation of Biofield Energy Therapy for Burdensome Symptoms of Burn Injury: A Pilot Study. J Pain Relief 3: 135. doi:10.4172/2167-0846.1000135

**Copyright:** © 2014 Goodwin PK, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

anxiety, non-specific somatic symptoms, and impaired quality of life [10].

Currently, pharmacotherapies are the most common types of treatments used to manage the various symptoms experienced by burn patients [3]. There remains great unresolved need for symptom relief and therefore, the necessity for development of additional therapeutic options. Methods of distraction have been used to combat pain in burn patients, particularly virtual reality, with successes attributed to the ability to draw upon conscious attention, leaving less cognition available to concentrate on nociceptive input [11-13]. Healing touch, touch therapy, and Reiki are all classified as biofield therapies, and are associated with relaxation, decreased anxiety, improved well-being, and healing [14]. These therapies may also tap into the usefulness of distraction to reduce pain [15]. Guided imagery and music therapy have also been used in the orthopedic, cardiac surgery, and gynecology fields to address perioperative and recovery pain and anxiety [16-18]. By embracing the usefulness of alternative therapies and increasing the number of tools available to providers, larger numbers of burn-injured patients may be able to experience relief from a myriad of symptoms.

The aim of this pilot study was to evaluate a newly described complementary therapy, Biofield Energy Therapy (BFET), as used in an inpatient burn population. This therapy is designed to alleviate pain, itching, fatigue, anxiety, stress, and to bring a sense of well-being to the patient. It is unclear whether BFET has any effect on burn wounds or the perfusion of skin distant to wounds, though other biofield therapies have shown some effects on the autonomic nervous system, including heart rate and blood pressure [19]. Skin abnormalities and disease are often associated with abnormal cutaneous blood flow, which can be detected by laser Doppler imaging (LDI) [20]. Studies of perfusion in skin flaps using LDI have shown usefulness in predicting flap viability in some cases [20,21], while in others, flaps that appeared ill-perfused went on to survive and heal without further intervention [20,22]. This pilot study sought to look at the changes in skin perfusion seen by Field Laser Perfusion Imaging (FLPI) before and after BFET and to evaluate patient perception of treatment.

## Methods

This study was approved by the Institutional Review Board at MedStar Health Research Institute.

### Subjects

All subjects (N=20) were at least 18 years of age, had sustained a burn injury and were admitted to the step-down unit of the MedStar Washington Hospital Burn Center between May 1, 2010 and February 1, 2011. Patients admitted to the burn step-down unit were screened for enrolment by a member of the research staff. If the patient was expected to remain in the hospital for at least 4 days, as determined by a burn surgeon, and the patient met inclusion criteria, he or she was approached for consent. Exclusion criteria were: age less than 18, a burn injury requiring ICU care at the time of study, inability to consent for themselves, and non-English speaking. Burn depth or percent total body surface area burn were not considered in inclusion or exclusion criteria.

### Therapy sessions

Upon enrolment, each patient was scheduled for two, 1 hour-long BFET sessions to occur within one week. The sessions took place in a private room equipped with a massage table. Subjects who, due to injury, were not mobile enough to position themselves on the massage table were wheeled into the private room in a hospital bed.

Trained in various forms of (CAM) modalities, the BFET practitioner applied ranges of energy frequencies, customizing each session according to the patient's needs. The BFET practitioner approached each subject with the intention to bring peaceful balance to the patient and the energy field surrounding the patient. Working on the premise that all matter generates electrical and electromagnetic energy fields at a precise frequency, the therapy included lightly touching or scanning the hands above the body, avoiding any painful, injured areas to treat weaknesses in the energy field. Imagery and relaxation techniques were also employed. The patient and practitioner remained undisturbed for the full hour of treatment.

### Surveys

Subjects completed a 12-question survey before and after each session. The survey asked the subject to rate levels of pain, pruritis, anxiety, stress, and fatigue. The survey also asked the subjects to rate satisfaction with their current health status, feelings of peacefulness and feelings of optimism. Responses were quantified using a 5-part Likert scale. The post-session survey contained two additional questions; one additional question asked the subject to rate his or her satisfaction with the BFET experience and the second asked the subject if he or she would be interested in additional BFET sessions. Surveys also provided space for subjects to leave optional comments.

### Perfusion measurement

Basal skin images were acquired using an FLPI (Moor Instruments, Inc.). This device has not been validated for clinical diagnoses; however, the device can be used to measure rates of vascular perfusion in units of flux. Due to burn wound dressings left intact, it was often not possible to image a subject's burn wound. Every effort was made to image an area of the body proximal to the burn wound. Due to scheduling constraints, only 14 subjects had imaging acquired before and after each BFET session. Only a subset of those 14 was able to be imaged for both BFET sessions. In patients who had additional time, multiple sites were imaged. Taken together, these FLPI sessions provide preliminary data. During each image capture, four images were taken in sequence, thus measuring perfusion 4 times. The flux from the four separate images, each acquired in 15 second intervals, was averaged for both the pre- and post-image captures and the pre and post results were compared for each of these 14 subjects' different FLPI sessions. Pre and post results from each session were analysed with an unpaired t-test, Holm-Sidak method. Graphpad (Prism, La Jolla, CA) was used for statistical analysis.

The same body location was imaged pre- and post-therapy for each patient, however the locations imaged varied among subjects and sessions. Whenever possible, imaging occurred after the subject had been lying still for 10 minutes to limit the effect of movement on measured perfusion units.

## Results

### Subjects

Subjects consisted of 15 females and 5 males. The age of females ranged from 27 to 61 years with a mean age of 44.6 years. The age of males ranged from 18 to 34 with a mean age of 24.2 years. The percent TBSA burn for these 20 subjects ranged from 0.5% to 30%. Fifty percent of subjects had a burn size greater than 8% TBSA. Depth of burn varied among subjects. Seven of the twenty subjects enrolled had only one BFET session; all other subjects (65%) had two sessions. Reasons for not participating in both sessions varied from scheduling conflicts with other services or operating room procedures, discharge of patients

prior to second scheduled session or the unwillingness or inability of subject to participate due to injury.

### Surveys

Surveys were evaluated for patient question responses and free text comments. Four surveys were incompletely answered. The questions left blank for each survey were not included in the total number of responses for a given topic, when applicable. Of 33 responses, 25 (76%) reported a decrease in tension, 22 (67%) reported a decrease in pain, 25 (76%) reported a decrease in anxiety, 18 (55%) reported a decrease in fatigue, and 21 (64%) reported an increase in feelings of peacefulness following a BFET session. Of 32 responses, 25 (78%) reported a decrease in stress, 22 (69%) reported a decrease in pruritis, 21 (66%) reported a decrease in feeling anxious, 12 (38%) reported an increase in energy, and 18 (56%) reported a decrease in feeling worn-out following a BFET session. Of 31 responses, 8 (26%) reported an increase in feeling satisfied with their current health status and 9 (29%) reported an increase in feelings of optimism about their health status following a BFET session. In the post-session survey, patients were asked about their satisfaction with the BFET session. Of 33 responses, 14 (42%) answered “extremely satisfied”, 13 (39%) answered “satisfied”, 2 (6%) answered “I don’t know”, 3 (9%) answered “unsatisfied”, and 1 (3%) answered “extremely unsatisfied”. In the post-session survey, patients were also asked whether they would be interested in further BFET sessions. Of 32 responses, 31 (97%) answered “yes” and 1 (3%) answered “no” (Table 1).

All patients were given the opportunity to leave free-text comments on their post-session surveys. Descriptive words written by patients included “soothing”, “relaxing”, “calming”, and “comforting”. Phrases included “relieved my stress and fatigue”, “I feel I can better cope”, and “definitely feel a difference”. More detailed comments included “If I could be in therapy all day, I probably wouldn’t have pain at all”, “I think this is the perfect complement to ‘scientific’ medicine”, and “I never knew soft touch could make me feel better”.

### Perfusion measurement

FLPI measurements on a subset of subjects (n=14) showed differential perfusion before and after therapy. Of all the FLPI sessions done on the 14 subjects, there were a total of 44 paired pre-BFET and post-BFET flux measurements to analyze. Of these 44 FLPI sessions, 16 had statistically significant differences between pre-BFET and post-BFET flux measurements, with  $p < 0.05$  (Figure 1). Ten of these 16 showed an increase in perfusion, measured in flux; though rates of increased perfusion varied among these ten subjects (Figure 2).

### Discussion

Biofield Energy Therapy has been cited as an example of “frontier medicine”, or a therapy “for which there is no plausible biomedical explanation” [16]. This pilot study was designed to gather feedback from burn patients who received BFET to determine whether further investigations into its use for this population are warranted. The majority of subjects treated experienced an improvement in measured symptoms and were satisfied with their BFET sessions. Almost all of the patients were interested in further therapy sessions. The potential for BFET to be used as a complementary therapy in the alleviation of burn injury symptoms is promising given the results seen in this small pilot study, coupled with a need for a wider range of available therapeutic modalities. We know that pharmacotherapies are at times inadequate and inconsistent, leading to the search for further tools. A great advantage of BFET is that it is designed to be a multidimensional

approach to the various symptoms experienced by burn patients, whereas pharmacologic therapies often target only one symptom at a time. The type of multifaceted symptom relief sought with BFET seemed to apply to the results reported by many of the patients treated in this study.

Inadequate pain management naturally results in worsened patient suffering, but may also contribute to dissatisfaction with care, delayed healing, and prolonged hospitalization [23]. By providing patients with alternative therapies and a larger variety of options, they are likely to have a more positive patient care experience.

It has been reported that the psychological state of a patient may modulate, inhibit, or modify the nociceptive signals occurring at the spinal cord, affecting the signals that reach the brain and contributing to the pain experienced by the patient [24]. If the psychological state of a person exerts physiologic effects on the body, then BFET may alleviate pain, anxiety, or stress via the ability to alter the mood of the patient through energy, relaxation, and imagery techniques. Future directions for BFET research may focus specifically on the alteration of a patient’s psychological state in an effort to alleviate associated symptoms.

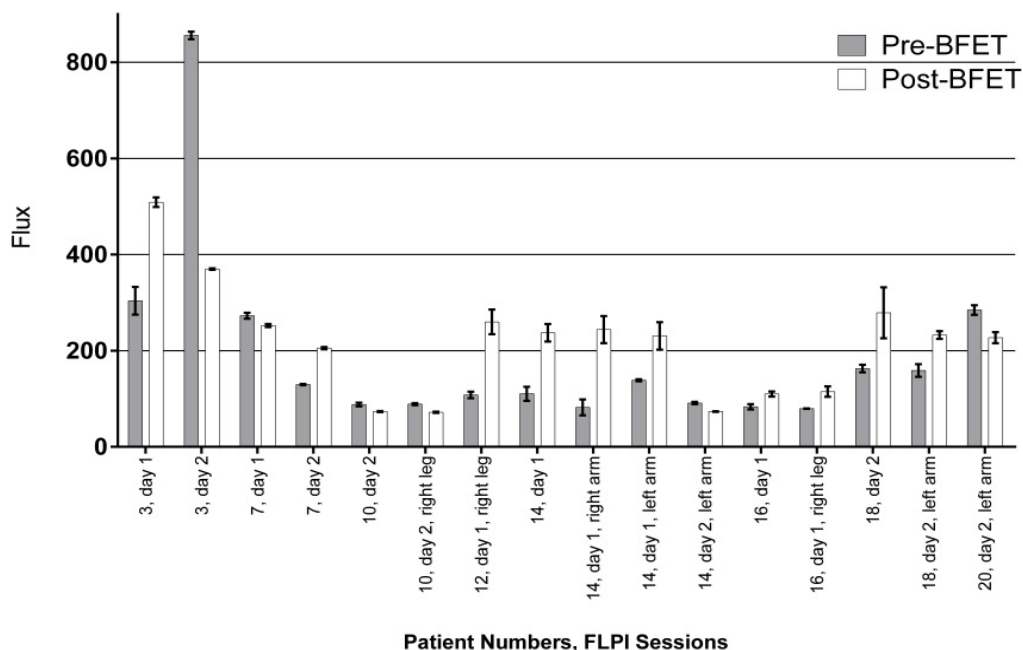
BFET is designed to provide relief to the whole person; as such, it is crucial to evaluate the types of verbal or written responses collected in this study’s surveys indicating perceived effects from participating subjects. The addition of documentation of physiologic changes may provide further insight to the underlying effects of BFET, hopefully resulting in quantitatively measurable data. The increase in perfusion, measured in flux, in ten of the twenty subjects may indicate a physiologic change occurring during BFET sessions. Indeed, other investigators have noted autonomic nervous system changes associated with biofield therapies [22]. There may, however, be no reliable change in perfusion associated with BFET, and the results seen could be attributed to unrelated, independent variables. No clear conclusions may be drawn from this small sample. In future studies, there may be benefit to the collection of perfusion data along with vital signs such as blood pressure and heart rate and environmental factors such as room temperature. This would allow for a more controlled setting to evaluate the reliability of flux measurements. Additionally, it may be important to make accommodations to image the wound and an uninjured part of the body to compare perfusion differences between these areas.

The results of this pilot study are promising, though several improvements could be made in future studies. It is plausible that the efficacy of this therapy may be related to burn depth and size. The severity of sequelae that results from burn injury may also vary depending on the time since injury. Future studies may benefit from the creation of cohorts based on burn depth, size, and time at which therapy occurs in

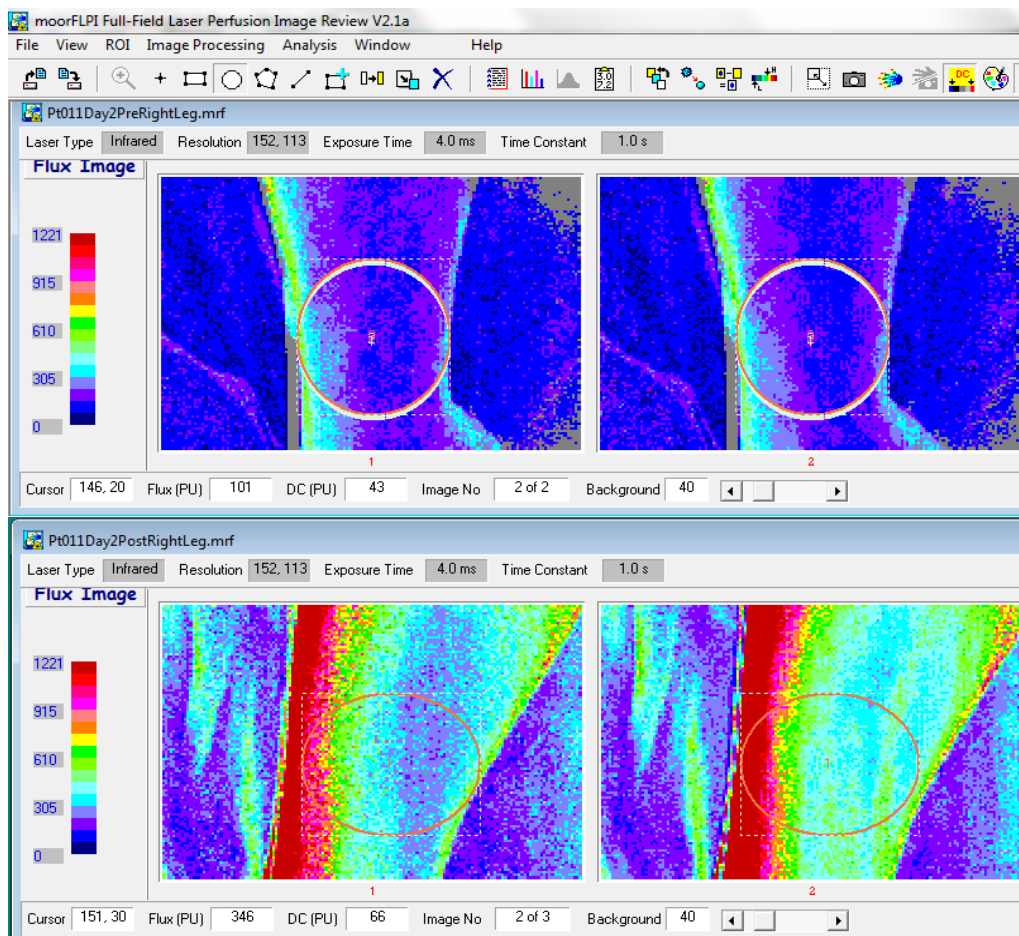
Compiled survey response topics and outcomes.

Question topics	Improved	Unchanged	Worsened
tension n=33	75.76%	12.12%	12.12%
stress n=32	71.83%	21.88%	0%
pain n=33	66.67%	24.24%	9.09%
anxiety n=33	75.76%	24.24%	0%
fatigue n=33	54.55%	36.36%	9.09%
itching n=32	68.75%	28.13%	3.13%
health satisfaction n=31	25.81%	64.52%	9.68%
feeling anxious n=32	65.63%	21.88%	12.50%
optimism n=31	29.03%	54.84%	16.13%
energy n=32	37.50%	56.25%	6.25%
feeling worn out n=32	56.25%	37.50%	6.25%
peacefulness n=33	63.64%	36.36%	0%

Table 1: Patient Survey Outcomes.



**Figure 1:** Field Laser Perfusion Imaging Perfusion Changes. Bar graph of perfusion, measured in flux, pre-BFET and post-BFET for all statistically significant results.  $P < 0.05$ . Error bars represent standard error of the mean.



**Figure 2:** Field Laser perfusion Images. Selected images from Field Laser Perfusion Imager before (above) and after (below) BFET.

the course of the subject's recovery. Lastly, many burn patients receive medications directed at the alleviation of pain, purities, and anxiety. These medications were not accounted for in this study and depending on dose and time administered, may have had a compounding effect on some of the symptoms evaluated.

## Conclusions

The need for improved management of common symptoms experienced by the burn injury population is obvious. Although burn care has improved dramatically in the past 40 years, the traditional pharmacologic approach to the treatment of these injuries has not sufficiently improved. Clinicians and patients should utilize tools beyond what has been traditionally available. In this small pilot study, BFET was associated with improvement in an array of symptoms for a majority of patients. The utility of BFET should be explored further, in an effort to consider independent variables that may have an effect on the subjective variables evaluated in this study.

## Authors' Contributions

PG contributed to development of study protocol, performed Biofield Energy Therapy and contributed to manuscript. JS contributed to development of study protocol, analyzed results, assisted in drafting the manuscript and was the principal investigator of the study. TT compiled and analyzed results and drafted the manuscript. AP helped develop the study protocol and enrolled subjects. KF recruited and enrolled subjects, compiled and analyzed results and drafted the manuscript. MJ contributed to the development of the study protocol, recruitment of subjects, and editing the manuscript.

## References

1. National Center for Complementary and Alternative Medicine.
2. Summer GJ, Puntillo KA, Miaskowski C, Green PG, Levine JD (2007) Burn injury pain: the continuing challenge. *J Pain* 8: 533-548.
3. Ilechukwu ST (2002) Psychiatry of the medically ill in the burn unit. *Psychiatr Clin North Am* 25: 129-147.
4. Miller SF, Bessey PQ, Schurr MJ, Browning SM, Jeng JC, et al. (2006) National Burn Repository 2005: a ten-year review. *J Burn Care Res* 27: 411-436.
5. Mahar PD, Wasiak J, O'Loughlin CJ, Christelis N, Arnold CA, et al. (2012) Frequency and use of pain assessment tools implemented in randomized controlled trials in the adult burns population: a systematic review. *Burns* 38: 147-154.
6. Pereira C, Murphy K, Herndon D (2004) Outcome measures in burn care. Is mortality dead? *Burns* 30: 761-771.
7. Latarjet J, Choinere M (1995) Pain in burn patients. *Burns* 21: 344-348.
8. Orrey DC, Bortsov AV, Hoskins JM, Shupp JW, Jones SW, et al. (2012) Catechol-O-methyltransferase genotype predicts pain severity in hospitalized burn patients. *J Burn Care Res* 33: 518-523.
9. Willebrand M, Andersson G, Ekselius L (2004) Prediction of psychological health after an accidental burn. *J Trauma* 57: 367-374.
10. Zachariae R, Lei U, Haedersdal M, Zachariae C (2012) Itch severity and quality of life in patients with pruritus: preliminary validity of a danish adaptation of the itch severity scale. *Acta Derm Venereol* 92: 508-514.
11. Haik J, Tessone A, Nota A, Mendes D, Raz L, et al. (2006) The use of video capture virtual reality in burn rehabilitation: the possibilities. *J Burn Care Res* 27: 195-197.
12. Hoffman HG, Patterson DR, Carrougner GJ, Sharar SR (2001) Effectiveness of virtual reality-based pain control with multiple treatments. *Clin J Pain* 17: 229-235.
13. Sharar SR, Miller W, Teeley A, Soltani M, Hoffman HG, et al. (2008) Applications of virtual reality for pain management in burn-injured patients. *Expert Rev Neurother* 8: 1667-1674.
14. Vitale A (2007) An integrative review of Reiki touch therapy research. *Holist Nurs Pract* 21: 167-179.
15. Legrain V, Crombez G, Mouraux A (2011) Controlling attention to nociceptive stimuli with working memory. *PLoS One* 6: e20926.
16. Krucoff MW, Crater SW, Gallup D, Blankenship JC, Cuffe M, et al. (2005) Music, imagery, touch, and prayer as adjuncts to interventional cardiac care: the Monitoring and Actualisation of Noetic Trainings (MANTRA) II randomised study. *Lancet* 366: 211-217.
17. Danhauer SC, Marler B, Rutherford CA, Lovato JF, Asbury DY, et al. (2007) Music or guided imagery for women undergoing colposcopy: a randomized controlled study of effects on anxiety, perceived pain, and patient satisfaction. *J Low Genit Tract Dis* 11: 39-45.
18. Thomas KM, Sethares KA (2010) Is guided imagery effective in reducing pain and anxiety in the postoperative total joint arthroplasty patient? *Orthop Nurs* 29: 393-399.
19. Mackay N, Hansen S, McFarlane O (2004) Autonomic nervous system changes during Reiki treatment: a preliminary study. *J Altern Complement Med* 10: 1077-1081.
20. Choi CM, Bennett RG (2003) Laser Dopplers to determine cutaneous blood flow. *Dermatol Surg* 29: 272-280.
21. Lanthier T, Miller C, McDonell WN, Yager JA, Roth JH (1990) Use of laser Doppler flowmetry to determine blood flow in and viability of island axial pattern skin flaps in rabbits. *Am J Vet Res* 51: 1914-1921.
22. Walkinshaw M, Holloway A, Bulkley A, Engrav LH (1987) Clinical evaluation of laser Doppler blood flow measurements in free flaps. *Ann Plast Surg* 18: 212-217.
23. Byers JF, Bridges S, Kijek J, LaBorde P (2001) Burn patients' pain and anxiety experiences. *J Burn Care Rehabil* 22: 144-149.
24. Roy M, Piché M, Chen JI, Peretz I, Rainville P (2009) Cerebral and spinal modulation of pain by emotions. *Proc Natl Acad Sci USA* 106: 20900-20905.