COMPARATIVE STUDY

A comparative study of Thai massage and Swedish massage relative to physiological and psychological measures

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Summary Many cultures have a massage or touch-based therapy that has been influenced by the development of culture over time. The origins of Thai massage (TM) can be traced to oriental medicine and yoga. Swedish massage (SM), the most popular type of massage practiced in the US, is based on anatomy learned from dissection. To date TM has been largely unexplored. The purpose of this study was to compare and contrast a single general massage treatment, using one of two different styles of massage, on physiological and psychological outcomes.

Fifty-three participants enrolled in the study and were randomly assigned to receive one TM or SM treatment. Dependent variables included blood pressure, heart rate, range-of-motion, perceived anxiety, and mood. Physiological assessments (blood pressure, heart rate, range of motion) were conducted immediately before (T1) and after the massage (T2). Psychological assessments (anxiety and mood) were conducted at T1, T2, and at 48-h follow-up (T3).

A multivariate analysis of variance (MANOVA) revealed overall significant differences for the massage. However, there were no differences between the treatment groups. Repeated measures analysis of variance (ANOVA) for individual dependent variables found significant improvement between T1 and T2 in resting heart rate, ankle plantar flexion, ankle dorsiflexion, and shoulder abduction/rotation. Significant overall improvement was noted in mood at T2, and in tension-anxiety as well as confusion-bewilderment at T2 and T3 compared to T1. The findings suggest that a single treatment of TM is as effective as SM on general physiological and psychological outcomes.
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Introduction

Massage is a generic term that encompasses a wide range of touch therapies. Essentially massage is manipulation of soft tissue (Fritz, 1995). A wide variety of techniques are used in massage treatments including pressure, kneading, rubbing, and mobilization (Hemmings, 2001). A basic massage session is considered to last 60 min (Fritz, 1995), yet a treatment can last a few minutes (Moyer et al., 2004), or several hours (Avraham, 2001; Lambert and Setthakorn, 1992; Shapiro, 1999).

Many cultures have a touch-based therapy or form of bodywork (Jahnke, 1985). Cultural philosophy has influenced the evolution of therapeutic bodywork over time (Jahnke, 1985). Ayurveda, oriental medicine and Buddhism are considered to have influenced Thai massage (TM) (Stillerman, 1996) which is not widely practiced outside of Thailand, but is becoming more well-known in western countries. Europe gave rise to Swedish massage (SM), which migrated to America along with the Europeans (Fritz, 1995) and is the predominant form of therapeutic bodywork practiced in the United States (Trivieri, 2001).

TM is an energetic modality that uses pressure and stretches to address the energetic pathways (sen lines) and specific points on the surface of the body (Gold, 2003; Lambert and Setthakorn, 1992). TM is performed on a floor mat with the client fully clothed (Avraham, 2001; Lambert and Setthakorn, 1992; Mercati, 1998). The practitioner uses his own body weight to apply pressure (applied with the palms, thumbs, elbows, knees, and feet), circling movements (made with the palms, thumbs, forearms, and fingers), and stretch the client. A variety of stretches, many similar to yoga postures, are employed in treatment including static stretching, dynamic movement, and myofascial release. A TM treatment can last for 2 h or more (Mercati, 1998). Massage is one aspect of Traditional Thai Medicine which has been enjoying a revival in Thailand in recent decades. Practitioners of Traditional Thai Medicine and TM practitioners sometimes combine massage with herbal remedies, nutrition, and spiritual or supernatural healing (Banpasirichote, 1989).

SM is primarily mechanical, with origins traced to medical gymnastics (Goldstone, 2000) and based on knowledge of anatomy learned from dissection (Tappan, 1988). The SM client lies on a massage table and is unclothed except for a sheet or towel. The covering (drape) is opened for massage and replaced when treatment of that body part is concluded (Holey and Cook, 2003). SM is based on five basic strokes (effleurage, petrissage, friction, tapotement, and vibration) which are administered using a lubricant to the skin. A basic massage session generally lasts 1 h (Fritz, 1995), although longer or shorter treatments are common in different settings. Muscles and connective tissue are specifically addressed, and strokes are delivered in the direction of lymphatic flow and venous return (Tappan, 1988). The type of stroke is thought to play a role in the response of the tissue and therefore in the physiological effects of massage (Goats, 1994).

Research indicates that people use a variety of forms of alternative medicine including bodywork therapies (Eisenberg et al., 1998; Eisenberg et al., 1993) in treatment for an array of conditions (Juhan, 1987) or as part of a preventive care regimen (Ramsey, 1997). A recent consumer survey found that among respondents who had a massage within the previous 5 years 25% did so for soreness, pain management, or injury-related reasons, and 22% for relaxation or stress relief (2003 Massage therapy consumer survey fact sheet, 2003).

There are two fundamental approaches to massage: massage for wellness and medical massage (Fritz, 1995). Wellness massage is general massage used in preventive healthcare regimes for health maintenance. In the SM tradition, medical massage is considered rehabilitative and uses techniques to address symptoms associated with medical conditions. TM practice includes curative massage for illness/disease and general massage that aims to restore energetic balance (Banpasirichote, 1989). Client assessment is an important part of medical or curative massage. The emphasis in SM is on physical symptoms, while in TM and other eastern modalities evaluation is holistic and includes the physical, social, and psychological state of the client (Ohashi, 1996). Research supports the effectiveness of therapeutic massage (Field, 2002), and there are data available on general physiological and perceptual outcomes. However, much of the research to date has focused on medical massage using SM as a complementary treatment for an array of illnesses and diseases (Moyer et al., 2004). Very little research has attempted to evaluate treatment outcomes for a general massage treatment on healthy subjects.

Given the vast array of touch-based therapies which employ different techniques, it is conceivable that differences occur in treatment between modalities. To date there are few reports available in English on research involving TM. The present study was a preliminary investigation into TM outcomes and exploration of potential differences between TM and SM.

Considerable differences between the two modalities suggest that there might be differences in measurable outcomes from a single treatment. Different theoretical foundations and techniques (the mechanical emphasis of SM compared to the reflexive nature of TM) suggest that there may be differences between the two styles. The purpose of this study was to compare and contrast a single general massage treatment, using one of two different styles of massage, on physiological and psychological outcomes. The overall hypothesis was that both groups would experience healthy improvements from pre-test to post-test. A secondary hypothesis was that the SM group would report more post-treatment fatigue and that the perceptual treatment effects would not carry through to the 48-h follow-up when compared to the TM group. A tertiary hypothesis was that TM would result in positive changes in range of motion and flexibility when compared to SM.

Method

This study employed a single treatment, random assignment design in order to collect exploratory data on the differences between modalities when the same areas of the body are treated in massage sessions of equal length. All participants received one 90-min massage. They were randomly assigned, via sealed envelope selection, to receive a TM or a SM. Use of a control (no treatment) group was considered for this study, but not considered feasible given the length of the treatment session. Physiological measures were taken immediately before (T1) and after the massage (T2). Psychological assessments occurred at T1, T2, and 48-h after the massage (T3).

Participants

Participants were recruited from Arizona State University and the surrounding community via flyer and email announcement. All were required to satisfy the following criteria for inclusion (a) between ages of 18 and 65, (b) not pregnant, (c) not under treatment for hypertension, (d) not in acute pain or suffering from acute illness, (e) not under treatment for orthopedic (bone or joint) pain or condition, (f) not have had joint replacement surgery, (g) not recovering from recent surgery, and (h) not suffering from skin rash or other dermatological conditions that could be aggravated by application of massage oil or lotion. Interested participants were screened to ensure

that they met the inclusion criteria and informed of the study procedures. Upon arriving for their massage appointment all participants were required to read and sign informed consent prior to engaging in any study procedures. The study was approved by the Arizona State University Institutional Review Board.

Although some research has utilized volunteers or relatively untrained (unlicensed or uncertified) individuals to administer massages (Moyer et al., 2004), the complexities of the treatments in this study necessitated the involvement of professional massage therapists. The massage treatments were administered by three massage therapists, licensed by the state of Arizona. Each was a graduate of a massage therapy program that exceeded 500 clock hours of training and provided instruction in SM and related modalities. All of the massage therapists had at least 16 h training in TM prior to the study. The massage therapists received 5 h of instruction in the SM protocol and they received and additional 35 h of training in TM and the TM protocol used for the study.

Procedures

After signing informed consent, participants selected a sealed envelope randomly assigning them to one of the two massage groups. The sealed envelope was given to the massage therapist. A research assistant conducted baseline assessments (T1), after which participants were escorted to the massage room. The massage therapist revealed the treatment assignment and administered the massage. Previous research suggests that massage facilitates disclosure (Field et al., 1992) so the massage therapists were asked to refrain from talking during the massage unless it was related to the treatment.

All massage treatments followed a standard protocol script for a general massage treatment. Both treatments included massage to the same areas of the body: back, hips, legs, feet, abdomen, arms, hands, upper chest, neck, scalp, head, and face. The treatment sequences and massage techniques used were different for each modality, in accordance with characteristics of each modality, and based on published resources (Fritz, 1995; Lambert and Setthakorn, 1992). SM treatment began with the back and ended with the face. The participant was treated unclothed, but properly draped, on a massage table in the prone and supine positions. Unscented massage lotion was used as lubricant, to deliver effleurage, petrissage, friction, tapotement, and vibration

strokes appropriate to each area of the body being treated in sequence. The TM treatment began with the feet and ended with the back. The fully clothed participant was treated on a floor mat in the supine, side-lying, prone, and sitting positions. The massage protocol consisted of stretches, pressure, and circling movements to address the sen (energy) lines on the body.

After the conclusion of the massage session, the massage therapist returned the participant to the research assistant for post-massage assessments (T2). Approximately 48-h after the massage participants received a phone call reminder to complete the follow-up assessments (T3) which were returned to the researcher via regular mail. Participants were instructed not to inform the research assistant about the treatment group to allow the research assistants and investigators to be blind to group assignment. Data from 53 massage appointments were collected over an 11 week period. After the final massage appointment, the treatment assignments were revealed to the investigators for data analysis.

Setting

To account for possible impact of the setting on the outcome, the massage room was set up in the same manner for all massage treatments. The same mat was used for TM and the same table was used for SM, with the table height adjusted for the massage therapist's comfort. The linens for all treatments were identical, the room was dimly lit, and a wave machine provided a sound backdrop to mask outside noise. Unscented massage cream was used for all of the SM treatments. To account for the private time needed for the SM participants to undress and redress, the TM participants were left alone in the massage room for an equivalent time before and after the massage.

Measures

For general descriptive data, participants were asked for demographic information and to fill out a survey which contained questions about their previous experience with massage. All measures were collected in the same manner at T1 and T2 by a research assistant who was blinded to treatment assignment. Each of the three research assistants had prior professional experience administering fitness and wellness assessments and participated in an additional training session for the assessments used in this study.

Physiological data

Physiological measures assessed at T1 and T2 included blood pressure, resting heart rate, and range of motion. Blood pressure and resting heart rate were measured with the participant in a seated position. Active range of motion was assessed for the shoulder and ankle joints, and the trunk. Shoulder rotation and abduction was evaluated using the "scratch test." The distance between the fingertips was measured in inches with both arms medially rotated, elbows flexed, one arm extended upward and the other extended downward behind the back. The test was repeated with the arm positions reversed. Dorsiflexion and plantar flexion of both ankles was measured with a goniometer. Unilateral results for the shoulder and ankles were averaged for data analysis. Trunk flexion was measured in centimeters using a sit-and-reach box.

Psychological data

Psychological measures included the state portion of the State-Trait Anxiety Inventory (STAI) and the Profile of Mood States (POMS). The STAI (Spielberger et al., 1983) is a 20-item test that measures of changes in anxiety over time (Fig. 1). The test includes both anxiety-present and anxiety-absent items. Each item is answered on a 4-point Likert scale reflecting how the person feels at the moment ranging from "not at all" to "very much so." The POMS Brief form (McNair et al., 1971) measures overall mood as well as six mood factors. The 30-item test consists of adjectives that describe feelings. Each item is answered on a 5-point Likert scale reflecting how a person feels at a particular time. Possible answers range from "not at all" to "extremely." The time reference for the test is adaptable for each setting where the POMS is administered. For this study, participants were
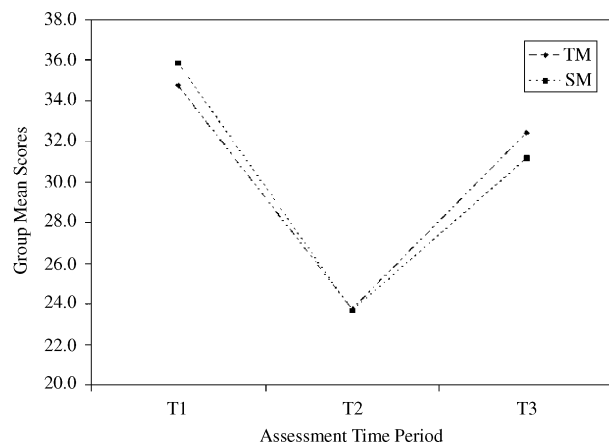

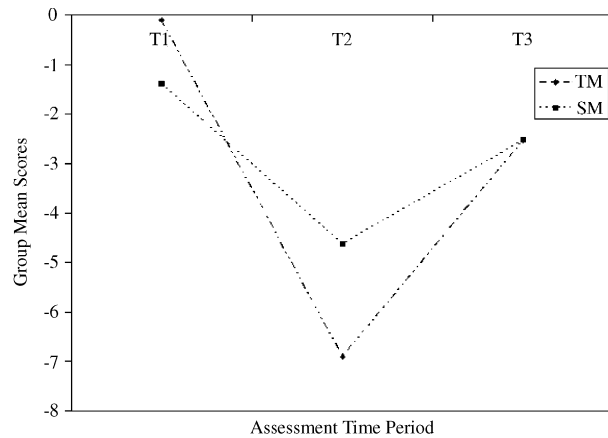**Figure 1** State Anxiety Inventory group means.

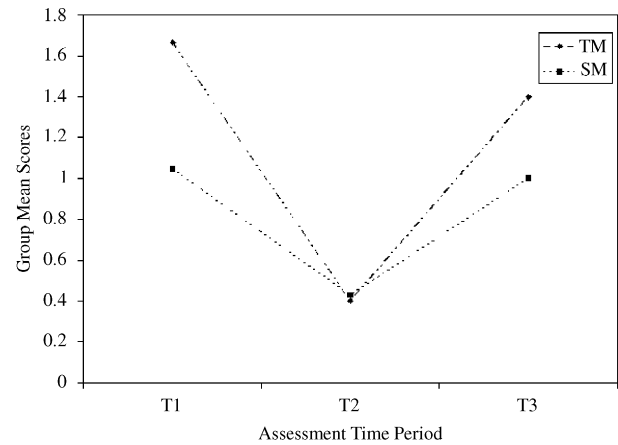**Figure 2** Profile of Mood States: total mood disturbance group means.

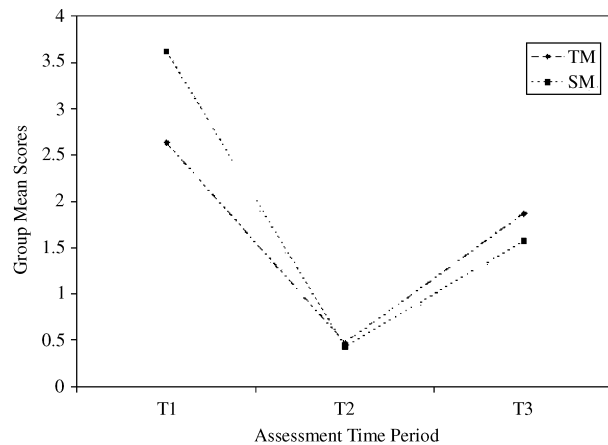**Figure 3** Profile of Mood States: tension-anxiety group means.

Figure 4 Profile of Mood States: depression-dejection group means.

Figure 5 Profile of Mood States: anger-hostility group means.
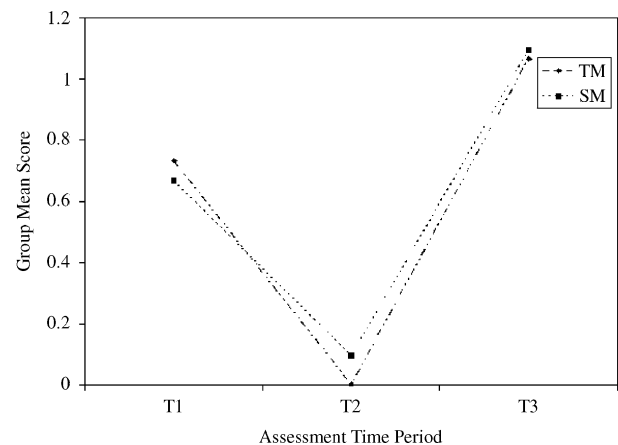

Figure 6 Profile of Mood States: vigor-activity group means.

asked to respond based on their immediate feelings. POMS scores were calculated for overall mood and each of the six factors (tension-anxiety (TA), depression-dejection, anger-hostility, vigor-activity, fatigue-inertia, and confusion-bewilderment (CB); Figs. 2–8). The vigor-activity score is weighed negatively and subtracted from the total of the other five factors for an overall mood (total mood disturbance) score. Both the STAI and POMS are self-administered, and have been used in previous research involving therapeutic massage (Moyer et al., 2004).

Data analysis

Data were analyzed using Statistical Package for Social Sciences (SPSS 12.0 for PC). A multivariate analysis of variance (MANOVA) was used to analyze the overall data. Significant overall effects we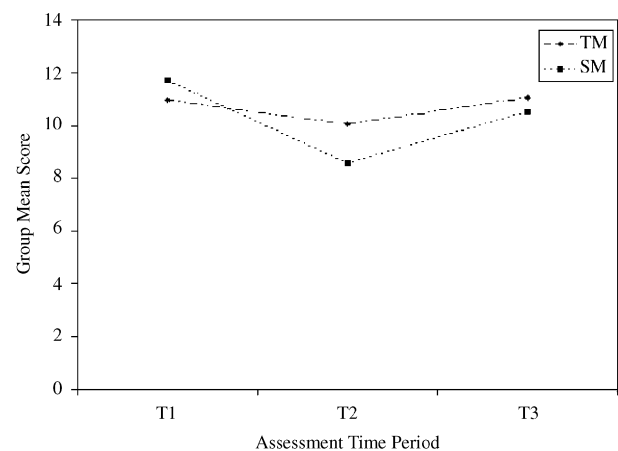re followed by a repeated measures analysis of variance (ANOVA) to assess differences in the physiological variables at T1 and T2 and psychological variables at T1, T2, and T3. Statistical
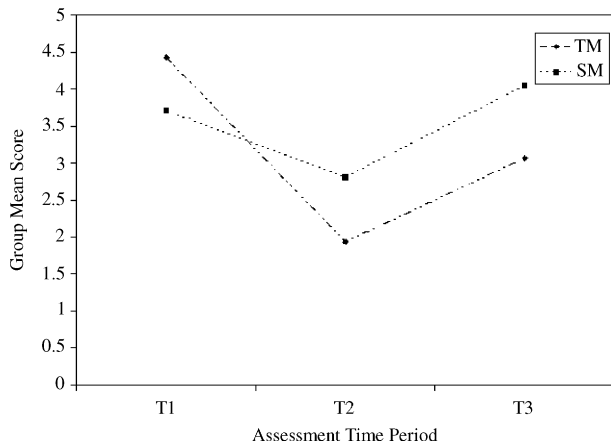
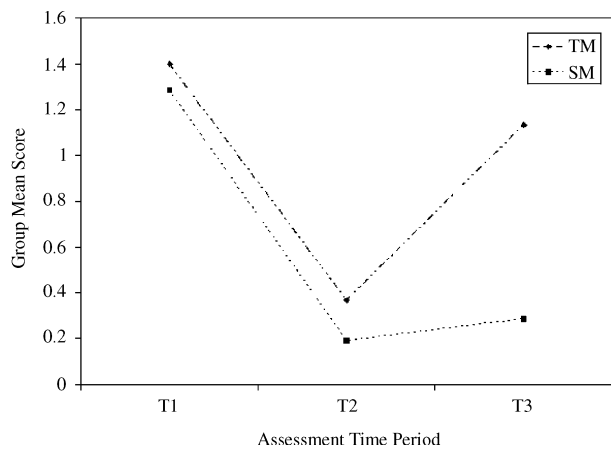**Figure 7** Profile of Mood States: fatigue-inertia group means.

Figure 8 Profile of Mood States: confusion-bewilderment group means.

significance was set equal to .05, and against this backdrop of alpha = .05, the statistical analyses were performed.

Results

Out of 60 massage appointments made for the study, 53 participants arrived for their appointment and received a massage. Physical data were collected for 53 participants, and psychological data were collected at all three time periods for 51 participants (two participants did not return data for T3). Thirty participants were randomly assigned to the TM group, and 23 to the SM group. At the conclusion of data collection, the seven unused treatment assignment envelopes were for SM treatments. Participants range in age from 20 to 61 (Mean = 33.7, SD 10.5), the majority were

Table 1 Descriptive characteristics.

Age	Mean 33.7	SD 10.5	
		N	(%)
Gender	Female	38	71.7
	Male	15	28.3
Race	White	45	84.9
	Black	2	3.8
	Hispanic	3	5.7
	Asian	2	3.8
	Native American	1	1.9

Table 2 Prior experience with massage.

	N	(%)
Received at least one Swedish massage before this study	38	71.7
Received at least one Thai massage before this study	4	7.5
How often do you generally get a massage?		
Weekly	1	1.9
Monthly	4	7.5
Every few months	14	26.4
Once per year	16	30.2
Every few years	7	13.2
Never had a professional massage	11	20.8

female (71.7%), and white (84.9%) (see Table 1). The majority of the participants ($n = 43$, 79.2%) reported that they had received at least one professional massage before the study. Prior experience was primarily with SM (71.7%) compared to TM (7.5%) (see Table 2).

A MANOVA revealed overall significant differences for the massage treatment, Wilks' $\lambda = .001$, $F (35, 15) = 419$, $P = .05$ (Power = 1.00, effect size = .992). However, the difference was not significant according to treatment group assignment. Follow-up tests were conducted to assess changes in the mean values for each of the physiological and psychological variables for all participants who received a massage, regardless of treatment group assignment.

Physiological variables

Separate repeated measures ANOVAs for the physiological variables found significant improvement after the massage (regardless of treatment

Table 3 Physiological variables.

		T1			T2			Effect	
		TM	SM	Total	TM	SM	Total	Size	Power
Resting heart rate (bpm)	Mean	68.6	69.6	69.0	62.1	65.0	63.4*	0.252	0.982
	SD	10.99	12.28	11.47	12.1	13.27	12.56		
Systolic blood pressure (mmHg)	Mean	116.0	119.8	117.6	115.0	120.3	117.3	0.003	0.065
	SD	6.71	10.60	8.73	7.32	11.59	9.68		
Diastolic blood pressure (mmHg)	Mean	71.8	72.9	72.3	71.5	73.5	72.4	0.001	0.053
	SD	8.99	7.63	8.37	9.39	8.73	9.08		
Ankle range of motion (deg)									
Plantar flexion	Mean	47.7	40.4	44.5	49.9	43.6	47.2*	0.111	0.699
	SD	12.76	9.90	12.06	12.92	10.83	12.36		
Dorsiflexion	Mean	15.6	18.3	16.8	17.8	18.2	18.0*	0.027	0.214
	SD	6.80	9.05	7.89	6.75	7.51	7.02		
Shoulder abduction/rotation (in)	Mean	2.2	2.7	2.4	1.6	2.4	2.0*	0.173	0.893
	SD	2.31	3.48	2.86	1.81	3.16	2.49		
Trunk flexion (cm)	Mean	27.3	23.7	25.3	27.3	24.7	25.8	0.042	0.314
	SD	10.00	8.96	9.50	10.32	9.22	9.71		

*Significant ($P < .05$) improvement after massage.

Table 4 State-Anxiety Inventory.

		T1			T2			T3		
		TM	SM	Total	TM	SM	Total	TM	SM	Total
STAI	Mean	34.7	35.9	35.2	23.7	23.7	23.7*	32.4	31.1	31.9*
	SD	9.11	7.44	8.40	4.53	4.42	4.44	9.78	8.52	9.21

*Significant ($P < .05$) improvement after massage.

assignment) in resting heart rate, ankle plantar flexion, ankle dorsiflexion, and shoulder abduction/rotation (see Table 3). No significant differences were found between the massage two modalities.

Psychological variables

Significant improvements in anxiety as measured by the STAI were noted in the repeated measures ANOVA immediately following the massage (T2) and at follow-up (T3) compared to baseline. However, as with the overall results for the study there were no significant differences based on massage treatment group (see Table 4). The largest improvement was noted from T1 to T2 (see Fig. 1). The mean STAI value at T3 fell below baseline. These findings indicate that there are immediate improvements in anxiety following massage and that these effects may last up to 48 h after the massage. Repeated

measures ANOVA found significant improvement on the POMS in the overall mood score (TMD) at T2, and in two individual factors: TA and CB at T2 and T3 (see Table 5).

Discussion

The findings of this study indicate that there are physiological and psychological benefits associated with a general massage treatment regardless of the modality. The lack of significant post-massage differences between the treatment groups was unexpected, given the different characteristics of the treatment protocols. The results indicate that TM and SM produce similar outcomes when a general treatment protocol is employed in treatment. This suggests that massage to the same areas of the body, to healthy adults, regardless of the

Table 5 Profile of Mood States.

		T1			T2			T3		
		TM	SM	Total	TM	SM	Total	TM	SM	Total
Total mood disturbance	Mean	−0.1	−1.4	−0.6	−6.9	−4.6	−6.0*	−2.5	−2.5	−2.5
	SD	11.57	8.59	10.37	7.95	7.76	7.88	16.72	10.47	14.36
Tension-anxiety	Mean	2.6	3.6	3.0	0.5	0.4	0.5*	1.9	1.6	1.7*
	SD	2.68	3.35	2.99	1.11	1.33	1.19	2.46	2.60	2.50
Depression-dejection	Mean	1.7	1.0	1.4	0.4	0.4	0.4	1.4	1.0	1.2
	SD	2.17	1.80	2.03	0.86	0.87	0.85	2.86	1.64	2.42
Anger-hostility	Mean	0.7	0.7	0.7	0.0	0.1	0.0	1.1	1.1	1.1
	SD	1.57	1.28	1.45	0.00	0.30	0.20	3.25	2.55	2.95
Vigor-activity[a]	Mean	11.0	11.7	11.3	10.1	8.6	9.5	11.1	10.5	10.8
	SD	5.01	5.46	5.16	6.10	4.68	5.55	6.72	5.19	6.08
Fatigue-inertia	Mean	4.4	3.7	4.1	1.9	2.8	2.3	3.1	4.0	3.5
	SD	4.11	3.02	3.68	2.32	3.96	3.09	3.70	3.93	3.79
Confusion-bewilderment	Mean	1.4	1.3	1.4	0.4	0.2	0.3*	1.1	0.3	0.8*
	SD	1.48	1.65	1.53	0.76	0.68	0.73	1.76	0.78	1.49

*Significant ($P < .05$) improvement after massage.
[a]Higher value for vigor-activity is optimal. Lower value for overall mood (total mood disturbance) and all other factors are considered optimal. The vigor-activity score is weighed negatively and subtracted from the total of the other five factors for the total mood disturbance score.

techniques employed or the intention of the massage therapist will result in similar physiological and psychological improvements.

This study did evaluate the differences between two massage modalities for a single treatment in comparison to each other. A variety of control or comparison conditions have been employed in massage research including attention (Smith et al., 2000), conversation (Stevenson, 1994), standard care (Hernandez-Reif et al., 2001; Wilkie et al., 2000). As previously mentioned, a non-massage control group was not considered feasible for this study given the length of the treatment. Research has found that there are benefits associated with a single massage treatment (Field et al., 1997; Okvat et al., 2002). The findings of this study are based on a single treatment session lasting 90 min. The overall aim of this study was to provide exploratory data on physiological and psychological outcomes involving two different styles of massage. The results indicate that benefits are associated with a single massage. Additional improvements may be found with multiple massages administered over a longer time period or when comparing therapeutic massage to another type of treatment for an equivalent length of time.

Physiological data

The significant decrease in heart rate supports the theory that massage has an effect on the para-sympathetic nervous system (Moyer et al., 2004). However, the lack of significant improvement in blood pressure at T2 does not support this assumption. In previous studies, massage has been more effective than comparison treatments in improving blood pressure after a single session (Moyer et al., 2004). Changes in blood pressure on a systemic level can be brought about through neurological or endocrine pathways. When studied in a controlled manner massage has been shown to improve blood flow on a localized level (Goats, 1994), this study evaluated specific massage techniques (such as tapotement and effleurage) and compared changes in blood flow within a single limb, or using a non-massaged limb as a control. The exact mechanism by which a combination of massage techniques as used in treatment might cause alteration in either the neurological or endocrine pathways on a systemic level remains unclear. Future research on a variety of massage modalities should continue to evaluate blood pressure changes resulting from a single treatment as well as multiple treatments over time.

Although range of motion for the TM group did not improve significantly more than the SM group as hypothesized, the findings support the popular belief that massage increases range of motion (Holey and Cook, 2003). It is possible that the assessment methods used in this study impacted the findings. However, the methods were selected for two primary reasons. First, many passive range-of-motion assessments require one examiner to

manipulate the limb and another to take a measurement. Limited resources available to the investigator allowed for one research assistant per session. Active range-of-motion assessments permitted the data collection for each session to be performed by a single research assistant. Several participants had to be encouraged to participate in the T2 assessments. Second, the researchers are required to allow participants to withdraw from a study at will as stated in the informed consent. Since the time requested of participants exceeded 2 h on the day of their massage, a short test battery was needed to encourage participation in the T2 data collection. Three assessments were specifically selected for this study that would allow relatively quick measures evaluating the total body: upper extremity (shoulder), lower extremity (ankle), and torso (trunk flexion). It is possible that more pronounced improvements in range-of-motion would be noted with passive assessments and that evaluation of more joints per participants using both simple and complex movements might yield more interesting findings.

The lack of significant differences in range of motion between the groups was unexpected given the emphasis on stretching in TM and the limited inclusion of stretching and movement in the SM treatment. This suggests that massage alone or in combination with stretching can bring about changes in muscle length. Theoretical differences between the modalities would seem to suggest that different improvements would be noted in range-of-motion in different areas of the body. A sizeable amount of TM is devoted to work on the feet and ankles to release blocked energy. In SM treatment to the back is generally stressed. While the results of this study did not find a difference between treatments, it is possible that treatments conducted over time can increase range-of-motion for habitually contracted muscles in areas emphasized in treatment.

Psychological data

The data support previous research that massage improves mood and reduces anxiety. The significant improvement in the psychological assessments give credence to the assumption that there are benefits to massage as a subjective experience (Cawley, 1997; Manheim, 1994). Improvements from T1 through T3 also indicate that the perceived benefits of massage may continue for up to 2 days. The improvements in anxiety found in both the STAI and the TA factor on the POMS are in line with previous research findings (Field, 1998; Moyer et al., 2004).

The assumption could be made that the overall mood score and individual mood factors would parallel the anxiety scores. The vigor-activity and fatigue-inertia results did not support the assumption that recipients of a TM treatment feel more energetic afterwards compared to an SM treatment. While massage is not generally recommended to improve confusion or cognitive ability, significant improvement in CB at T2 and T3 support the overall subjective improvements.

Conclusion

In summary, the findings support previous research that there are benefits associated with a single massage treatment. Despite the reflexive and flexibility emphasis of TM and the mechanical emphasis of SM, similar outcomes may be found with wellness massage protocols in treatments of the same duration. TM or similar body-based therapies may be particularly useful for massage patients who are uncomfortable disrobing for a treatment or would like to experience a new modality. Given the breadth of the field, there are ample opportunities for future research on massage and bodywork. Future research should evaluate the benefits of repeated general TM treatments over the longer term. There are opportunities to compare the effects of general massage with treatments designed by the massage therapist to addresses specific client needs based upon the pre-treatment assessment. With the array of massage and bodywork modalities available to the consumer, research should compare general outcomes of different modalities, and explore how they can be used as an alternative therapy or as a complementary treatment for disease or illness.

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