

## The Effectiveness of Massage Therapy Intervention on Reducing Anxiety in the Workplace

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*This study evaluated the effectiveness of an on-site chair massage therapy program in reducing anxiety levels of employees. A quasi-experimental pretest/posttest control group design was used to determine changes in anxiety levels due to the massage therapy intervention. Eighteen subjects participated in the chair massage therapy program for 6 weeks. Fifteen control group subjects participated in break therapy. For 15 minutes weekly, subjects either received a massage or were allowed a break, depending on their assignment to either the treatment or control condition. Participants' stress levels were measured with the State-Trait Anxiety Inventory Self-Assessment Questionnaire. This measure was administered twice during pretest, posttest, and delayed posttest to achieve stable measures. Significant reductions in anxiety levels were found for the massage group. Future research and implications for management are discussed.*

Stress in the workplace has been and continues to be a pervasive and costly problem in organizations. Under normal conditions, workplaces can be inherently stressful, due to such organizational realities as deadlines (real and self-imposed), presentations, pressures for flawless work, disagreements with fellow employees, and workplace changes. To mitigate employee stress, many organizations have instigated stress-reduction programs as part of a Wellness Program or an Employee Assistance Program. Techniques for reducing stress include physical fitness, relaxation, meditation, time management, and counseling programs. One technique that has been tried by several companies, including Heinz, AT&T, Apple Computer, and Warner Lambert, is company-sponsored in-office chair massage therapy programs. This type of massage can

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be done while the subject individual is fully clothed; it targets the head, neck, shoulders, back, arms, and hands of the subject, all common areas where stress manifests muscle pain and fatigue. Little research exists on the effects of massage on stress and anxiety levels. This study examined the effects of on-site chair massage therapy on self-reported anxiety levels of employees in a downsizing organization.

Organizations are currently going through unprecedented rates of downsizing (Koretz, 1995)—a phenomenon that undoubtedly is stressful for employees of these organizations. In the first quarter of 1994, announced staff reductions in U.S. firms totaled 192,572, a rate of more than 3,100 employees per day (Byrne, 1994). The sources of anxiety for those employed in downsizing organizations include fear of job loss, low morale, parting with coworkers, job change, and increases in workload. Wilson, Larson, and Stone (1993) studied the stressful effects of job insecurity among staff and faculty at a university undergoing budgetary cutbacks. They found that perceived job insecurity was an influential stressor for the university employees directly affected by job insecurity. Also, as the threat of job loss continued, Wilson et al. found a decline in emotional well-being and perceptions of increased stress among affected employees. Hence, employees of a downsizing organization might manifest not only stress levels inherent in normal work activities, but also the added stress associated with the workplace phenomenon of downsizing.

### Massage as an Anxiety Reliever

Greenwood and Greenwood (1979) provided an explanation of how massage mitigates stress. Muscular tension is a physiological symptom of stress. Over time, muscle tension will cause muscles to become tight and inelastic. When muscles lose their resiliency, they lose their ability to release tension, causing such problems as back pain and stiff necks. Many health care professionals regard touch as vitally important in interactions and healing (Ross-Flanigan, 1995). Siegel (1993) noted that because of the benefits of touch on anxiety and recovery, therapeutic massage is gradually becoming a recognized health care profession.

Benjamin (1986) noted that massage has entered the mainstream of corporate life. A considerable amount of popular literature touts massage as a muscle spasm eliminator, a productivity booster, a creativity inspirer, and a stress reliever (e.g., Dilks, 1987; Hinderyckx, 1991; Jones, 1990; Lally & Meyers, 1990; Ross-Flanigan, 1995; Sigman, 1991; Washer, 1988), although the number of scientific studies to support such claims are limited. Most such conclusions appear to be based on informal feedback from employees participating in massage therapy programs. However, the effects of massage therapy have been the subject of several systematic studies.

### Massage Therapy-Related Studies

Five previous studies have examined the effects of massage on anxiety levels. Longworth (1982) examined the effects of a 27-minute, slow-stroke, back massage on anxiety levels in a sample of 32 female nursing school faculty, staff, and students. Comparison of the State-Trait Anxiety Inventory completed before and just after the

massage showed that subjects were significantly more relaxed after massage therapy. Link (1985) compared the effectiveness of three stress management treatments—massage, restricted environmental stimulation (floatation), and stress management training. Although each group showed positive results in reducing physiological and psychological measures of stress, the massage group manifested the strongest effect.

Levin (1990) examined the effects of a 1-hour full body massage on physiological measures of stress. To induce stress, Levin required participants (36 students) in the intervention condition to perform certain tasks (mental arithmetic, structured interviews, word tests, and video games) the day before receiving the massage. On the second day of the study, control group participants read a magazine for an hour whereas massage participants received a 1-hour full body massage. Results indicated that the massage group reported lower levels of state anxiety after the massage than did the control group. Results also showed improvements in heart rate and blood pressure. Glaser (1990) conducted a similar study with 58 college students, which also showed that massage decreased anxiety levels. Although both studies provide support for the positive effects of massage on stress, the studies examined stress levels after only one massage, and subjects were not employees in a work environment.

Gale (1992) investigated the effects of a daily 10-minute neck and shoulder massage on stress levels for 23 critical care nurses (22 females and 1 male). Subjects were divided into control and massage groups. During a 6-week period, the massage group participants were given a 10-minute neck and shoulder massage plus a 5-minute rest period, whereas control group participants took a 15-minute break away from their work each day the individual worked. This study showed that both groups demonstrated a reduction in stress. However, the massage group demonstrated a greater decrease in stress.

The purpose of the present study was to examine the effect of massage therapy on levels of stress, as evidenced by self-reported anxiety, in professional working men and women employed in a downsizing organization. We chose to conduct the intervention in a downsizing organization because of the accompanying stress that occurs for employees in such organizations. Also, when reductions in staffing are planned, individuals may feel that the organization does not value its work force. Sigman (1991) noted that massage is another method for a company to show care and appreciation for staff.

This study extended previous research on massage intervention in several ways: First, the study involved a larger sample size than had been included previously; second, subjects were employees of varying ages (versus all college students); third, both males and females were involved (versus females only); fourth, subjects were in a variety of occupations within an organization (versus a single occupation, such as nurses); fifth, work-related stress was not induced but was rather an inherent workplace condition due to downsizing; sixth, whereas other studies have used daily massages or 1-hour full body massages (both of which are prohibitively costly for an organization to provide employees), here the effect of a more feasible massage program of 15-minute massages conducted once a week was examined.

## Sample

Thirty-four participants were recruited via flyers explaining participation in the study. These flyers had been mailed to all members of the Finance and the Research & Development functions at a large Midwestern manufacturing organization. Volunteers were selected randomly, within gender, for placement into the treatment condition (chair massage therapy) or the control condition (break therapy). As can be seen in Table 1, there were approximately equal proportions in each group for several demographic variables, including age, marital status, education level, prior experience with relaxation techniques, hours worked per week, and years with current employer. Eighteen subjects were assigned to the treatment condition and sixteen subjects to the control condition. Unfortunately, one participant in the control condition dropped out of the study during the intervention period.

Approximately half of the subjects reported using some form of relaxation technique. None of the subjects acknowledged having previous experience with on-site chair massage. Twenty (61%) of the participants were female, and thirteen (39%) were male. The average age of the subjects was 40 years.

## Procedure

All employees participating in this quasi-experimental field study worked in the Finance function or the Research & Development function, at both the clerical and the professional levels. In the preceding 4 years, the company had experienced multiple restructurings and downsizings, consequently reducing its work force from more than 8,000 to fewer than 7,000 employees. Specifically, the Finance function had been reduced by approximately one third over that time, and Research & Development had been reduced by approximately 15%.

Voluntary participants were asked to attend an orientation meeting. During the meeting, participants were told the purpose of the study, the study procedures, and description of the massage and break conditions. Subjects were told that, after agreeing to participate, they would randomly be assigned to either the massage therapy group or the break therapy group. All participants signed an agreement indicating their informed decision and commitment to participate in the research. Subjects also completed a demographics questionnaire.

Participants were randomly assigned to the treatment or control condition. Once a week (each Tuesday) for 6 weeks participants in the treatment condition received an on-site, 15-minute chair massage, and participants in the control condition were asked to take a 15-minute break during the same 2-hour time period that the massage therapy was being administered. Subjects in the break condition were allowed to do anything they desired during the 15-minute period, except an activity related to work.

Measurements of anxiety levels were taken prior to the 6-week intervention period (pretest), during the intervention period (posttest), and after the intervention period was completed (delayed posttest). The delayed posttest was administered to determine

TABLE 1  
Demographic Characteristics of the Sample

Characteristic	Massage Group		Break Group	
	n	Percentage	n	Percentage
Sex				
Male	8	44	5	33
Female	10	56	10	67
Age				
25 or less	0	0	1	7
26 to 39	8	44	6	40
40 to 60	10	56	8	53
Marital status				
Married	11	61	9	60
Single	7	39	6	40
Educational level				
No college degree	7	39	9	60
College degree	11	61	5	33
No response	0	0	1	7
Prior experience with relaxation techniques				
Yes	9	50	7	47
No	9	50	8	53
Hours worked per week				
40 hours or less	5	28	5	33
41 hours or more	13	72	10	67
Years with current employer				
Less than 5 years	7	39	4	27
5 to less than 10 years	1	6	3	20
10 to less than 15 years	3	17	1	7
15 to less than 20 years	0	0	1	7
More than 20 years	7	39	6	40

residual, or long-term, effects of the massage therapy on stress levels. The study design is shown in Table 2. For each measure, subjects reported stress levels at two separate times 1 week apart. This was done to obtain a more stable measure of anxiety levels. For each measure, the two scores were then added. To reduce response bias, the ordering of items on the questionnaires was changed for each administration. Completed questionnaires were sealed by participants in an envelope and returned to the researcher within 24 hours after the break or massage period.

Messages were administered by the first author and a fellow male massage therapy student from The American Institute of Massotherapy, Inc. The massage practitioners received identical training and followed an identical on-site chair massage routine during the course of this study. The massage group was counterbalanced so that the female massage practitioner massaged half of the total group during the first 3 weeks of massages, and the male practitioner massaged the other half of the sample. During the last 3 weeks of massages, the two massage practitioners switched subjects. This

TABLE 2  
Schedule of Study Design

Week	
1	pretest 1
2	pretest 2
3	
4	first week of 6-week intervention
5	
6	posttest 1 (massage therapists switch subjects for remaining 3 weeks)
7	
8	
9	posttest 2, last week of intervention
10	
11	delayed posttest 1
12	delayed posttest 2

design attempted to mitigate any effects that might be associated with the gender of the massage therapist.

### Dependent Measure

The State-Trait Anxiety Inventory (STAI) was used to measure changes in reported levels of stress. The STAI consists of 20 items each for state anxiety and trait anxiety. Items are rated on a 4-point scale ranging from *not at all* to *very much so*. State anxiety is defined as a palpable reaction or process taking place at a given time. This measure indicates the intensity of subjective feelings of tension, apprehension, nervousness, and worry. State anxiety scores indicate how an individual feels at the present time, as opposed to how he or she feels in general. Sample items from this scale include, "I am tense," and "I feel calm." Trait anxiety scores measure individual differences in generalized anxiety, as opposed to feelings of anxiety at a given point in time. Sample items include, "I feel nervous and restless" and "I feel satisfied with myself." For each scale (state and trait), the STAI has a minimum score of 20 and a maximum score of 80. Higher scores indicate higher levels of anxiety. More than 2,000 studies have used the STAI. Average alpha reliabilities for working adult populations using the STAI are reported to be .93 for the State Anxiety scale and .91 for the Trait Anxiety scale. The correlations between the State Anxiety and Trait Anxiety scales for normative samples of working adults are .75 (males) and .70 (females) (Spielberger, 1983).

## RESULTS

### Sample Versus Normative (Working Adult) Anxiety Levels

This study assumed that participants were working in an inherently stressful environment because of downsizing. Spielberger (1983) reports STAI norms for

TABLE 3  
STAI Means and Standard Deviations for the  
Massage (Treatment) and Break (Control) Group

Groups	N	Pretest	Posttest	Delayed Posttest
State Anxiety				
Massage	18	90.72 (12.31)	68.61 (11.28)	78.33 (14.43)
Break	15	83.33 (11.96)	77.93 (21.25)	78.20 (18.64)
Trait Anxiety				
Massage	18	87.39 (11.56)	73.89 (12.01)	79.39 (13.94)
Break	15	81.53 (14.56)	78.13 (18.37)	76.93 (15.05)

NOTE: Higher scores indicate higher stress levels. Standard deviations are in parentheses.

working adults as 35.72 in state anxiety and 34.89 in trait anxiety. The pretest mean scores for the present sample were 42.56 for state anxiety and 42.08 for trait anxiety. These higher mean scores suggest that subjects in this study experienced more anxiety than do average working adults.

Measures of state and trait anxiety were significantly correlated ( $p < .001$ ) at each time (pretest:  $r = .72$ ; posttest:  $r = .65$ ; delayed posttest:  $r = .75$ ). These correlations between the two scales are consistent with those reported in the STAI manual (Spielberger, 1983), discussed above.

### Tests of Effectiveness

Table 3 shows the means and standard deviations for each measure. For each time (pretest, posttest, and delayed posttest), the two administrations of the STAI scales were summed. Thus, means in Table 3 could range from 40 to 160. Due to the relatively small sample size, it was important to retain all subjects in the analyses if possible. Because only a few random questionnaires were not completed, questionnaire means were entered for the missing data. Specifically, of 33 participants, 5 failed to return one (of six) of the STAI measures over the course of the study. Three of these subjects were in the break group and two were in the massage group.

A repeated measures analysis of variance was conducted to test for overall differences across the groups and over time (i.e., the three data collection points). Table 4 summarizes the results of the repeated measures analysis separately for state and trait anxiety. For state anxiety, there was a significant interaction between time and group. The three time periods were compared for treatment and control group separately using Tukey's multiple comparison ( $\alpha = .05$ ). All three time periods were significantly different for the massage group. There were no significant differences across the three time periods for the break group. Figure 1 shows the means in graphic form. *T*-tests were conducted between the state anxiety means for the massage and break groups at the pretest and posttest. The pretest means between the two groups were not significantly different ( $t = 1.39, p > .05$ ). The posttest means between the two groups were significantly different ( $t = 1.75, p < .05$ ).

For trait anxiety, the interaction between time and group was not significant. Thus, the massage and break group were combined at each time, and Tukey's multiple

TABLE 4  
Repeated Measures Analysis of Variance

Treatment Factor	df	SS	MS	F	p
State Anxiety					
Group	1	8.84	8.84	.02	.885
Error (Group)	31	12830.58	413.89		
Time	2	3173.64	1586.82	11.39	.000
Group $\times$ Time	2	1149.03	574.52	4.13	.021
Error (Group $\times$ Time)	62	8633.98	139.26		
Trait Anxiety					
Group	1	383.33	383.33	.74	.395
Error (Group)	31	15985.34	515.66		
Time	2	782.82	391.41	13.07	.000
Group $\times$ Time	2	49.33	24.66	.82	.444
Error (Group $\times$ Time)	62	1857.10	29.95		

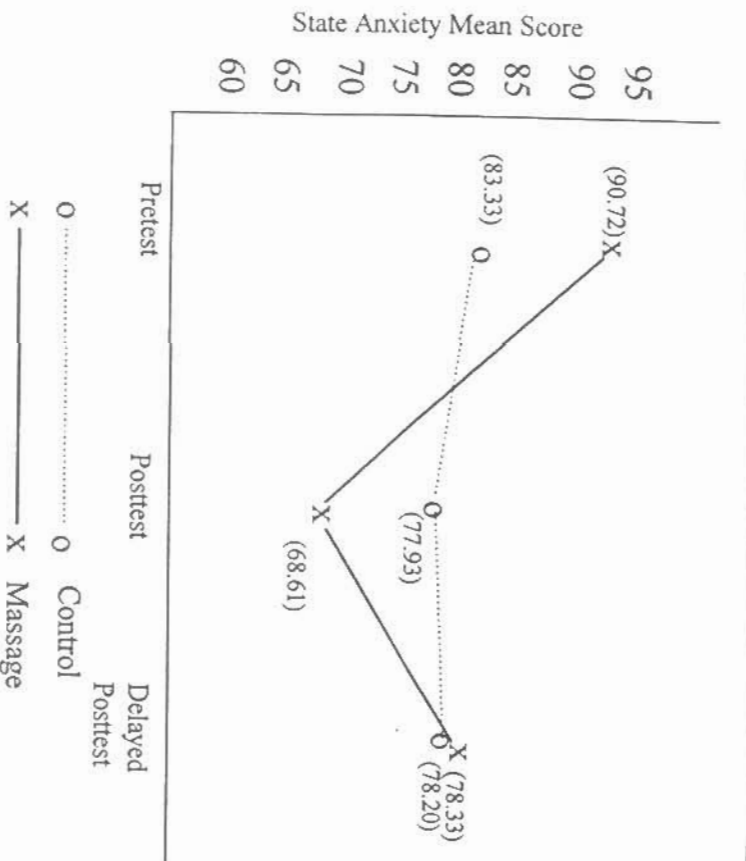


FIGURE 1: Massage and Control Group Means of State Anxiety for Pretest, Posttest, and Delayed Posttest

TABLE 5  
Results of the Content Analysis of General Comments

	Posttest 1		Posttest 2		Delayed Posttest 1	
	Massage Group	Break Group	Massage Group	Break Group	Massage Group	Break Group
Positive responses:						
More relaxed/reduced tension or stress	9	1	9		6	1
More focused/mind cleared		2				1
More refreshed/invigorated/energy	1	1	2			
Good/great/beneficial/wonderful/fabulous/enjoyed, and so on	2	2	1		2	4
Relieved muscle pain	1					
Enhanced emotional well-being					1	1
Wish weren't over					1	
Negative responses:						
Difficult to get away (not think about work)		1		1		2
No response	6	10	5	12	8	7
Total	18	15	18	15	18	15

Delayed posttest measures were administered 2 and 3 weeks after the end of the treatment period. The significantly lower delayed posttest mean for the massage group from the pretest mean indicates that residual effects remained after the intervention. However, the mean for the delayed posttest did increase (reflecting increases in stress levels) from the posttest mean. It is likely that the stress reduction effects of massage therapy intervention would continue to decrease over time, after cessation of massage sessions. This is to be expected, as massage is a stress reduction technique that must be maintained to continue to be effective, similar to a physical exercise program or other relaxation method.

### Supplementary Qualitative Results

An additional, open-ended question was asked of massage and break group participants with the STAI at the time of Posttest 1, Posttest 2, and Delayed Posttest 1. Specifically, participants were asked: "Do you have any comments about the massage you received or break you took today or general comments about massage/breaks in the workplace?" Response categories were developed, and five independent raters categorized the comments. Of 52 comments, the raters agreed across 44; an agreement rate of 84.6%. Table 5 shows the results of the content analysis of these data. Comments were placed in the category with the highest frequency of assignment.

As can be seen in Table 5, the majority of comments from the massage group participants were categorized as "more relaxed/reduced tension or stress" (Posttest 1: 9 of 12; Posttest 2: 9 of 13; Delayed Posttest 1: 6 of 10). Examples of comments from this category include: "They have been very relaxing and have relieved tension for the

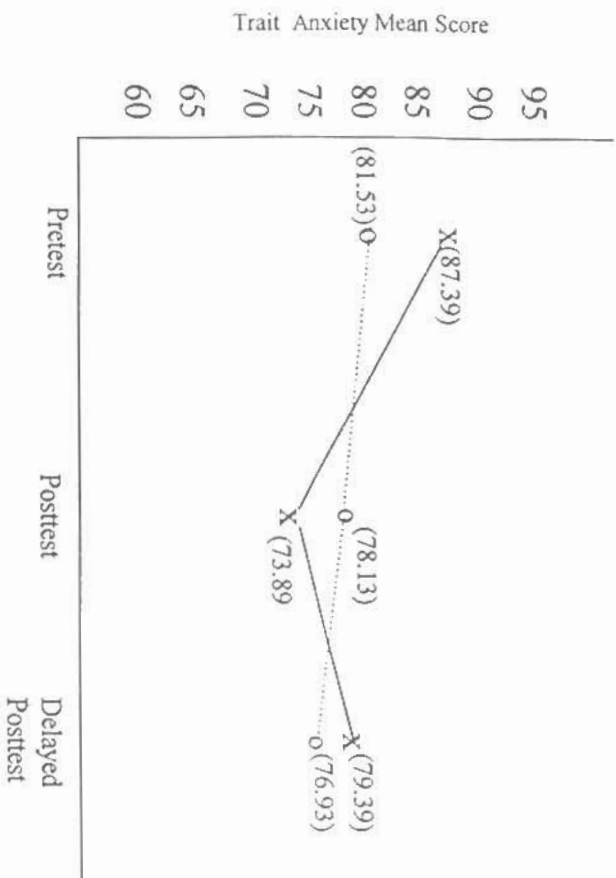


FIGURE 2: Massage and Control Group Means of Trait Anxiety for Pretest, Posttest, and Delayed Posttest

comparison ( $\alpha = .05$ ) was used to determine differences across time. This analysis showed significant differences between the pretest and the posttest, as well as between the pretest and the delayed posttest. There was no significant difference between the posttest and the delayed posttest. Figure 2 shows the means in graphic form.

### DISCUSSION

The purpose of this study was to determine whether an on-site massage therapy program in the workplace reduced employee anxiety. The results showed there were significant reductions in state levels for the massage group, but not for the control group. Trait anxiety significantly decreased as well, although there were no significant differences between the treatment and control groups. In addition, the difference between the massage and control group at the time of the posttest was found to be significant for state anxiety, but not for trait anxiety. This is not surprising, because state anxiety is an indication of an individual's present condition and trait anxiety is a measure of a more stable personality characteristic.

remainder of the day" and "I look forward to the massage and feel they should become a part of our day (at least once a week). The day becomes less stressful after a massage." There were no comments from the massage group participants that were deemed negative.

Although there were general positive comments from the control group participants (Posttest 1: 6 of 7; Posttest 2: 0 of 1; Delayed Posttest: 6 of 8), these responses varied. Very few subjects indicated a reduction in stress (only 2 of 16 responses) at any of the three times. Example comments are: "The breaks are fine—need one every day, not once a week" and "Enjoyed the breaks!" Also, there were a total of four negative responses. Examples of negative comments are: "I felt under pressure during my break—almost wishing it were over and done with—I was not able to relax" and "I felt that I had to make up the time away, so for me, it added stress to an already stress-filled day."

These written responses, although subjective, may help indicate why the massage group exhibited more positive effects than the control group. Based on the comments, massages had more carryover effects back on the job. Participants described themselves as more relaxed and more focused. Comments from subjects in the control condition were not as frequent or uniformly positive.

### Limitations

Several limitations of this study should be mentioned. First, as can be seen in Table 3, the massage and control groups were not equivalent at the time of the pretest. The massage group exhibited a higher stress-level mean on both state and trait anxiety levels, although these differences were not significant (state anxiety:  $t = 1.39, p > .05$ ; trait anxiety:  $t = 1.10, p > .05$ ). Had the groups been matched on pretest scores, instead of randomly assigned before pretesting, or if larger samples had been used, we would have tested more accurately for the differences between the two groups.

Second, the results of this research should be evaluated noting the possibility of a Hawthorne Effect. Subjects may have been responding positively to the special treatment they received from being in the study rather than to the intervention itself. The inclusion of the break group in the study design attempted to mitigate this possible effect. Third, subjects were told of both conditions before random assignment. Thus, there could have been an experimental demand characteristic problem. Specifically, break condition subjects may have felt slighted for not getting into the massage group or conversely massage condition subjects may have felt lucky to get the massages. No comments from participants indicated this to be the case, but this caveat is worthy of mention. After completion of the experiment, break condition participants were given the opportunity to receive on-site chair massages.

### Future Research

The size of our sample did not allow us to conduct valid inferential statistical tests on potential moderator variables, such as gender, education level, occupation, and so on. However, some trends were found that may be examined in further research. With

regard to gender, females began with higher stress levels ( $N = 20$ , pretest mean = 90.00) than did the males ( $N = 13$ , pretest mean = 79.96). This is consistent with prior research (e.g., Cleary, 1987; Miller & Kirsh, 1987), which has found that women have higher rates of anxiety disorders than do men. In the present study, there was a greater reduction in stress due to the massage for females ( $N = 10$ , posttest mean = 77.2) than for males ( $N = 5$ , posttest mean = 71.38). Prior research has indicated that females tend to be more comfortable with touch than are males (Ross-Flanagan, 1995; Tulman, 1985). If women are more receptive to touch as a stress reducer, massage may be an increasingly important intervention for reducing work-related stress, as women become a higher proportion of the work force.

Trends in our data indicate that education level and number of hours worked may be possible moderator variables of the effects of massage therapy. Again, our research lacked an adequate sample size to make valid inferences. However, the data indicated that stress levels were reduced to a greater extent for individuals with more education and for individuals who worked more than 40 hours per week.

Further research on massage therapy intervention at work might examine other measures of stress effects, such as health-related outcomes, interpersonal relations, and job performance. In addition, subsequent research might compare massage therapy to other possible stress reduction interventions, such as mediation/relaxation or cognitive/behavioral options. Moreover, this study should be replicated in a different organization, under different inherent conditions (e.g., non-downsizing), and with different massage therapists, to determine the generalizability of these results.

### Implications for the Workplace

Stress and anxiety in the workplace have been a common and pervasive problem. It is estimated that stress-related disorders cost Fortune 500 companies more than \$25 billion per year in health care costs, absenteeism, and lowered productivity levels (Palmer, 1990). This study was done in a downsizing organization in order to conduct our research in a workplace environment where stress levels would be high due to workplace conditions. *Please note* that we are in no way advocating massage therapy as a surrogate for treating employees fairly and equitably. Rather, we are presenting a quasi-experimental test of the effectiveness of a specific stress management technique in a workplace situation known to be stressful.

Massage therapy is an innovative and effective stress reduction intervention alternative. Findings from this study have shown that one 15-minute application per week can have a positive impact on reducing employee anxiety levels. Numerous studies have found that reduced anxiety levels in employees can lead to better morale, improved productivity, better decision making, and ultimately better performance (cf. Lazarus, 1963; Steers & Black, 1994). Further studies investigating the impact of massage on workers' compensation and health care costs, job performance, and productivity might enhance the acceptance of massage in the workplace.

The massage intervention evaluated here was an experimental study. Participants were aware that the organization was not providing the massages (massage therapist fees), only the time away from work, and that the massage therapy would end after 6

weeks. As mentioned earlier, employees need to feel appreciated and cared for by the organization, which is all the more important during the precarious times of downsizing and restructuring. The effects of massage therapy intervention may be greater than the results found here, if the massage is sponsored by the company and is ongoing.

From a cost perspective, finding effects from a weekly 15-minute massage is quite encouraging. Prior research manifesting positive effects of massage therapy scheduled massages daily or for 1-hour sessions. These schedules may not be feasible for employers or employees, considering that current rates for massages are approximately \$1 per minute. For many organizations and their employees, the dollar costs and the time away from work may be prohibitive. By using a 15-minute weekly chair massage, this study provided support for the positive effects of massage therapy intervention in a context that is more feasible for the work environment.

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