

The Study of Swedish Massage on Anxiety Situation and PPT in Stressed Office Workers

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Abstract

Background: The purpose of this study was to investigate the effects of Swedish massage on anxiety and pressure pain threshold in office workers with psychological stress.

Method: Sixty office workers with psychological stress were randomly assigned to experimental group 1 and control group. They were assigned into either a Swedish massage group (Experimental group 1, n = 30) or a resting group (Control group, n = 30). A single measurement mediated Swedish massage and rest for 20 minutes and was measured before and after intervention.

Findings: In state trait anxiety inventory (STAI), there were significant differences between before and after the experiment and between the two groups ($p < .05$). The pressure pain threshold (PPT) of the upper trapezius increased in the Swedish massage group ($p < .05$).

Application: These findings indicate that, the Swedish massage applied to stressed office workers showed a significant difference in increase of PPT and decrease of STAI.

Keywords: Swedish massage, STAI, PPT, Stress, Office Workers.

Introduction

At present, there are many studies that indicate chronic stress has a detrimental effect on health. Stress has been shown to be associated with immune function and cardiovascular disease^[1]. According to Bae's study, stress impairs the anti-inflammatory effects of the immune system, leading to chronic infections, chronic immune diseases, or cancer as well as other physiological disorders^[2]. Hawkins's found that about 760 depression, stress or anxiety occurred in 100,000 workers. Moreover, most people would agree that stress can have a negative impact on health, but they don't

know how to prevent or cope with it. Other studies have shown that long-term psychological stress can interfere with psychological and physiological functions and can be more easily infected with diseases that can put more stress on life in addition to causing disease^[3,4,5].

It is very important to find ways to reduce stress that can adversely affect the body. There are a variety of physical therapies that can induce positive emotions through proper stimulation of the skin. Among them, Swedish massage is a treatment that can relieve stress and fatigue by promoting muscle relaxation, and it has been reported to have a significant effect on blood pressure reduction, especially in women^[6]. Massage is a standard treatment used in many countries, whose principle is to apply pressure to muscles in the direction of the blood flow to the heart; it comprises five main techniques that most therapists use in the United States^[7,8,9]. There have been few studies related to treating stressed office workers through Swedish massage, and most of them are applied for the purpose of alleviating muscle spasms and

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relaxing muscles, although they can help to relieve stress, too. Swedish massage is a method that can effectively apply the five (effleurage, petrissage, friction, tapoment, vibration) according to each situation. Therefore, the purpose of this study is to provide evidence that Swedish massage can be used to relieve stress from the stressed office workers by comparing and analyzing state trait anxiety inventory and pressure pain threshold related to stress when Swedish massage is applied to stressed workers.

Method

1. Subject: The subjects of this study were 60 stressed office workers with 9 points or more on a Psychosocial Well-being Index-short form (PWI-SF) scale, who work at K branch in D city. They were randomly assigned into either a massage group (Experimental group 1, $n = 30$) or a resting group (Control group, $n = 30$). The experiment was conducted in a comfortable light treatment room where the room temperature was maintained between 22 and 24°C. The subject was placed directly on the massage table and a wedge-shaped knee support was placed under the knee at 70° flexion of the hip. Relaxation was allowed. After the experiment began, it blocked conversations, phone sounds, other noises, and electromagnetic waves that could act as variables in the experiment, minimizing the irritation of the surroundings, preventing the subject from sleeping during the experiment, and closing the eyes and taking part in the experiment comfortably. The study consisted of two massage majors, and two massage majors performed massage for 20 minutes. For the massage group, Swedish massage was performed twice on the neck and shoulder for 10 minutes each session, and the resting group rested in the lying position for 20 minutes [Figure 1].

Both groups were provided with the same conditions of time and surroundings. STAI and PPT were measured before and after the experiment. The subjects were fully informed of the purpose of the study, and they gave informed consent prior to entering the study. Only those who have no skin conditions, have no history of thrombosis treatments, do not take prescription medicines related to the cardiovascular system, and agree to perform the same daily activities as usual were included in the study.

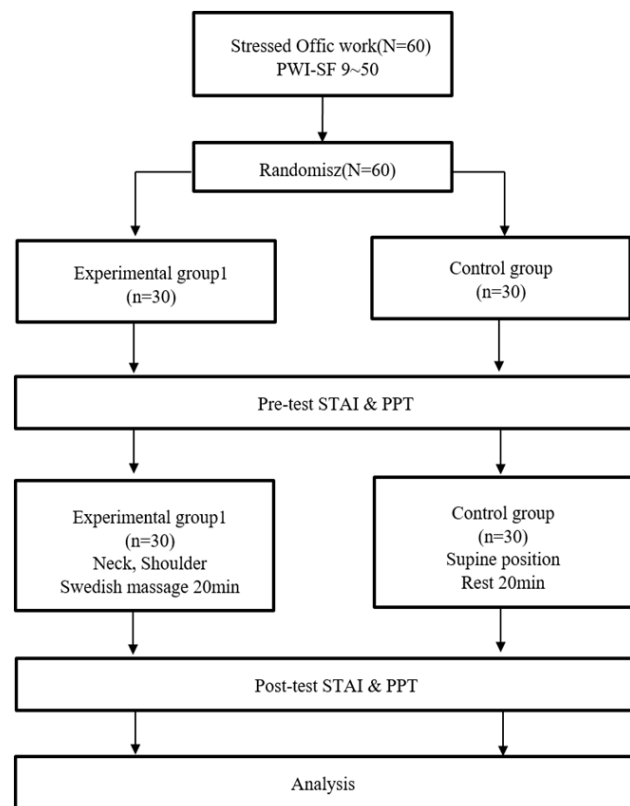


Figure 1. Design of experimental procedure

2. Measurement tools:

- 1. State trait anxiety inventory (STAI):** The state trait anxiety inventory (STAI) test before and after the Swedish massage was self-reported and consisted of 20 questions asking how they felt at the very moment in a specific situation, and their levels of feelings were assessed on a 4-point scale^[10].
- 2. Pressure pain threshold (PPT):** Pressure pain threshold (PPT) is measured using an Algometer (Algometer, Sammons Preston, USA, 2010) to assess the pressure pain level at the pain trigger point of the upper trapezius. Subjects sit comfortably in the chair, take an upright position, mark the superior-angle of the shoulder bone, and make it vertical, and as the pressure was gradually increased at a rate of 1lb/sec, they were told to voice “ah” at the point of unbearable pain, and then the pressure gauge reading was measured at that moment in lb/cm². The trigger point of the upper trapezius of the dominant hand was measured and it was used as PPT. After three measurements at the same location, the mean value is used for the analyses. Measurements

before and after massage application were used as comparators^[11] [Figure 2].



Figure 2. Pressure pain threshold measuring method

3. Statistical Analysis: All statistical analyses in this study were conducted using SPSS ver. 21.0 program. One-Way ANOVA test was used to confirm the general characteristics of the subjects. For the normality test between the two groups, Kolmogorov-Smirnov was used, and for the change of dependent variables before and after intervention, the corresponding sample t-test was used, and One-Way ANOVA was used to compare the effects between the two groups. All statistical significance probability (α) of the data were .05.

Result

According to the general characteristics and homogeneity test, although control group with average age of 37.80 years was older than Experimental group 1 with average age of 37.40 years, there were no significant differences between the two groups; although control group with average height of 169.17 cm was taller than Experimental group 1 with average height of 167.07 cm, there were no significant differences between the two groups; although control group was heavier with average weight of 63.97kg than Experimental group 1 with average weight of 61.57kg, there were no significant differences between the two groups; although Experimental group 1 was greater with mean BMI of 22.30 kg/m² than Experimental group 1 with mean Body mass index (BMI) of 22.03 kg/m², there were no significant differences between the two groups. Although in PW, control group was higher with mean value of 23.23 points than Experimental group 1 with mean value of 23.20 points, there were no significant differences between the two groups.

1. STAI: In STAI, there were significant differences between before and after the experiment and between the two groups ($p < .05$). It was judged that Experimental group 1 was lower than control group [table 1].

Table 1: The immediate effects of Exp. 1 group on anxiety (N = 60)

Parameter	Exp. group 1 (n = 30)	Control group (n = 30)	F	p
STAI (before)	36.80±4.67a	36.47±4.83	.074	.78
STAI (after)	30.57±4.65*	36.77±4.28	28.862	.00

Exp : Experimental group 1, STAI: State trait anxiety inventory, a: mean±standard deviation., *: Within-subjects comparison $p < .05$, : Between-subjects comparison $p < .05$

2. PPT: PPT was a variable to determine the level of pain when pressure was applied, which showed significant differences between before and after the

experiment ($p < .05$). But the differences between the two groups were not significant [Table 2].

Table 2: The immediate effects of Exp. 1 group on PPT (N = 60)

Parameter	Exp. Group 1 (n = 30)	Control group (n = 30)	F	p
PPT (lb/cm ²) (before)	11.85±3.83 a	12.19±3.29	.133	.71
PPT (lb/cm ²) (after)	13.87±4.03*	12.40±3.29	2.417	.13

Exp : Experimental group 1, PPT: Pressure pain threshold, a: mean±standard deviation., *: Within-subjects comparison $p < .05$

Discussion

The purpose of this study was to investigate the effects of Swedish massage on the change of STAI and its impact on PPT in stressed office workers. After 20 minutes of massage, there were significant differences in STAI value in Experimental group 1. This suggests that the rhythmic stimulus induces, through a somatosensory area in the skin, increased activity of the vagus nerve, i.e. hyperfunction of parasympathetic nerve, resulting in psychological stability, which leads to differences in STAI between before and after the massage and between the two groups.

Bessel's reported that treatments such as massage are upward treatments enough to restore control of the vagus nerve^[12]. PPT showed significant differences in Experimental group 1 between before and after the treatment, but there were no significant differences between the two groups. Wall's pain theory showed that proper mechanical stimulation on the skin can reduce pain^[13]. Therefore, the rhythmic mechanical stimulation in Experimental group 1 is considered to bring about emotional stability due to the relaxation of muscles and the effects of upregulation. Kim's study of the effects of the experimental group on the activity of the sympathetic nervous system, anxiety, pain, and pressure pain thresholds in the subjects with psychological stress suggested that the scores on the state anxiety scale were relatively lower in the experimental group, which was similar to the outcome of this study^[14]. Farzane's compared the effects of two Swedish massage techniques on vital signs and anxiety in healthy women. Vital signs and anxiety levels were checked for 10 patients who had Swedish massage on their legs, arms, and face, and 10 who had Swedish massage on their back, neck, and chest groups. Vital signs were significantly decreased in both groups and there was no significant difference in anxiety score after massage^[15]. Felipe's study examined the effects of massage on cyclic rhythm, pain, stress index and quality of life in patients with myalgia syndrome. A total of 24 subjects were subjected to a total of 24 Swedish massages twice a week for 3 months and 40 minutes per session. After 3 months, pain was reduced, stress index was decreased, quality of life was improved, but cortisol concentration was not affected by massage treatment^[16]. Najafi's study looked at the effects of massage and music on pain, anxiety and relaxation in burn patients. Of the 240 subjects, 60 were provided with music, 60 were provided with massage, 60 were provided with both music and massage, and the remaining 60

were provided with rest after being treated for general burns; each group had 20-minute intervention per day for a three-day period. In all three groups, the intensity of pain and anxiety decreased and the level of relaxation increased. There were no significant differences between the groups that received intervention, but the effects of the group that received both the massage and music at the same time showed greater effects^[17]. Alsdair's conducted a study on the effects of Thai massage and Swedish massage on fatigue and energy depletion states. Ten subjects received Thai massage and ten subjects received Swedish massage for 45 minutes per session for a period of six weeks. Both types of massage showed improvement in sleep quality, relaxation, stress relief, muscle tone relief and physical and mental well-being^[6]. Therefore, it suggests that appropriate stimulation in Experimental group 1 alleviates state anxiety.

Conclusion

Swedish massage can induce effective relaxation with five different techniques, leading to a decrease in STAI and an increase in PPT. Therefore, it should be considered as an important factor in physical therapy for stressed subjects. The limitation of this study is that it is difficult to generalize the research results because only stressed workers participated in the study. Also, the single measurement design of the intervention does not reveal how long the actual effects will last. In future studies, it is expected that results can be generalized through studies with various types of subjects.

Ethical Clearance: Not required

Source of Funding: Self

Conflict of Interest: Nil

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