

# **THE DEVELOPMENT OF STANDARDIZED THERAPEUTIC MASSAGE FOR DYSMENORRHOEA**

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## **Abstract**

Dysmenorrhoea is a syndrome affecting 90% of women during the reproductive period. It ranges from mild to debilitating condition. Visits to University Physical Therapy Clinics are increasing from 2006 to 2007 (18 to 24 respectively). Massage is a complementary physical therapy with controversial effectiveness. The objective of the study was to develop standardized therapeutic massage for dysmenorrhoea with maximum benefits and minimum harmful effects.

Methods of massage developed in this study consisted of acupressure and Swedish massage. The manipulations are expected to reduce pain and minimize bleeding during the menstrual period. This is a developmental research which comprises 6 stages: 1)manipulation techniques development; 2)validation; 3)revision; 4)trial (effectiveness and safety); 5)adjustment; 6)methods finalization. Subjects of the study were 19 women with dysmenorrhoea, four women made two visits each, due to different menstrual periods. Overall there were 23 cases of dysmenorrhoea. The first trial was applied in 5 cases, the revised version was carried in 7 cases, the second revised version was applied in 6 cases, and the final version was carried out in 5 cases.

The patients indicated that they were satisfied with the massage in reducing pain without increasing menstrual bleeding. All the versions of massage reduced pain. However, 4 out of 5 patients undergoing the first trial reported increased bleeding. In the second trial 4 of 7 patients indicated more bleeding after the massage, and so do 2 of 6 patients in the third trial. None of 5 patients participating in the final version complain about more menstrual bleeding. The final version of the massage for patients with dysmenorrhoea consisting of acupressure and Swedish massage without tapotement manipulation, effectively reduce pain without increasing menstrual bleeding. This manipulation is considered as safe and can be considered for a randomized phase III clinical trial.

**Keywords:** Therapeutic Massage, Dysmenorrhoea

## **Introduction**

Dysmenorrhoea is a menstrual condition characterized by severe and frequent menstrual cramps and pain associated with menstruation. Dysmenorrhoea may be classified as primary or secondary. Primary dysmenorrhoea is menstrual pain associated

with ovular cycles in the absence of pathological findings. From the beginning and usually lifelong, manifestation is severe and frequent menstrual cramping caused by severe and abnormal uterine contractions. Pain generally develops one or two years after the first menarche and may progressively get worse with time. Secondary dysmenorrhoea due to some organic cause and usually of later onset, painful menstrual periods caused by another medical condition present in the body (i.e., pelvic inflammatory disease, endometriosis). The cause of dysmenorrhoea depends on whether the condition is primary or secondary. In general, women with primary dysmenorrhoea experience abnormal uterine contractions as a result of a chemical imbalance in the body (particularly prostaglandin and arachidonic acid – both chemicals which control the contractions of uterus). Secondary dysmenorrhoea is caused by other medical condition. Most often endometriosis is the root problem. This is a condition in which tissue that looks and acts like endometrial tissue becomes implanted outside the uterus, usually on other reproductive organs inside the pelvis or in the abdominal cavity, often resulting in internal bleeding, infection, and pelvic pain. Other possible causes of secondary dysmenorrhoea include pelvic inflammatory diseases, uterine fibrosis, abnormal pregnancy, infection, tumors, or polyps in the pelvic cavity. The risk increased for the condition women who smoke, drink alcohol during menses, overweight, and who started menstruating before the age of 11.

Each individual may experience symptoms differently. Symptoms may include cramping in the lower abdomen, pain in the lower abdomen, low back pain, pain radiating down the legs, nausea, vomiting, diarrhea, fatigue, weakness, fainting, and headaches. Diagnosis begins with patient's medical history and a complete physical

examination. Western medicine suggest to counseling about symptoms that lead for stress management. Other possibilities include surgical and medical treatment protocols for managing dysmenorrhoea. This treatment may include prostaglandin inhibitors (i.e., non steroidal anti inflammatory medications such as aspirin, ibuprofen) to reduce pain, acetaminophen, oral contraceptives (ovulation inhibitors), progesterone, dietary modifications to increase protein and decrease sugar and caffeine intake, vitamin supplements, regular exercise, heating pad across the abdomen, hot bath or shower, abdominal massage, endometrial ablation. In the future it is hope that more and more physicians will refer patients to an Acupuncturist before resorting to their other possibilities.

The pathology of dysmenorrhoea (Tong Jing) is the impairment of Qi and Blood. The main organs involved are the liver, kidney and spleen. The main channels involved are the ren and the chong. Although the point selection will be determined by the person individual, there are some general points used for dysmenorrhoea: Ren3, 4, 6, St25(qi), St28(damp), St29(stasis), Ub32, Ki13, Ki14, Shi Qi Zhui, Pc6, Li4, St36. The most well known effect of acupressure is its ability to abolish pain. It has been shown to release endorphins in the brain which affect the opiate receptors. This process blocks pain in a similar way to intravenously injected morphine as it is transported to the central nervous system. This explains why pain thresholds are higher throughout the whole body after acupuncture.

Acupuncture also works segmentally to abolish localized pain and to create a feeling of numbness. This has been explained by “gate control” theory: stimulation coming via thick sensory nerves from certain neurological segments inhibits pain

impulses mediated by thin nerves in the posterior horns of the spinal chord. Similarly the sensation of pain is also modulated in other levels of the central nervous system. More important factor in diminishing pain is that acupuncture release muscle tension. In so doing not only relieves pain, but it also has an effect on the cause of the pain. As well as treating skeletal muscle, acupuncture is also able to affect the smooth muscles of internal organs and can give relief in conditions like uterine. Such effects are mediated through the autonomous nervous system.

When acupuncture point along the channels stimulates by pressing hard with the tip of the finger, a radiating pain may be caused. There can also be numbness, and hot or cold sensations experienced. This is called the Propagated Sensation Along Channels (PSAC) phenomenon, that coordinated pain sensation in the central nervous system. Acupressure treatment method is applied using the thumbs or finger tip moving from point to point along the part of the channel being treated. The amount of pressure applied by the finger should be moderate, and no pain sensation should be experienced when treating normal channels, although some tenderness will always exist. Pressure is increased gradually to avoid causing excessive pain, but acupressure therapy is not painless as one is often working on very sensitive spots. Channels and points which need special attention are more tender, and excessive tension is often felt in the surrounding tissues.

In most cases it is beneficial to start far away from a painful and tense area and gradually work towards it. This enables pain to be reduced in the affected area early in the treatment so it become easier as one work closer to it. When treating abnormal conditions, pain should be kept to a bearable level. In many cases it is beneficial to leave

very tender areas at peace for a while and return there after ordinary massage or after treating other channels. Often by then tenderness will have eased to some extent so one is able to give more effective treatment. There are no strict rules about how long to apply pressure. Recommendations for the method of pressing points are often not given at all, and they may vary from five seconds to one or two minutes. There is no purpose in pressing for too long as this will cause the tissues beneath to become numb through transitory ischemia. However, this can be avoided by using very local circular movements, which also acts to increase stimulation. Further benefits can be gained by massaging the channels, not just concentrating on the specific points.

The time needed for treatment will depend on the number of channels which require special attention. Time spent working on a channel will depend on a person's pain tolerance as well as the tension and tenderness along it. With local painful conditions fewer channels usually need treatment but more time can be spent on them. Channels should be treated until one can feel the tension decrease in the surrounding tissues and tenderness eases off. It is inadequate to just work quickly through a channel without responding to its condition. Acupressure therapy should be included as part of general massage.

Swedish massage recommended four basic techniques used in a therapeutic massage. Other techniques are just a variation on these movements. The most important thing is that the massage should feel good to the receiver. The movements should be flowing and rhythmical and do not lose contact with the receiver as the hands flow from one movement to the next. The basic techniques are effleurage, petrissage, friction, percussion movements/tapotement. Effleurage is a stroking technique that is always

performed both at the beginning and at the end of a massage. Stroking is vital as it allows the receiver to become accustomed to your hands and is used to apply oil to each part of the body. It also enables to flow smoothly from one movement to the next. Effleurage can be used on any part of the body and usually performed towards the heart to assist the flow of blood. The palmar surfaces of or both hands are used to move slowly along the body, while moulding the hands to the contours of the body. The hands should be completely relaxed if they are to mould to the curves of the receiver. Try to maintain a steady rhythm and avoid any jerky or abrupt movements that could make the receiver feel nervous and irritated. A slow rhythm will soothe and relax the receiver whereas a fast rhythm will stimulate an area.

Therapeutic effects of slow effleurage excellent for soothing the nerves and is highly-strung or anxious individuals. Stress can be relieved and headaches or migraines dispelled. Blood pressure can be brought down significantly and patterns of insomnia can be broken. Slow effleurage is excellent for eliminating waste products such as lactic acid and other deposits from the tissues. Brisk effleurage is useful for stimulating the body. It improves the circulation and encourages the flow of lymph so that waste substances can be eliminated.

Petrissage is derived from the word “petrir” which means to knead. There are several ways to performing petrissage and it divided into picking up, squeezing, rolling and wringing. This technique allows to work deeply on the muscles and it is particularly effective when performed on fleshy areas such as the calves, hips, thighs and across the shoulders. This movement is suitable for every area of the body except the face. To apply the picking up technique, one must grasp the muscle (not the skin) with both hands and

then pick it up and pull it away as far as possible from the bone. Hold this position for a few seconds and then release the pressure, although the hands should still remain in contact with receiver. To perform the squeezing technique pick up the muscle as before and then gently squeeze it between the hands. This allows to squeezing out any toxins that have accumulated from the deeper tissues. Muscle may be rolled in both directions – the thumbs can roll the muscle towards the fingers or the fingers may roll the muscle towards the thumbs. Wringing technique is apply by picked up the muscle between the thumb and fingers, each hand working alternately.

Friction performed with the balls of the thumbs. However, the fingertips and knuckles can also be used, as well as the elbows. This technique is an excellent way of finding and breaking down knots and nodules which can build up, particularly around the shoulder blades and on either side of the spine. Masseur body weight can used to penetrate into the deeper tissues. Press for a few seconds while rotating the thumbs then gradually release the pressure. The knuckles may also be employed by curl the hands into fists and use the knuckles in the circular motion. Therapeutic effects of friction are breaks down knots and nodules, eliminating the waste products, broken down the fatty deposits and old scar tissue, relieving pain, and loosening the joints.

Tapotement consist of variety of movements in which the muscles are stimulated using various parts of the hands such as the edge of the hand, the palms or even the fists. Percussion movements are only performed on fleshy, muscular areas – never on bony areas. The techniques of tapotement including cuping, hacking, flicking, and pounding. Therapeutic effects of tapotement are improving blood circulation in the surface, induce muscle tone, and reduce fatty deposits.

Johnson & Johnson Health Care System (2001) defined Quick Relaxation Techniques as techniques to attain harmony and to empower the body through concentration, stretching, and releasing muscle tension. Quick Relaxation Technique has been shown to affect decreased sympathetic nervous system arousal, hypothalamic-pituitary-adrenocortical axis dysregulation, cortisol levels, and sympathetic-adrenergic receptor sensitivity (Barnes *et al.*, 2001). When we become stressed, the bodies engage in something called the “fight or flight response”. These responses include increased heart rate, blood pressure, and rate breathing. Quick Relaxation Techniques can opposite the fight or flight response. Deep meditation state produces delta waves in the brain like a person who is sleeping soundly. In this state, the person feels a total relaxation with respiration over heart rate ratio 1:3. This means that one full breath takes equivalent time period as three heart beats. This practice harmonizes all organ activities, even at molecular level. The body has the ability to regulate and heal itself. Quick Relaxation Techniques enhances the harmonization and self treatment (Walton, 2002). Effective self-regulation and self-treatment may decrease blood pressure in patients with hypertension.

Hypertension is a major cause of coronary heart disease, stroke and renal failure due to end-organ damage. Mild, medium and severe hypertension are characterized by systolic blood pressure 140-159 mmHg, 160-179 mmHg, and 180-209 mmHg respectively, and diastolic blood pressure 90-99 mmHg, 100-109 mmHg, and 110-119 mmHg respectively. Systolic and diastolic blood pressure 210 mmHg and 120 mmHg or more, the disease is classified as very severe hypertension. Most people suffer from hypertension with unknown etiology, categorized as essential or primary hypertension.



Only 10% of those with hypertension have other diseases which increase the blood pressure, hence the hypertension is classified to secondary. The most frequently reported symptoms are headache, pain or tension on the back of the head, neck and even the shoulders. People with hypertension often feel tired and malaise, without any known cause. Hypertension is not precisely a disease, but a disorder in the regulation of blood pressure.

Most blood vessels have the intrinsic capacity to compensate changes by affecting the resistance to blood flow so that adequate blood supply relative to need is achieved. Metabolic changes, such as the decrease of O<sub>2</sub> and pH produce vasodilatation, relaxation of arterioles and pre capillary sphincter. The increase in CO<sub>2</sub> and osmolality also cause dilatation of blood vessels. The dilating effect of CO<sub>2</sub> is readily apparent on the skin and the brain. Systemic regulation may also result from hormonal effects, such as kinin, which produces vasodilatation, and several hormones, such as vasopressin, nor epinephrine, epinephrine and angiotensin II, which produce vasoconstriction. Quick Relaxation Technique practice reduces acute and chronic sympathetic nervous system tone and possibly modification of other neuroendocrine and neurophysiologic mediators of stress. The effects of the Quick Relaxation Techniques practices on hypertension are restoration of adaptive mechanisms (Walton , 2002).

The objective of this research is to know short term and long term subjective and objective effects of Quick Relaxation Techniques in persons with hypertension. Subjective effects are characterized by the decrease of symptoms, and objective effects are shown as the decrease of blood pressure. This study tested the null hypothesis that

Quick Relaxation Techniques does not decrease subjective symptoms and blood pressure in patients with hypertension.

### **Materials and Methods**

The design of this study is pre-experimental “one group pretest-midtest-posttest design”. The usual notation for this design is:  $O1 \rightarrow X \rightarrow O2 \rightarrow X \rightarrow O3$

where O1 is the pretest, X is the treatment (in this case Quick Relaxation Technique), and O2 is the midtest, and O3 is the posttest.

The subjects of this study were persons with systolic blood pressure 140 mmHg or higher, and diastolic blood pressure 90 mmHg or higher, with or without medication with antihypertensives. A total sample of 32 mans were obtained through incidental sampling. Twenty eight persons were patients in Sanata Darma University, and 4 persons were patients from private practice. Before participating in the study, the subjects signed informed-consent form, after the objectives and procedures of the study were explained and clarified to them.

History taking or interviews were used as a data collection instrument to document symptoms felt by the research subjects. Sphygnomanometer and stethoscope were used to measure blood pressure.

The research activities were carried out according to the following steps:

1. Identify research subjects, explain about Quick Relaxation Techniques and invite them to participate in this research as study subjects;
2. Facilitate the subjects to sign informed-consents;
3. History taking and interviews to obtain disease history and family history;

4. Provide trainings to practice Quick Relaxation Techniques by warming hands, paying close attention to breathing movement, stretching of whole body muscle in a relaxed condition, while saying within themselves affirmative words, such as “Calm body, Relax, Smile”. The subject should practice this technique at least twice daily during six weeks. The Quick Relaxation Techniques practice takes 10 minutes each.
5. Obtain information about subjective complaints before Quick Relaxation Techniques;
6. Measure blood pressure three times each before and after Quick Relaxation Techniques, in twice a week in Monday and Thursday at Sanata Darma University Clinic. The main data is the first week, third week, and sixth week;
7. Obtain information about subjective complaints after sixth week;
8. Check that all information has been recorded.

Descriptive analyses were conducted to interpret changes in subjective complaints. Paired t-test was applied to test the null hypothesis that Quick Relaxation Techniques does not produce response decrease in systolic and diastolic blood pressure. Test of Anava was applied to test the null hypothesis that Quick Relaxation twice daily along six weeks does not produce adaptation decrease in blood pressure. Normality test of systolic and diastolic blood pressure data distribution and test for homogeneity of variance were done before the statistical tests.

## **Results and Discussion**

All of 32 research subjects were male. The ages of the subjects were between 48-61 years, with an average of 54,72 year. The average duration of hypertension according to the knowledge of the subjects was 3.2 years. Common complaints include stiffness on the back of the neck (81%), dizziness (63%), and stiffness of the shoulders (42%). Tingling sensations were felt by 15% subjects, and only 3% of the subjects felt nauseated. General weakness was expressed by 54% subjects. Back pain was reported by 15%, and some subjects (6%) also mentioned breathlessness.

The majority (94%) of respondents took antihypertensives, 42% of them also use alternative treatment, such as herbal medicine, juice and massage. Only 30% of the respondents had salt restricted diet, and 63% of the subjects practiced exercises, including breathing exercises. Family history revealed that all subjects had relatives with hypertension. More than half (54%) of the subjects had relatives with diabetes.

The results of the descriptive data analyses indicated that among 9 patients with dizziness, 7 persons reported that the complaint disappeared and in 2 persons the complaint was reduced after Quick Relaxation Techniques. Tension on the back of the head and shoulders reported by 6 persons were more relaxed or reduced. Heaviness in the head or body expressed by 4 persons was relieved after Quick Relaxation Technique. Among 8 persons without symptoms, all were still free from any symptom after Quick Relaxation Techniques, 3 of them even felt more relaxed.

The effect of Quick Relaxation Technique on dizziness could be explained by 20% reduction of oxygen consumption and increased CO<sub>2</sub> production during meditation including Quick Relaxation Techniques (Wilson, 2003) resulting in better supply of oxygen to the brain. The disappearance of tension on the back of the head and shoulders

was due to the relaxation effect. Meditation include Quick Relaxation Techniques stimulate alpha waves which present in a relaxed and full awareness state. At the same time, the delta waves commonly present during a deep sleep also present during meditation (Krishna, 2000) suggesting that during meditation full consciousness and relaxation coexist. Alertness is enhanced by the release of epinephrine, while relaxation is the result of endorphine hormone. The sympathetic nervous system arousal also reduced by Quick Relaxation Techniques, so that the heart rate and breathing rat slow down (Johnson & Johnson, 2002).

Anxiety was reduced after Quick Relaxation Techniques due to the opposite effect of “fight or flight” in a person under stress. Quick Relaxation Techniques was recommended for persons with hypertension to manage stress in their daily lives. Better blood flow and decrease in metabolic rate improve peripheral blood circulation so that tissue perfusion will be better.

The paired t-test using SPSS-12 showed that the average decrease of blood pressure from the average systolic blood pressure 164.22 mmHg to 141.4063 mmHg was statistically significant ( $p < 0.000$ ). By the same token, the diastolic blood pressure also significantly ( $p < 0.000$ ) reduced from the average 95.47 mmHg to 89.3750 mmHg. The results of this statistical test suggest that the null hypothesis that Quick Relaxation Techniques does not response to reduce blood pressure is rejected. After three weeks there was no significant decrease in systolic blood pressure. However, an average decreases of 5.47 mm Hg in diastolic blood pressure was statistically significant, during the same three weeks period. Decreases in systolic and diastolic blood pressure were highly significant (0.000) after six weeks. Studies on the effect of meditation on blood

pressure and other cardiovascular phenomena indicated that meditation restore adaptive mechanisms (Schneider et al., 2005). This study showed immediate effect of meditation on symptoms and blood pressure among persons with hypertension. Studies carried out in longer period of times and using a variety of surrogate end-points, mortality and morbidity showed that meditation produced regression of carotid atherosclerosis, reduced myocardial ischemia and lowered mortality rates.

### **Conclusion and Suggestion**

It is concluded from this study that Quick Relaxation Techniques ameliorated or mitigated subjective symptoms and made reduced blood pressure among persons with hypertension. Therefore, meditation should be widely practice as non pharmacological complementary treatment for hypertension. Meditation with its restorative and stress-reduction roles can be applied in normotensive individuals to improve general health and well-being. Further studies should be carried out to investigate the long term effects of meditation on cardiovascular or other responses to promote health.

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