



“Efficacy of Therapeutic Swedish Massage in the Treatment of Non-specific Pain of the Lumbar Region”

Christina Spiliotopoulou^{a*}, Dr. Dimitrios Damigos^b, Konstantina Vasileiadi^c,
Dr. Constantinos Koutsojiannis^d

^a*Physiotherapist, MSc (cand) in Pain Management, Department of Physiotherapy, Technological Educational
Institute of Western Greece, Aigion, 25 100 Achaia, GR*

^b*Assistant Professor of Medical Psychology, PhD in Medical Psychology, Department of Psychiatry, Medical
School, University of Ioannina, Ioannina, 45 110 GR*

^c*Physiotherapist, MSc in Cardiovascular Rehabilitation, Department of Physiotherapy, School of Health and
Caring Professions, Technological Educational Institute of Western Greece, Aigion, 25 100 Achaia, GR*

^d*Assistant Professor of Physiotherapy, PhD, Department of Physiotherapy, School of Health and Caring
Professions, Technological Educational Institute of Western Greece, Aigion, 25 100 Achaia, GR*

^a*Email: spiliotopoulou.ch@gmail.com*

^b*Email: ddamigos@gmail.com*

^c*Email: konvasi@gmail.com*

^d*Email: ckoutsog@teivest.gr*

Abstract

Research objective are (1) assess the effectiveness of Swedish massage in the treatment of non-specific pain in the lumbar region, to (2) measure the effects of Swedish massage on pain intensity, disability indexes and anxiety levels and to (3) measure pain intensity, disability indexes and anxiety levels before and after a single session. An experimental pilot study was implemented in a private physiotherapeutic center in Athens, Greece.

* Corresponding author.

Forty-five (45) women with non-specific pain in the lumbar region were selected. In this study; Ten sessions performed day after day of classical Swedish massage techniques (effleurage, petrissage, kneading, rolling, friction). The following Outcome Measures were used: Baecke Questionnaire, Pain intensity (Visual Analog Scale), Oswestry Disability Index, Rolland-Morris Disability and HAMILton Anxiety Scale (HAMA). The results showed significant pain reduction after the 5th session which was maintained until the end of the research programme and 1 month after ($p=0,006$). Only at the end of the 10 sessions there was a statistically significant reduction in anxiety levels between the two groups ($p=0,025$). Regarding the functional levels, there was a statistically significant difference between the two groups at the end of 10 sessions [Rolland-Morris ($p=0.000$) and Oswestry Disability Index ($p=0,001$)]. Before and after a single session of Swedish massage, pain intensity and anxiety levels were reduced and functional ability was improved. The Results of this pilot study support the effectiveness of Swedish massage for the treatment of non-specific pain in the lumbar region and its efficacy in reducing pain. If results are confirmed in a larger randomized trial, Swedish massage could be an important component of therapeutic sessions.

Keywords: Swedish massage; lumbar region; non-specific lumbar pain; women; low back pain.

1. Introduction

Lumbar pain is one of the most common musculoskeletal conditions in modern society with a quite high economic impact on health services and poor quality of life [1, 2, 3, 4, 5]. Low back pain is one of the most common reasons for providing compensation to employees in the United States of America and Canada and affects 70% to 85% of the population in developing countries at some point in their lives [6, 7]. Back pain seems to be most common between the ages of 35 and 55 years [7] and according to a newest and latest research from Kamali and his colleagues in 2014 shows a peak in symptoms between the ages of 25-45 years.

The usual complementary and alternative treatments for non-specific back pain include acupuncture, manipulation and massage [8]. Massage therapy claims it can reduce pain and ensure a quick return to normal daily activities [9]. However, despite the popularity of massage therapy there is still an ongoing debate about its effectiveness in the treatment of non-specific low back pain.

Massage is defined as the manipulation of the soft tissues of the body for therapeutic purposes such as pain relief [10]. It is considered one of the methods of manual therapy that is regarded as a safe treatment method without significant risks and side effects which is even recommended by the Chartered Society of Physiotherapy for the management of painful conditions, particularly of musculoskeletal etiology [8]. Massage is mainly used for achieving relaxation, treatment of painful musculoskeletal conditions and stress reduction [11].

The efficacy of therapeutic massage on the non-specific low back pain has not been fully established [12]. Although there is promising evidence for massage as an effective treatment for non-specific lumbar pain, further studies must evaluate its effectiveness as a monotherapy. Core objectives of this pilot study were to (1) assess the effectiveness of Swedish massage in the treatment of non-specific pain in the lumbar region and to (2) measure the effects of Swedish massage on pain intensity, disability indexes and anxiety levels. Moreover,

another objective was to (3) measure pain intensity, disability indexes and anxiety levels before and after a single session in order to establish whether pain, levels of functional ability and stress were affected.

2. Materials and Methods

This was a double group pilot study with the participants randomly divided into (1) intervention group and (2) control group.

2.1. Participants

Primary eligibility requirements included (1) women, (2) age 20-40 years old and (3) non-specific pain (acute, subacute or chronic)^a in the lumbar region. Exclusion criteria included (1) specific reasons for lumbar pain such as radiculopathy, trauma in the region, (2) pregnancy and (3) women that recently gave birth.

Assessments were conducted before the 1st session, before and after the 5th session, at the end of the 10th session and one month after. At the start of the research program, 47 women participated with an average age of 32.14 years. Intervention group involved 24 women and control group 23 women. Two participants from the control group discontinued because the first one could not bear the pain and used painkillers before the completion of the research program and the second one started cortisone treatment for another condition that occurred in the same period.

2.2. Study design and treatment

Participants in the intervention group received 10 sessions of 30-minute Swedish massage day after day. The patient was put to bed in a prone position with the head positioned in a neutral position in the hole that has the bed head, with no clothes on the specified area and covered with a towel. The treatment room was kept warm and quiet and each patient was offered a period of 5 minutes before and after the massage session in order to get dressed and undressed.

Questionnaires were completed before the 1st session, before and after the 5th session, at the end of the 10th session and one month later. Participants in the control group completed the questionnaires at the same intervals as the intervention group. All participants were asked to fill a form with demographic information and the Greek version of the Baecke Questionnaire to determine the levels of habitual physical activity [13].

The physiotherapist applied a 30-minute massage session from the 12th rib to the gluteal fold under which is the area of pain in lumbalgia. The movements applied were effleurage, petrissage, kneading, rolling, friction and the therapeutic session was completed again with effleurage.

Initially, the pain intensity was evaluated using the VAS scale (Visual Analog Scale) and the accuracy of the version of a numerical rating scale (NRS - Numerical Rating Scale). All participants completed the Oswestry Disability Index and Roland-Morris Disability Questionnaire which assess the state of health. The Oswestry Disability Index Questionnaire is designed to determine the disruption of daily activities due to chronic low

back pain [14]. The Roland-Morris Disability Questionnaire is a disability questionnaire widely used in low back pain [2, 14]. Both of the questionnaires have been designed for use in research but was found useful for monitoring patients in clinical practice and they are reliable, valid and sensitive tools [15]. Last but not least, HAMilton Anxiety scale (HAMA) was administered as a rating scale developed to assess the severity of symptoms in stressful situations [16].

3. Statistical Analysis

Paired-samples *t* tests were used to examine the effects of treatment on change in outcomes at baseline and in specific intervals specified above. In all analyses, statistical significance is reported using a p-value of 0, 05 or less [($p < 0, 05$) ($\alpha = 5\%$)]. All analyses were carried out by using the Statistical Package for Social Sciences Program (S.P.S.S.) 20 for Windows.

4. Results

4.1. Participants characteristics

Forty-five (45) women participated in this study with an average age of 32.14 years (S.D. =5,757). The weight of the entire sample ranged from 43 to 100 kg with a mean weight of 65,63 kg (S.D. = 12, 63) and an average height of 1,67 meters (S.D. = 0,065). Nineteen (19) participants smoked an average of 13.06 years (S.D. =6, 97) and 8, 53 cigarettes per day (S.D. =5,989). The Baecke Score for habitual physical activity ranged from 4.75 to 11.375 (mean=7, 44, S.D. =1,377) (table 1). Twenty-eight (28) women had received prior therapy (classical physiotherapy, acupuncture, exercises and more) on their lumbar area or other part of the body and 26 of them had received massage treatment before.

Table 1: Patient characteristics

<u>Characteristics</u>	<u>Value</u>
Total sample (n)	47
Mean age at baseline (yr)	32,14 ± 5,757
Mean height (m)	1,67 ± 0,065
Mean body weight (kg)	65,63 ± 12,63
Mean score for habitual physical activity (Baecke Questionnaire)	7,44 ± 1,377

4.2. Outcome measures

Before the beginning of the intervention, pain intensity using the Visual Analog Scale showed no statistically significant difference between the two groups ($p = 0,194 > 0, 05$). After the 5th treatment session, there was a statistically significant difference between the two groups ($p = 0,006 < 0, 05$) which lasted up to the end of the ten sessions ($p = 0,000 < 0, 05$) and even one month after ($p = 0,000 < 0, 05$ (figure 1)).

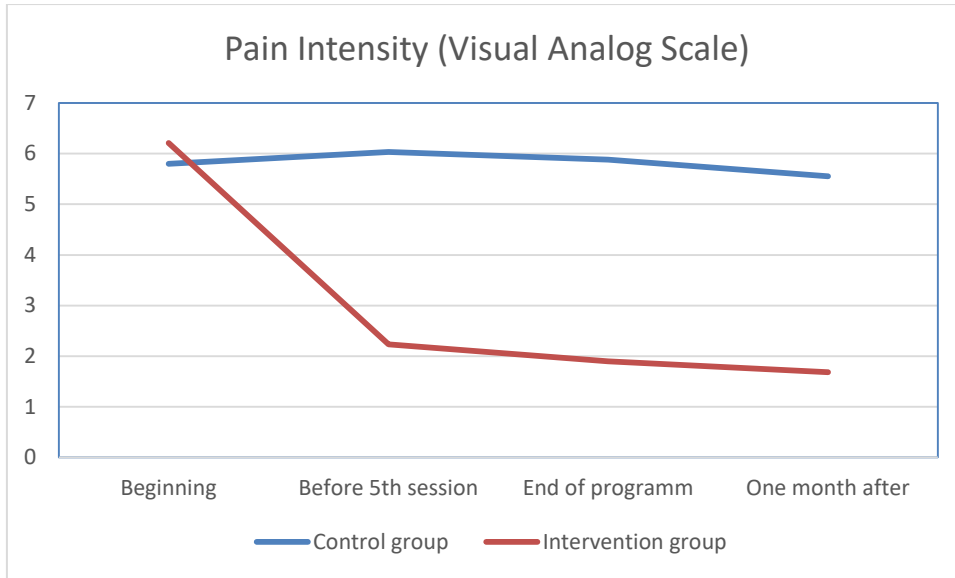


Figure 1: Comparison of pain intensity for both groups in 4 different stages of the research process (at the beginning, before the 5th session, at the end of the program and one month after).

Regarding the HAMA Scale, there was not a statistically significant difference at the beginning of the research protocol or in the middle of it (5th session) ($p = 0,683$ and $p = 0,911$ respectively). Between the two groups there was a statistically significant difference at the end of the research protocol ($p = 0,025 < 0,05$) which did not last at the follow-up of 1 month ($p = 0,197 > 0,05$) (figure 2).

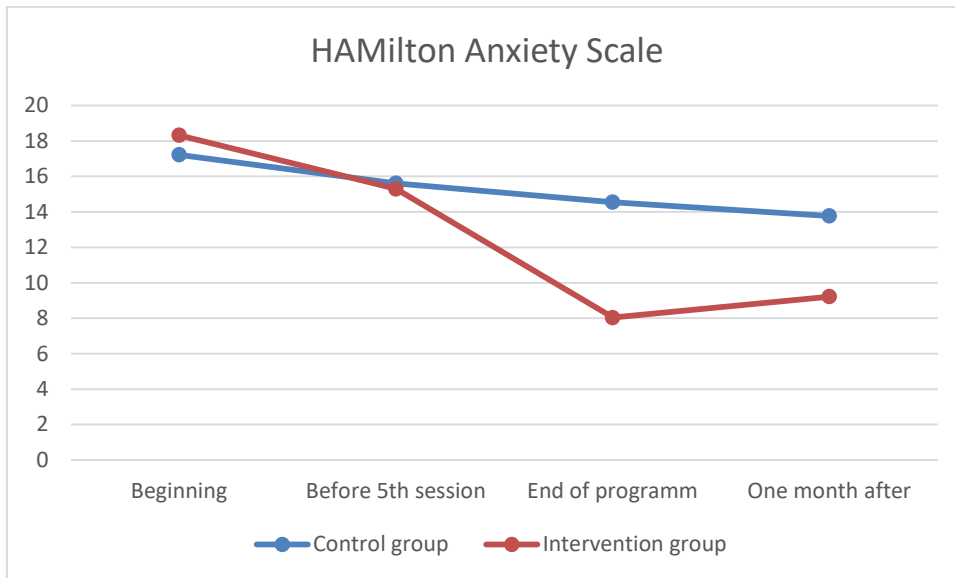


Figure 2: Comparison of HAMilton Anxiety Scale for both groups in 4 different stages of the research process (at the beginning, before the 5th session, at the end of the program and one month after).

Results from both Rolland-Morris Index and Oswestry Disability Index showed no statistically significant difference on the 1st measurement at the beginning of the research protocol and on the 2nd measurement on the 5th session between the two groups (for the 1st measurement $p = 0,525 > 0,05$ and $p = 0,341 > 0,05$ and for the

2nd measurement $p = 0,159 > 0,05$ and $p = 0,801 > 0,05$ respectively). However, a statistically significant difference between the intervention group and the control group was shown after the end of the research protocol ($p = 0,000$ for both questionnaires) and a month after its completion ($p = 0,000$ for both questionnaires) (figure3 ; figure 4).

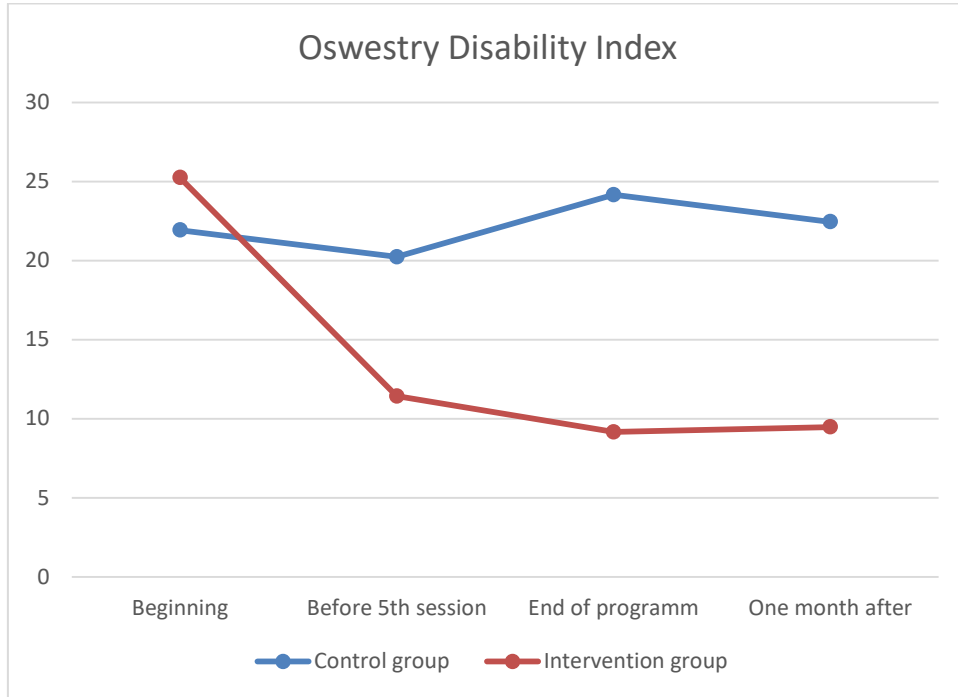


Figure 3: Comparison of Oswestry Disability Index Questionnaire for both groups in 4 different stages of the research process (at the beginning, before the 5th session, at the end of the program and one month after).

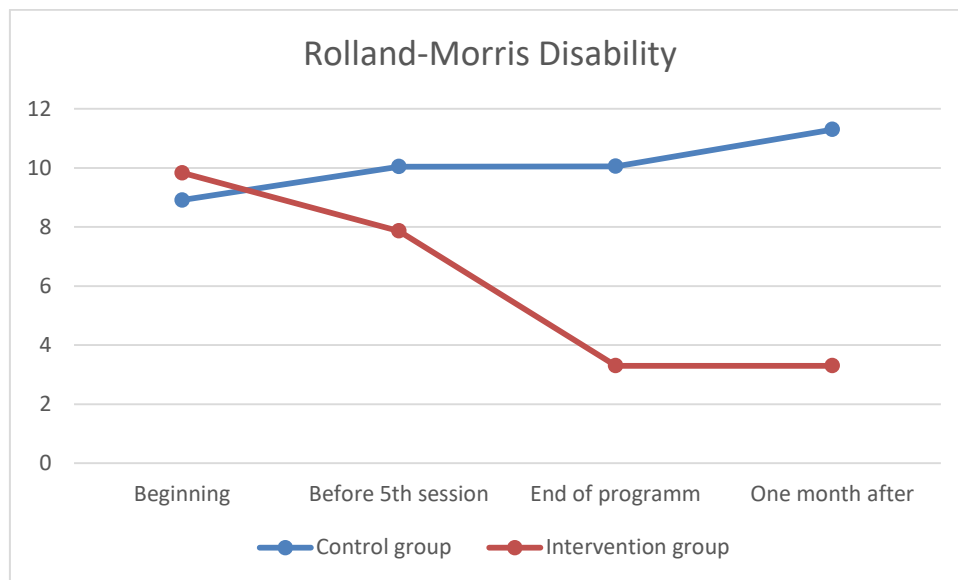


Figure 4: Comparison of Rolland Morris Disability for both groups in 4 different stages of the research process (at the beginning, before the 5th session, at the end of the program and one month after).

5. Discussion

This pilot study confirmed the feasibility of delivering a protocol of Swedish massage for treating non-specific low back pain. Although preliminary, the data strongly supported the efficacy of this treatment protocol for improving outcomes in women with acute, sub-acute and chronic low back pain.

At the beginning of the research protocol, there was no difference regarding the intensity of pain between the two groups. During the 5th treatment session, pain was reduced significantly in the intervention group and the reduction was evident even one month after the research protocol was finished. The treatment protocol used in the intervention group appeared to be effective in reducing pain, especially compared to the control group which received no treatment. Regarding stress and anxiety levels, the results of this study showed no statistically significant difference between the two groups in the initial phase of the program or in the middle of the process (5th treatment session). A statistically significant difference occurred at the end of the ten sessions but did not last until the follow-up of 1 month. Therefore, it seems that the application of therapeutic Swedish massage improves stress levels after ten sessions but proves to be a temporary improvement that appears to have no long effect. However, the economic situation in Greece during the past few years has affected a large percentage of the population so the stress levels are quite elevated and this temporary improvement could be attributed to the whole social and economic turmoil. Last but not least, the functional ability was assessed as previously reported with the use of the Oswestry Disability Index and Roland-Morris Disability Questionnaire. The disability levels before the beginning of the research protocol were not statistically different in any of the two groups. At the 5th session, there was no statistically significant difference between the intervention and the control group. A statistically significant difference between the two groups was reported after the end of the sessions. One month after, the improvement in the intervention group was still reported. The researchers concluded that in terms of functional ability and activities of daily living, application of therapeutic Swedish massage improved everyday living but as noted, more than 10 sessions might be needed in order to show substantial improvement. Before and after the 5th session, all four parameters were measured. There was a significant improvement in all four of them and it seems that the immediate results after a session of Swedish massage include a significant reduction in the intensity of pain, in stress experienced and improvements in the functional ability of people suffering from non-specific low back pain.

6. Conclusions

Unlike the anxiety levels that showed improvement at the end of the ten sessions, pain intensity was reduced from the 1st session and remained reduced even one month after the completion of the research protocol. There was also an increase at functional capacity and ability improved after the completion of the research protocol and also remained improved one month after. These findings are consistent with other studies of massage treatment as in Field and his colleagues [17], which showed a reduction in pain after the first and the last session and during the study in the intervention group. Hernandez-Reif and his colleagues [18] found that the massage treatment was effective in reducing pain, levels of stress hormones and back pain symptoms and in the investigation of Borges and his colleagues [19] where significant improvement was observed in pain scale and the score of Oswestry Disability Index. However, another reason why we could not draw a clear and definitive

conclusion about the effectiveness of therapeutic massage as a single therapy is that the studies conducted were compared with many different techniques and therapies. For example, other studies compare the massage with relaxation therapies [1,8,9,18,20], others by manipulation of the spine [8, 9, 20, 21], the other by positioning zone [8, 9, 21, 22] and others with the application of traditional Chinese acupuncture [9, 20]. Massage was also compared by applying percutaneous electrical nerve stimulation (TENS) or transcutaneous muscle stimulation [9, 21], using information leaflets [20], by performing exercises [9,20] and last but not least, classical physiotherapy [1,20]. In conclusion, future research should focus in the selection of the most appropriate protocol (number of sessions, intervals between sessions) as elements from various studies suggest that massage on acupuncture points seems more effective than classic massage techniques but still evidence is inconclusive. Data from this research protocol suggest the potential efficacy of 10 sessions of 30-minutes Swedish massage for reduced pain and functional improvement. If results are confirmed in a larger randomized trial, Swedish massage should be an important component of regular care for patients suffering from non-specified acute, sub-acute or chronic low back pain.

Acknowledgments

Special thanks to Dr. Dimitrios Damigos for the excellent cooperation.

The authors are grateful to Dr. Constantinos Koutsojiannis for his kind help in statistical analysis of this work.

Disclosure Statement

No competing financial interests exist

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