The Effects of Positional Release Therapy on Trigger Points of the Upper Trapezius Muscle

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Abstract

Background: Many health care practitioners, including chiropractors and physical therapists, utilize soft tissue modalities to help relieve pain associated with trigger points in muscles. The upper trapezius musculature is a common area in which these practitioners find trigger points in their patients. Several techniques are utilized by various health care professionals. Studying these techniques to determine their efficacy is of value to those professionals who use them. This study was performed to determine if Positional Release Therapy (PRT) could be effective in relieving trigger points of the upper trapezius musculature.

Methods: Twenty volunteers were recruited as subjects for this study. All subjects were between the ages of 20 and 50 years old and current students of Logan College of Chiropractic. The subjects in the treatment group were given a PRT treatment in compliance with published PRT protocols. The subjects in the control group were given a sham treatment. Pre-treatment and post-treatment microcurrent and algometer readings were measured and recorded for each subject. After the data for the control group and treatment group was compiled, it was compared to determine statistical significance of the results using a t-test analysis.

Results: The average decrease in the microcurrent readings after treatment for the treatment group was 7.5, with a p-value of 0.101. The average increase in the algometer readings after treatment for this group was 1.7, with a p-value of 0.098. The average decrease in the microcurrent readings after treatment for the control group was 4.5, with a p-value of 0.108. The average increase in the algometer readings after treatment for this group was 1.5, with a p-value of 0.105.

Conclusions: This study was unable to provide statistically significant data to evaluate the efficacy of Positional Release Therapy (PRT) for relieving trigger points of the upper trapezius muscles. Evaluation of the raw data, however, indicates a general tendency for PRT to affect microcurrent reading changes to a greater extent in the treatment group

than in the control group. This indicates that the researchers' hypothesis, with respect to microcurrent readings as an outcome measure, may be valid. Repetition of this experiment is necessary to explore this supposition. Limitations in this study's design and execution are discussed.

Key Words: trigger point, soft tissue technique, Positional Release Therapy (PRT), microcurrent, algometer

Introduction

Many health care practitioners, including chiropractors and physical therapists, utilize soft tissue modalities to help relieve pain associated with trigger points in muscles. The upper trapezius musculature is a common area in which these practitioners find trigger points in their patients. Several techniques are utilized by various health care professionals to treat these trigger points. Studying these techniques to determine their efficacy is of value to those professionals who use them.

This study was performed to determine if Positional Release Therapy (PRT) could be effective in relieving trigger points of the upper trapezius musculature. Previous studies showed positive results for PRT, including improvement in four main categories: pain tolerance, pain threshold, range of motion and visual analog scale (VAS) [1]. Previous studies mainly used subjective outcomes to determine the effectiveness of therapy, with limited emphasis on objective outcomes. Further research concluded that microcurrent machine analysis could be used as an accurate tool to measure the electrical activity in a muscle trigger point[2,3]. This technology could be used as an objective determination of the effect of PRT on trigger points. In addition to using the microcurrent modality, this study included an additional objective rating through the use of a standardized pressure meter to measure pain threshold.

The researchers hypothesized that electrical activity at the site of a trigger point in the upper trapezius musculature would be significantly decreased following treatment with PRT than without treatment. The researchers further hypothesized that subjects

would require significantly more pressure to initiate a pain response in the trigger point after PRT treatment than without treatment.

Methods

Twenty volunteers were recruited as subjects for this study. All subjects were between the ages of 20 and 50 years old and current students of Logan College of Chiropractic. Using a questionnaire, the subjects were screened to determine their eligibility (See Appendix A). Inclusion criteria included presence of a trigger point in the upper trapezius musculature and general good health of the subject. Exclusion criteria included: open wounds, recent acute trauma, acute inflammation, systemic or localized infection, acute or healing fractures, hematomas, a diagnosis of diabetes, hypersensitivity of the skin, or current use of analgesic or muscle relaxing medication.

All subjects were assigned to either group A, the treatment group, or group B, the control group by one of the researchers. The study participants and the data-gathering researchers were blinded to the group in which the subjects were placed. Only the assigning researcher was aware of subject placement into groups.

Pre-treatment microcurrent readings were taken on each subject, using the Acutron Mentor microcurrent machine, model number 961, and recorded on the data collection sheet (Appendix B). The trigger point was then marked with a skin marking pencil. A pre-treatment algometer reading was also recorded on the data sheet. A digital pressure meter with a measurement head of five-eighths inch diameter was placed over

the trigger point and pressure was applied until the subject indicated that pain was felt; the pressure reading at that point was recorded.

The subjects in group A were then given the PRT treatment in compliance with published PRT protocols[4,5]. The treatment consisted of precise positioning of the subject in order to approximate the origin and insertion of the upper trapezius muscle. The examiner then applied pressure over the trigger point and held for 90 seconds. The subjects in group B were given a sham treatment. The sham treatment consisted of an investigator placing a contact with a lighter pressure in the area of the trigger point and holding the contact for 90 seconds.

Post-treatment microcurrent and algometer readings were then measured and recorded for each subject. After the data for the control group and treatment group was compiled, it was compared to determine statistical significance of the results using a t-test analysis.

Results

Group A, the treatment group, consisted of four females and six males ranging in age from 23 to 35 years old, with a mean age of 26. The average decrease in the microcurrent readings after treatment for Group A was 7.5, with a p-value of 0.101. The average increase in the algometer readings after treatment for this group was 1.7, with a p-value of 0.098. These results are summarized in Tables 1 and 2.

Group B, the control group, consisted of four females and six males ranging in age from 24 to 33 years old, with a mean age of 27.3. The average decrease in the

microcurrent readings after treatment for Group B was 4.5, with a p-value of 0.108. The average increase in the algometer readings after treatment for this group was 1.5, with a p-value of 0.105. These results are summarized in Tables 1 and 2.

The data was analyzed using a t-test. The difference in microcurrent readings within the treatment and control groups was not statistically significant, nor was the difference in the algometer readings within the treatment and control groups. Because of this, it was not logical to analyze the data for statistical significance between the treatment and control groups.

Microcurrent

	Average Pre-Treatment Reading	Average Post-Treatment Reading	Average Decrease	p-value
Group A	53.5	46	7.5	0.101
Group B	45	40.5	4.5	0.108

Table 1. Microcurrent reading data for treatment and control groups.

Algometer

	Average Pre-Treatment Reading	Average Post-Treatment Reading	Average Increase	p-value
Group A	10.4	12.1	1.7	0.098
Group B	12.2	13.7	1.5	0.105

Table 2. Algometer reading data for treatment and control groups.

Discussion

This study was unable to provide statistically significant data to evaluate the efficacy of Positional Release Therapy (PRT) for relieving trigger points of the upper trapezius muscles. Evaluation of the raw data, however, indicates a general tendency for PRT to affect microcurrent reading changes to a greater degree in the treatment group than the in the control group. This indicates that the researchers' hypothesis, with respect to microcurrent reading as an outcome measure, may be valid. Further research is necessary to explore this supposition.

This study consisted of only twenty subjects, and an increase in study size may increase the likelihood of gathering statistically significant data. There are additional parameters that could be modified to create a better data set, including limiting the inclusion criteria of the study in the areas of age, sex, chronicity of trigger points, degree of pain on the visual analog scale. Also, a new sham procedure may be developed, as the sham treatment provided in this study may have had an affect on the trigger points of the subjects. The sham treatment may have also had some psychological treatment affect. Although more objective than visual analog scale ratings, the algometry readings used in the study are still semi-subjective, since the patient must indicate when they first feel pain.

Although this study shows no statistical significance in the use of PRT to treat trigger points of the upper trapezius muscles, it opens the door for a study that has a greater opportunity to show statistical significance.

Works Cited

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Positional Release Therapy Subject Questionnaire

Are you between the ages of 20 and 50?	☐ Yes	☐ No
Do you currently have any tender points in your trapezius musculature?	☐ Yes	☐ No
Do you consider yourself in reasonably good health and physical condition?	☐ Yes	☐ No

Do you have any of the following in the region of treatment (upper trapezius):

Open wounds?	☐ Yes	☐ No
Recent acute traumas?	☐ Yes	☐ No
Acute inflammation?	☐ Yes	☐ No
Systemic or localized infection?	☐ Yes	☐ No
Acute or healing fractures?	☐ Yes	☐ No
Hematomas?	☐ Yes	☐ No

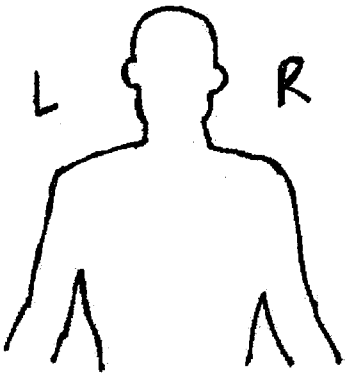
Have you been diagnosed with Diabetes?	☐ Yes	☐ No
Do you or have you ever experienced hypersensitivity of the skin?	☐ Yes	☐ No
Are you currently using any analgesic or muscle relaxing medications?	☐ Yes	☐ No
Have you had any soft tissue manipulation performed on you in the last 48 hours?	☐ Yes	☐ No
Do you plan to have any soft tissue manipulation performed on you in the next 72 hours?	☐ Yes	☐ No

DATA

Date:_____

Subject Number: _____

Position of Trigger Point



Pre-Treatment

Microcurrent reading of trigger point: _____

VAS (marked by subject)

|_____|
0 10

Post-Treatment

Microcurrent reading of trigger point: _____

VAS (marked by subject)

|_____|
0 10