Improvements in range of motion with passive stretching and myofascial release at the hamstrings

Marcos Garza, Mayrena Hernandez, Thomas Swain, Kelsey Tarrant, Nicole Teutsch

KINE 3325 – Undergraduate Research Methods (Dr. Caçola)

Department of Kinesiology - The University of Texas at Arlington

Abstract

Introduction: Range of motion (ROM) is the specific movement of a joint- measured in degrees. It is important to know techniques to apply that will give people the best ROM. With myofascial release (MFR), the object is to fix muscular restrictions while ROM is restored. Re-establishing ROM after pathology is essential for activities of daily living or athletics. Studies have discovered that MFR interventions were effective in reducing hamstring tightness versus no treatment on hamstrings. **Purpose:** The aim of this experiment is to examine range of motion of the hamstrings by the assessment of knee extension with implementation of various forms of myofascial release. **Methods:** 18 participants were evaluated over 3 sessions. The participants were divided into 3 groups. Group 1 received passive stretching (PS) as treatment, group 2 received PS and self-release treatment, and group 3 received PS and clinician release. The subjects were measured for hamstring ROM at the beginning and end of the first two sessions, just ROM was assessed for the third session. **Results**: Data analysis was conducted by running repeated measures and a one-way ANOVA. The repeated measures on each individual in each group were insignificant with P values > 0.05. ANOVA results indicated no effect for condition, t(df) = (2), p > .05, F= .502, p > .05. **Conclusion:** Our results indicate that myofascial release, clinician or self-release, did not improve range of motion over passive stretching. This may be attributed to treatment types and times.

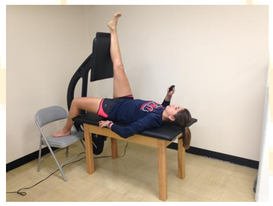
BACKGROUND & PURPOSE

- Studies have indicated that MFR in adjunct with passive stretching greatly increases ROM over passive stretching alone.
- QUESTION: Does manual therapy (myofascial release) in adjunct to passive stretching further increase range of motion?
- PURPOSE: The aim of this experiment is to examine the effects that myofascial release of the hamstring muscle group has on range of motion at the knee.

METHODS

18 participants. 9 males & 9 females divided into 3 groups. The electronic protractor was the tool of measurement because of its reproducibility (validity) and reliability.

- Group 1 received passive stretching as treatment for three treatments of 30 seconds per session
- Group 2 received passive stretching and self-release treatment. Self-release was done for two sets of 45 seconds.

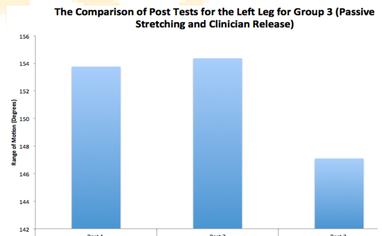


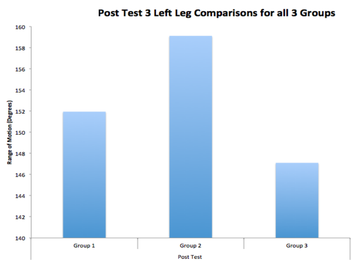
- Group 3 received passive stretching and clinician release. Muscle play was used for 45 seconds, following 45 seconds of muscle ironing.

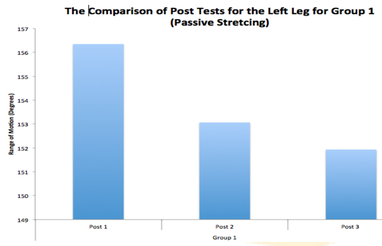
The patient was instructed to lay supine on a yoga mat, a chair was then placed under the flexed involved leg, and the patient was instructed to extend their knee towards the ceiling.
3 pre test and post test measures were taken.

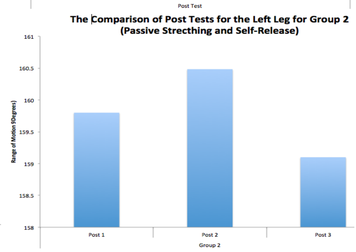
RESULTS

- Repeated measures group results indicated no significant difference.
- ANOVA results indicated no effect for Condition, t(df) = (2), p > .05, *F*= .502, *p* > .05. There was an approaching significance for the Post Test Average on the Left Leg between all groups with a 0.073 significance in Post Test 3.









DISCUSSION & CONCLUSION

- The variables measured within the clinician release group, were not individualized to patient's needs, and as a result we believe this could have hindered significance. Underestimation in the effect of lengthy passive stretching in all groups. Based on the results found, we fail to reject the null hypothesis.
- Our results indicate that myofascial release, clinician or self-release, did not improve range of motion over passive stretching.

REFERENCES

1) Ajimsha, M., Binsu, D., & Chithra, S. (2014). Effectiveness of myofascial release in the management of plantar heel pain: A randomized controlled trial. *The Foot*. 2) Ajimsha, M.S., Noora Al-Mudahka. J.A. Al-Madzhar. (2015) "Effectiveness of myofascial release: Systematic review of randomized controlled trials." Journal of Body Work and Movement. 9(1) 102-112. 3) Ajimsha, M.S., Noora Al-Mudahka. J.A. Al-Madzhar. (2015) Effectiveness of myofascial release: Systematic review of randomized controlled trials. *Journal of Body Work and Movement, 9(1)* 103-105. 4.) Deyne, Patrick. (2001) Application of Passive Stretch and Its Implications for Muscle Fibers. *Physical Therapy. 81(2):*819–827. 5.)Gajdosik, Richard, and Richard Bohannon. (1987). Clinical Measurement of Range of Motion: Review of Goniometry Emphasizing Reliability and Validity. *Journal of the American Physical Therapy Association, 67(12),* 1867-1872. 6.) George, James. Andrew Tunstall. Rodger Tepe. Clayton Skaggs. (2006) The Effects of Active Release Technique on Hamstring Flexibilty: A Pilot Study. *Journal of Manipulative and Physiological Therapeutics, 29(3):*224-227. *7)*Kidd, Robert. (2009) Why myofascial release will never be evidence based. *International Musculoskeletal Medicine, 31(2)*55-56. 8)Kistemaker, D. A., A. J. K. Van Soest, J. D. Wong, I. Kurtzer, and P. L. Gribble. (2014) Control of Position and Movement Is Simplified by Combined Muscle Spindle and Golgi Tendon Organ Feedback. *Journal of Neurophysiology 109.4:* 1126-139. 9) Llamas-Romas, Rocio. Pecos –Martin, Gallego-Izquiredo, Llamas-Ramos, I. Plaza-Manzano, Ortega-Santaigo, Cleland. Fernandez-de-Las-Penas. (2014) Comparison of the short-term outcomes between trigger point dry needling and trigger point manual therapy for the management of chronic mechanical neck pain: a randomized clinical trial. *Journal of Orthopedic* Sports *Physical Therapy, 44(11):* 852-61. 10) Decoster, L.C. (2009). Effects of Hamstring Stretching on Range of Motion. *Athletic Training & Sports Health Care: The Journal for the Practicing Clinician, 1(15),* 209-213.