

The Acute and Residual Effects of IASTM and Roller Massage Stick on Hamstring Range of Motion

Ded

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INTRODUCTION

- · Fascial tissue: connective tissue that surrounds muscles, nerves, blood vessels and connects structures of the body
- · Fascial adhesions result in decreased range of motion and prevent normal muscle function
- · Adhesions form due to various mechanisms (Halpren, 2014)
- · Response to injury
- · Sedentary lifestyle
- · Chronic inflammation
- · Self-myofascial release is a popular intervention used by patients in many different settings to increase myofascial mobility (Cheatham, 2015)
- · Many devices exist, most common being self roller massage and foam roller
- · IASTM is the mechanical break up of fascial adhesions or restrictions (Ercole, 2010)
- · Generates micro-trauma thus creating an inflammatory response (Moon, 2017)
- Facilitates soft tissue healing (Moon, 2017)
- · Decreases pain
- Improves mobility
- · Improves muscular performance
- · Promotes restructuring of collagen

Statistical Analyses:

- Two-way repeated measures ANOVA
- 2x3 factorial design
- Two independent variables: Treatment (IASTM and The Stick) and Time (Pre, Post, and 48Post).
- The alpha level was set at p < 0.05.

METHODS

Design & Setting:

- · Prospective cohort study
- · Conducted at Weber State University

Participants:

- · Sixteen (8M, 8F) recreationally-active college-aged participants
- Age=23.38+2.45yr, Ht=171.38+9.14 cm, Wt=70.94+11.11kg
- · Deficit in hamstring flexibility
- · No injuries or surgeries within the past six months
- · Participation in moderate-vigorous intensity exercise for at least 20-60 minutes, at least 3-5 times per week.

Procedures: All participants were randomly assigned to two groups (counterbalanced by gender, dominant leg, and clinician) applying the intervention of either instrument assisted soft tissue mobilization or roller massage stick to their dominant leg and the other to their contralateral leg.

- · ROM was measured pre-treatment, immediately posttreatment, and 48hrs-post-treatment
- Both treatments were 3¹/₂ minutes
- · Participants then conducted their week as they normally would, including workouts, and intensity of those workouts.
- Participants returned after 48 hours for final ROM measurements.



Figure 1. and 2. Participant positions for Active and Passive ROM measurements

RESULTS

- · No interaction effect between treatment and time for AROM F(2,14) = 1.956, p=.491 or PROM F(2,14) = .894, n= 989
- · Main effect for time showing a significant increase in ROM from pre-treatment to immediate post treatment
- · Both interventions produced an acute increase in ROM of the hamstring and sustained the increase 48 hours later.

	Act	ive ROM	
	Pre	Immediate post	48 post
Stick	56.88° ± 8.555	62.38° ± 9.337	61.75° ± 8.307
IASTM	55.81° ± 8.264	61.50° ± 7.339	60.88° ± 8.981
	Pass	sive ROM	
	Pre	Immediate post	48 post
Stick	44.00° ± 13.332	48.81° ± 11.374	49.81° ± 9.772
IASTM	41.50° ± 14.556		48.69° ± 8.428
60		AROM	1 Treatr

Immediate 48hrPost Time PRON Treatmen Stick IASTN

Immediate

Time

A8hrPost

- The increase in ROM was sustained 48 hours post-treatment
- · The study demonstrates that an increase in range of motion can be achieved with either intervention and be sustained for 48hours-post treatment after just a 3.5 minute treatment

- · Duration of treatment
- · Patient pain tolerance

Future Research:

- · Multiple measurements (48 hr, 96 hr, etc) should be taken to demonstrate how long the effects of a single treatment might last
- · Choosing a specific sample size may decrease variability among

CONCLUSIONS

- · A single treatment of 31/2 minutes of application of either intervention of IASTM or The Stick produced statistically significant increases in hamstring range of motion
- · Both treatments were equally effective at increasing and maintaining range of motion of the hamstring
- · The effects were sustained 48 hours following the treatment even after a moderate to vigorous intensity training session
- · The present findings and results indicate that IASTM and The Stick were equally effective at increasing hamstring ROM
- · IASTM and The Stick were equally effective, but The Stick is significantly more affordable.

REFERENCES

1.	C MuurletT A ClashU PadualD ElectroeseendMyshaclaRelease Therapies on Physical Performance Measurements: A Systematic Review. Athletic Training & Sports Health Care. 2014;6:189- 196. doi:10.200114/5304-20140777-02
2	Halperin (Aboodestab), ButtorDC, Andersen Li, BehmDG Rolernassager improves range of motion of plantar fexor muscles without subsequent decreases in force parameters. Int J Sports Phys There 2014;39(1):32-102.
2.	ZügelM, MagerarieCN, WikeJ, etal. Fascialissueneeerchireports medicine: from molecules to lissue adaptation, injury and diagnostics: consensus statement. British Journal of Sports Medicine. 2018;52(22):1427-1497. doi:10.1138/bjsports-2018-202308
4.	Cheathan/SW KolbeAU Calob Lead TheeTectoletar-hyotacclahelease using a foam roller or roller massager on joint range of motion, muscle recovery, and performance: A systematic review. In J. Soath Phys. The. 2015;1051:027-020.
5.	RabinA, KozolZ, Spitzer F, Friestone A, Ankie Dorsilleaion Among Healthy Men With Different Qualities of Lower Extremity Movement. Journal of Athletic Training. 2014;48(5):617-623. doi:10.1015/102.0010-01.01.01
б.	MikeskyAE, JlahamondeRE, StantonK, AlveyT, FittonT. AcuteEllifecteolThe Stick on Strength, Power, and Fiexbillty. 5.
7. 8.	Erosilli Antonics, AukaAnno, Skecco, Howmuchtimeinequiredomotiy a tascial librairi / Journal of Bodynok and Movement Thrangkes. 2010;14(4):318-233. doi:10.1016/j.bmt.2010.04.008 Markovics. Aukaefectodomismicratasiatasiatasiatoms.toam solitigi on knee and hip tango of motion in accore players. Journal of Bodynok and Movement Thrangiac.
9.	2015;19(4):680-688. doi:10.10168.jbmt.2015.04.010 Moonal/Langel/Work?ScholeY.hmmediateMethoda/EautonTechnique on hamating muscle extensibility and pain intensity in patients with nonspecific low back pain. J Phys Ther Sci.
10.	2017 29(2):204-227. doi:10.1026/jpta.20.224 Loadner K. Compton RD, Nicholas TA, Wathers CM. Acute effects of instrument assisted and tissue mobilization for improving posterior shoulder range of motion in collegiate baseball players. Int J
11.	Sports Phys Ther. 2014;5(1):1-7. Guilox DT. Instrument-assisted soft issue mobilization increases myobacial trigger point pain threshold. Journal of Bodywork and Movement Therapies. 2017;0(0). doi:10.1016/j.bmt.2017.10.012
12.	Stanak J, Salivan T, Davis S, Comparison of Compressive Myobaccial Release and the Grastion Technique for Improving Ankie-Donatifesion Range of Motion. Journal of Athletic Training. 2018;53(21):105-107. doi:10.1005/1002-0005-038-16
13.	Kober MJ, Hanney WJ. The reliability and concurrent validity of shoulder mobility measurements using a digital inclinometer and goniometer: A technical report. Int J Sports Phys Ther.
14.	2012;7(1):306-313. Kokmeyer(3), van der Wurft P, Aufdenkampe G, Fickenscher TCM. The milability of multitast regimens with sacrolisc pain provocation tests. Journal of Manipulative and Physiological
15.	Therapeutics. 2002;23(1):42-46. doi:10.1067/mmt.2002.120418 Endburg-Squires DU, Notali X, Sullian KM, Behm DG, Power KE, Button DC. Roller-Massager Application to the Quadricops and Knee-Joint Range of Motion and Neuromuscular Efficiency
16.	Daring a Lungs. J Adm Train. 2015;50(2):133-146. doi:10.4685/1002-8603-48.5.03 Hopper D, Conneyl M, Chonnell K, Canniel B, Berggnan J, Britter K. Evaluation of the effect of two massage techniques on harmstring muscle length in competitive female hockey players. Physical
17.	Therapy in Sport, 2005 6(2):127-145. doi:10.1016().ptp.2005.04.003 Buunhai L, Chavaon SM, Weberler MM. Chrisch Relevance of Foam Rolling on Hip Extension Angle in a Functional Lunge Position. J Strength Cond Res. 2015;22(9):2307-2403. doi:10.1559/J2C000000000000000000000
18. 19.	Mehr AR, Long BC, Good CL. Effect of faam noling and static stretching on passive hij-flassion range of motion. J Sport Reababl. 2014;22(4):286-250. doi:10.1123/jsr.2013-0025 Km. J. Samg OL, Lee J. Twarapacitic effectiveness of instrumentassisted and itsuament/bitanion for and fissue julyar. mechanisma and practical application. J Easter Reababl. 2017;12(1):12-22.
	4h0101123655ar17733834.412

DISCUSSION

· Statistically significant increased AROM and PROM regardless of treatment

- MASTER OF SCIENCE -

TRAINING

Limitations:

Small sample size

· Recreational athletes with varying workout programs

- · Use of a lab setting instead of a clinical setting