



Modern Modalities in Sports Medicine

Massage Gun and Vibration Therapy

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Vibration Therapy Products

- TheraGun- \$300 - \$600
- Hypervolt- \$200 – 400
- Non-Name Brand- \$120
- Vibration Rolling (VR)
 - Vyper 2.0 \$200



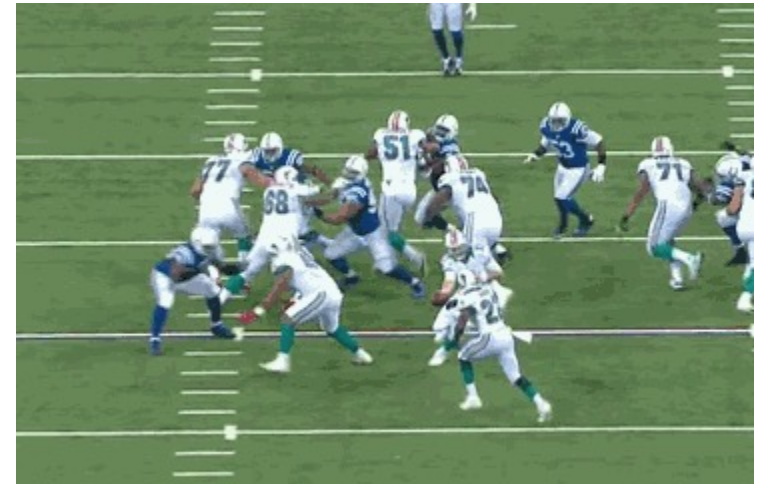
Pre-Workout VT Guidelines

- Treatments on hamstrings, quadriceps, calf muscles, and biceps
- 1 minute x 5 sets
- 2 minute continuous
- 30 seconds x 3 sets
 - All significantly increased ROM of knee flexion and extension, isokinetic peak torque, muscle strength, and dynamic balance (Lim et al.)
- 30s x 3 sets on calf VR while actively performing ankle dorsiflexion and plantarflexion (Dynamic VR)
- Currently no consensus on optimal vibration therapy technique



Effects of Vibration Rolling on Performance

- Study done in 2020
 - Ankle ROM
 - Proprioception
 - Muscle Strength
 - Agility
- Vibration Rolling (VR)
- VR with Dynamic Muscle Contraction (DVR)
- Static Stretching (SS)



Results of Vibration Therapy on Performance

Ankle ROM

Increased with both VR and DVR

Even more ankle dorsiflexion with DVR

Ankle Proprioception

Comparable after VR, DVR, and SS

Ankle Plantar Flexor

Peak Torque

VR and DVR significantly improved

Agility (Figure 8 Hop Test)

VR and DVR significantly improved

Static Stretching

Significantly improved dorsiflexion and plantarflexion ROM only

Vibration Therapy Effect on DOMS



Vibration Therapy- 5 min @ 50 Hertz (Hz) on biceps before workout

Massage Therapy- 15 minutes

Control Group

Muscle Soreness

Maximal Isometric Force

ROM

1 Repetition Maximum

Creatin Kinase

- primary enzyme regulating anaerobic metabolism
- Released in case of damage to muscle tissue

Lactate Dehydrogenase (LDH)

- Enzyme that turns sugar into energy
- Released when cells are damaged or destroyed

Results of Vibration Therapy on DOMS

Muscle soreness

Reported significantly less in VT and MT groups @ 24, 48, and 72 hours post-exercise

Maximal Isometric Force

No difference in any group

ROM

Significant improvement in VT and MT at 48 & 72 hours post-exercise

1 Rep Max

VT showed significant difference in pre-workout and 48 hours post workout compared to MT group

Creatin Kinase

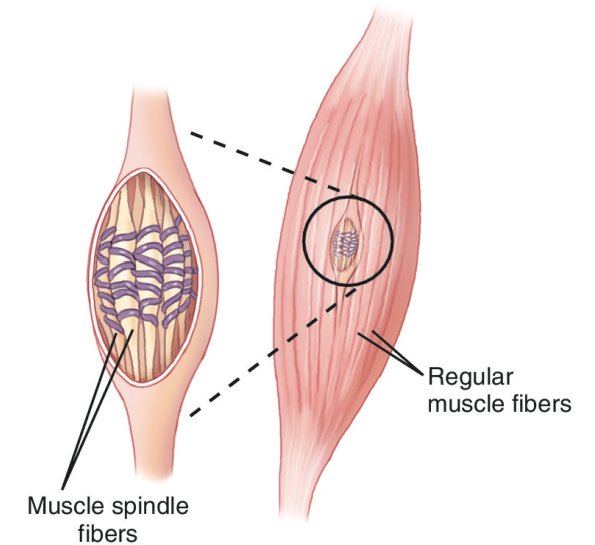
Significant difference 48 hours post-exercise in both VT and MT compared to control group

LDH

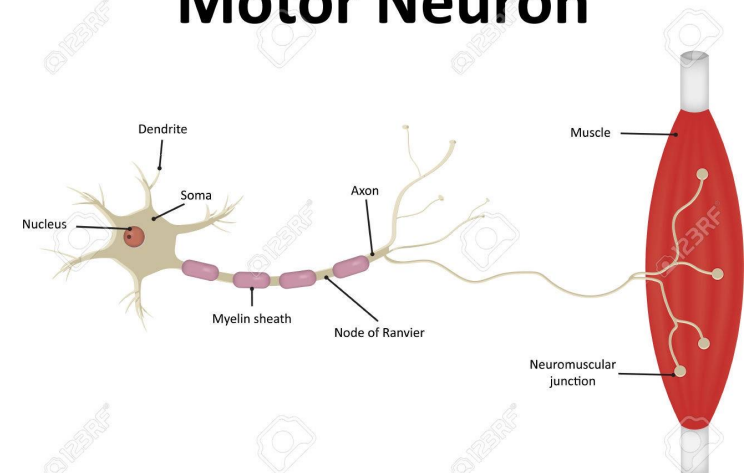
VT showed significantly lesser levels 48 hours post workout compared to control group

WHY WOULD VIBRATION THERAPY WORK?

- Enhancement of reflex activity by stimulation of the muscle spindle (stretch receptors)
- Increases blood flow (DVR), skin temp, flexibility
- Motor unit activity synchronization resulting in more force production from muscle group
- More active muscle fibers results in great distribution of exercise load, causing less muscle damage
- Mechanical remobilization of fascia back to its normal aligned state
- Soft-tissue compliance increased to enable longer muscle length
- Pain/Gait Control Theory
- LESS DAMAGE TO MUSCLE DURING ACTIVITY



Motor Neuron



References

- Lyu, B. J., Lee, C. L., Chang, W. D., & Chang, N. J. (2020). Effects of Vibration Rolling with and without Dynamic Muscle Contraction on Ankle Range of Motion, Proprioception, Muscle Strength and Agility in Young Adults: A Crossover Study. *International journal of environmental research and public health*, 17(1), 354. <https://doi.org/10.3390/ijerph17010354>
- Imtiyaz, S., Veqar, Z., & Shareef, M. Y. (2014). To Compare the Effect of Vibration Therapy and Massage in Prevention of Delayed Onset Muscle Soreness (DOMS). *Journal of clinical and diagnostic research : JCDR*, 8(1), 133–136. <https://doi.org/10.7860/JCDR/2014/7294.3971>



Questions