Neufit System and the Neubie Device

The Muscular Response to the Neubie Device VS. Traditional Resistance Exercise

The Study

The Neubie device is FDA-cleared for indications such as maintaining and increasing range of motion, increasing local blood flow, and neuromuscular re-education. Since neuromuscular re-education is directly related to muscle recruitment, the Neubie is hypothesized to have a potential effect on muscle strength and hypertrophy. In this study, we compared acute changes in muscle thickness, isometric torque, and soreness before and up to 48 hours following no load resistance training with the Neubie vs. traditional high load resistance training.

Location: *University of South Florida Muscle Laboratory* | **Director:** *Professor of Exercise Science, Dr. Samuel Buckner, PhD*

Why Examine No-Load Training?

Rather than the amount of load on muscles, the most important factor in muscle growth is actually sufficient activation of muscle fibers. Growing evidence suggests that muscle growth can occur across a variety of intensities and training modalities. For example, 3 sets of 80% intensity or 3 sets of 30% intensity (3x/week) resulted in a similar muscle growth following 10 weeks of resistance exercise[2]. Neuromuscular electrical stimulation like that of the Neubie is an attractive alternative to high-load training, as it has been shown to enhance muscle fiber activation, while also beneficially accelerating recovery in tissues by stimulating muscle protein synthesis and suppressing muscle protein breakdown[3].

The Study:

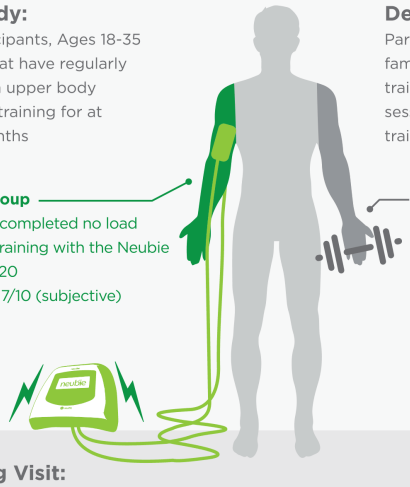
- 34 Participants, Ages 18-35
- Those that have regularly engaged in upper body resistance training for at least 6 months

Design:

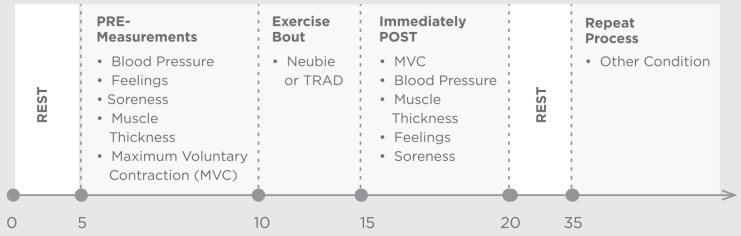
Participants underwent 1 familiarization session, 1 resistance training session, and 2 measurement sessions (24 and 48 hours after training).

NEUBIE Group
- One arm completed no load resistance training with the Neubie
- 4 sets of 20
- Power of 7/10 (subjective)

Traditional Resistance Training (TRAD) Group
- One arm performed high load resistance exercise to fatigue
- 4 sets to failure
- 8-12 reps @ 70% 1RM



Training Visit:



1 Muscle Thickness

Neubie and traditional training both led to **significantly increased** muscle thickness compared to pre-training. The amount of increased thickness was not significantly different between the two groups. This is important because fluid shifting into muscle cells is a precursor to hypertrophy[1].

PRE-TRAINING:	IMMEDIATELY POST TRAINING:		24 HRS AFTER:		48 HRS AFTER:	
3.7CM	3.9CM NEUBIE	4.2CM TRADITIONAL TRAINING	3.81CM NEUBIE	3.77CM TRADITIONAL TRAINING	3.75CM NEUBIE	3.77CM TRADITIONAL TRAINING

2 Isometric Torque (Fatigue)

There was a **significant decrease** in torque immediately after training for both Neubie and traditional training, and the amount of decrease was very similar for both types of training at all times measured. This is important because fatigue is typically a precursor to improvements in strength and hypertrophy.

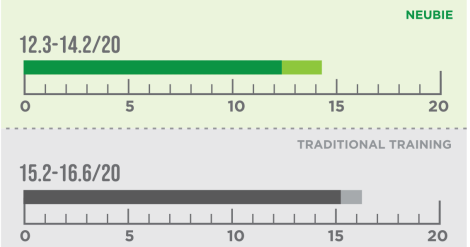
3 Soreness

Neubie resulted in **significantly greater levels** of delayed onset muscle soreness compared to traditional training.

PRE-TRAINING:	24 HRS AFTER:		48 HRS AFTER:	
0.3/10	2.1/10 NEUBIE =	2.1/10 TRADITIONAL TRAINING	2.8/10 NEUBIE	1.7/10 TRADITIONAL TRAINING

4 Rated Perceived Exertion (RPE) Scale

For all training sets, participants rated RPE **significantly lower** with the Neubie than with traditional training.



CONCLUSION

Short-term training with the Neubie results in similar acute responses as traditional high load training in areas of increased muscle thickness, fatigue, and soreness, but with lower perceived exertion. These acute effects may indicate that the same amount of muscle growth or strength improvements can be achieved without the additional strain on joints, making it a safe, effective, and viable alternative to traditional training.

REFERENCES: 1. E. Vasenina, R. Kataoka, W.B. Hammert, A.H. Ibrahim, S.L. Buckner (2022) The acute muscular response following a novel form of pulsed direct current stimulation (Neubie) or traditional resistance exercise. Journal of Musculoskeletal and Neuronal Interactions. Available online April 1, 2022. https://www.ismni.org/jmni/accepted/JMNI_21M-08-159.pdf **2.** Mitchell CJ, Churchward-Venne TA, West DW, Burd NA, Breen L, Baker SK, Phillips SM. Resistance exercise load does not determine training-mediated hypertrophic gains in young men. J Appl Physiol (1985). 2012 Jul;113(1):71-7. doi: 10.1152/japplphysiol.00307.2012. Epub 2012 Apr 19. PMID: 22518835; PMCID: PMC3404827. **3.** Dirks ML, Wall BT, Snijders T, Ottenbros CL, Verdijk LB, van Loon LJ. Neuromuscular electrical stimulation prevents muscle disuse atrophy during leg immobilization in humans. Acta Physiol (Oxf). 2014 Mar;210(3):628-41. doi: 10.1111/apha.12200. Epub 2013 Dec 12. PMID: 24251881.