Effects of a “Holographic” disk on Delayed Onset Muscle Soreness and Performance: a Pilot Study

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INTRODUCTION

DOMS is the feeling of discomfort within the skeletal muscle occurring after a bout of unaccustomed exercise. The most accepted treatment for DOMS is anagelsics, e.g., ibuprofen. Home remedies typically include the use of topical lotions and creams, the application of heat, and deep tissue massage. It is well accepted that DOMS impairs muscular performance.

In Asia, acupuncture/accupressure has been an accepted form of medical treatment for pain relief for roughly 2000 years. The company Zero Quantum has developed a holographic data disc that is used on traditional Chinese medicine (TCM) acupuncture points. The company claims that with the use of their disc one can manage pain without the use of any drugs, when the discs are placed at the appropriate TCM acupuncture points. Because pain has been shown to impact performance, if the Zero Quantum “relief” disc is a viable recovery agent we hypothesize that compared to placebo, we will see significant recovery at 24 hours post unaccustomed exercise. Therefore, the purpose of this pilot investigation is to determine if the placement of an encoded holographic disc at the appropriate TCM site can alleviate the discomfort commonly associated with DOMS as well as enhance performance during 3 trials to failure.

Statistical Analysis

An alpha level of P ≤ 0.05 was established. Power analysis revealed that 16 participants would be needed for a full study. Because upper- and lower-body performance measures have different variances a composite Z-score was used to allow comparisons between placebo and disc treatments. A paired t-test was performed to determine differences in pain, perceived recovery, rating of perceived exertion, and performance.

RESULTS

A significantly higher number of repetitions for all exercises combined was observed for the disc condition when compared to placebo (Disc Z = 0.17 ± 0.12 vs. Placebo = 0.29 ± 0.23) Figure 1.

Ratings of perceived recovery as subjective measure of how the participant thought they would perform was significantly higher (p = 0.02) for the disc condition when compared to placebo (Disc Z = 0.1 ± 0.3 vs. 0.3 ± 0.1) Figure 2.

DMT RPE was lower (p = 0.04) for the disc condition when compared to the placebo condition (8.0 ± 9.9 vs. 8.9 ± 9.9) Figure 3.

Ratings of pain sensation was not statistically different (p = 0.21)

DISCUSSION

We found that the “holographic” disc significantly (P = 0.01) increased muscle endurance following a novel bout of exercise designed to induce DOMS, regardless of whether upper- or lower-body muscles were used.

Overall perception of effort was lower with the holographic disc relative to placebo.

Perceptions are important both in positive and negative aspects. Being less sensitive to effort may allow the participant to work harder, however, less perceiving effort may lead to over-training.

The greatest limitation to this study was the lack of a clear physiological mechanism for the results observed.

The results should be interpreted with caution. This is a small sample size and inferential statistics only state probability, not surety.

The results of this pilot study warrant a comprehensive follow-up study with larger samples examining pain, strength, endurance, and recovery in trained weight lifters to determine if this novel approach to recovery is effective.