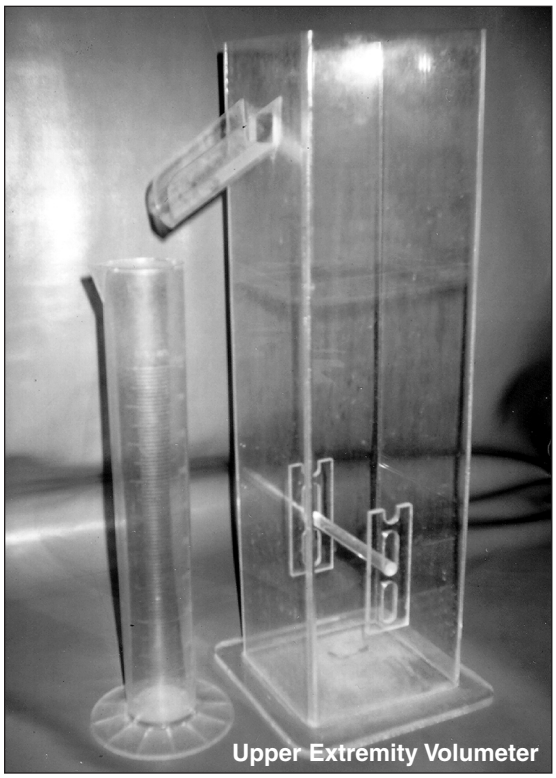

## Research Results:

# Various Treatment Techniques on Signs and Symptoms of Delayed Onset Muscle Soreness

### Practical Recommendations

**The findings of the study did not reveal a treatment method that was statistically better than that of no treatment at all. Furthermore, the use of a nonsteroidal anti-inflammatory drug (oxaprozin) and a homeopathic herb (Arnica montana) were shown to delay the recovery of muscle function. This study focused on treatments that could be rendered independently by the individual, therefore making the treatment valuable to the athletic trainer in team settings. Future research is needed to investigate the effectiveness of other therapeutic interventions that could hasten the recovery of the signs and symptoms of DOMS.**


Upper Extremity Volumeter

### Overview

Delayed onset muscle soreness (DOMS) is believed to be a result of eccentric contraction and intense isometric exercise. DOMS impairs muscle function by decreasing flexibility and maximal force production for a period of 24-48 hours after activity. This condition is a challenge to athletic trainers because there are no known strategies to prevent the onset of its signs and symptoms. This study examined six treatment effects on the signs and symptoms of DOMS, namely range of motion, edema, muscle soreness and muscle function.

### Results

With regard to the signs and symptoms of DOMS, there were no significant differences between treatments which included a nonsteroidal anti-inflammatory drug, high velocity concentric muscle contractions on an upper extremity ergometer, ice massage, 10 minute static stretching, topical Arnica montana ointment and sublingual A montana pellets.

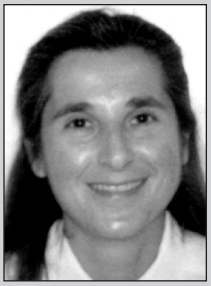
**Isokenetic wrist extension strength measured with a lido dynamometer.**

## In-depth Analysis

DOMS was induced in 70 untrained volunteers via 15 sets of 15 exercises in which the forearm extensor muscles were lengthened against resistance. All subjects performed a pilot exercise bout a minimum of 9 weeks prior to data collection to assure the production of DOMS. Data were collected on 15 dependent variables: active and passive wrist flexion and extension, forearm girth, limb volume, visual analogue pain scale, Muscle Soreness Index, static muscle strength, and shortening and lengthening muscle activity at the wrist (total work, peak torque and angle of peak torque). Data were collected on six occasions: pre and post induced DOMS, 20 minutes after treatment, and 24, 48, and 72 hours after treatment. Subjects were randomly assigned to 1 of 7 groups (6 treatment and 1 control). Treatments included nonsteroidal anti-inflammatory drug (oxaprozin), high velocity concentric muscle contractions on an upper extremity ergometer, ice massage, 10 minute static stretching, topical homeopathic herb (Arnica montana ointment), and sublingual homeopathic herb (Arnica montana pellets). A 7 x 6 ANOVA with repeated measures on time was performed on the delta values of each of the 15 dependent variables.

The results indicated that there were significant main effects on time only. There were no significant differences between treatments. ■

## Researchers

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Various Treatment Techniques on Signs and Symptoms of Delayed Onset Muscle Soreness, *Journal of Athletic Training*; 31(2):1-8, 1996.

Delayed Onset Muscle Soreness: What Is It and How Do We Treat It?, *Journal of Sport Rehabilitation*; vol. 5: 1-10, 1996.



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