

Research: Massage Is Effective in Alleviating Delayed-Onset Muscle Soreness Caused by Eccentric Exercise

Delayed-onset muscle soreness from exercise can be caused by eccentric (stretching combined with contractions) muscle actions, and massage can effectively reduce this soreness, according to researchers. “Effects of Massage on Delayed-Onset Muscle Soreness, Swelling, and Recovery of Muscle Function” tested the hypothesis that massage applied after eccentric exercise—in this case, arm curls—would effectively alleviate pain without affecting muscle function.

Ten healthy subjects (five men and five women) with no history of upper- arm injury and no experience in resistance training were recruited for participation in the study, which took place at Australia’s Edith Cowan University. With each subject, one arm was the control, and the other arm received the experimental treatment.

The subjects performed 60 arm curls with each arm on a dynamometer, a machine that assesses muscle function. The arm curls were divided into 10 sets of six, with a three-minute rest between sets. This series was repeated once again two weeks later, and muscle soreness developed after both exercise sessions.

Three hours after the exercise, a standard sports massage was performed on one arm for 10 minutes; the other arm received no treatment. During the massage, each subject lay on his or her back and received effleurage of the hand, wrist to elbow, and elbow to shoulder; petrissage of the wrist to elbow, and elbow to shoulder; friction to the forearm, biceps, triceps and deltoids; thumb petrissage of the wrist to elbow and elbow to shoulder; and repeat effleurage of the hand, wrist to elbow, and elbow to shoulder.

In addition to muscle soreness (which was self-reported), other variables were measured: maximal isometric and isokinetic voluntary strength, range of motion, upper arm circumference, and plasma creatine kinase (blood enzyme) activity. These conditions were recorded before, immediately and 30 minutes after exercise, and one, two, three, four, seven, 10 and 14 days after exercise.

Massage provided a 20-percent to 40-percent decrease in soreness as compared with the non-massaged arm in each individual. It also reduced swelling and plasma CK activity. No change in range of motion was evident. The authors state that “massage, used appropriately, is beneficial in reducing delayed-onset muscle soreness and swelling associated with high-intensity eccentric exercise.” However, they point out that massage does not seem to improve recovery of muscle function.

— *Source: Edith Cowan University, Joondalup, Australia; University Technology of Malaysia, Johor. Authors: Zainal Zainuddin; Mike Newton; Paul Sacco; Kazunori Nosaka. Originally published in the Journal of Athletic Training, Vol. 40, No. 3, September 2005, pp.174–180.*