

18. Symptoms and Signs

Reference

Irie T, Tokutake T, Yoshikawa K. The effects of effleurage on muscle fatigue and muscle endurance recovery*. *Nihon Shugi Ryoho Gakkai Zasshi (The Journal of Japanese Association of Manual Therapy)* 2001; 12(1): 29–33 (in Japanese). Ichushi Web ID 2003139621

1. Objectives

To evaluate the effectiveness of effleurage for muscle fatigue and muscle endurance recovery.

2. Design

Crossover randomized controlled trial (RCT-cross over).

3. Setting

Acupuncture and Physical Therapy Teacher Training School, University of Tsukuba, Ibaraki, Japan.

4. Participants

Twelve healthy adults.

5. Intervention

The laboratory temperature and humidity were 26°C and 60%. Participants were instructed to repeatedly squeeze a hand dynamometer at 50% of their maximum handgrip strength until exhausted. Fatigued muscles received 5 minutes of effleurage before measurement. This process constituted one phase, which was repeated five times.

Arm 1: Efferent effleurage group (n=12).

Arm 2: Afferent effleurage group (n=12).

Arm 3: Control group (no treatment, n=12).

6. Main outcome measures

Muscle fatigue graded on a visual analogue scale (VAS), muscle endurance, heart rate, finger-tip plethysmogram.

7. Main results

VAS score was significantly lower in Arm 1 ($P=0.022$) and Arm 2 ($P=0.020$) than in Arm 3, but not significantly different between Arm 1 and Arm 2. No significant difference was observed between the effleurage groups and the control group for muscle endurance (squeeze repetitions), heart rate, or finger-tip plethysmogram peak values (treatment side and non-treatment side), which reflect blood flow. Also, no significant correlation was observed between change in muscle fatigue and change in peak pulse wave values on the treatment side.

8. Conclusions

Both efferent and afferent effleurage promotes recovery from muscle fatigue, but not recovery of muscle endurance. Increased blood flow does not correlate with recovery from muscle fatigue.

9. Safety assessment in the article

Not mentioned.

10. Abstractor's comments

This study elucidates the effectiveness of massage (effleurage) as treatment for muscle fatigue and loss of muscle endurance. Irie et al. demonstrate ingenuity in basing this study on their previous study, which indicated that afferent effleurage promotes blood flow. The sophistication of the fatigue inducement, treatment, and measurement methods strengthens the reliability of the evidence showing that effleurage promotes recovery from muscle fatigue. However, unlike their previous study, the study did not find that effleurage promotes blood flow. The authors will need to verify whether or not the degree of mechanical stimulation provided by the effleurage employed in this trial affected blood vessels in deep muscle. As the manual treatment to investigate the relation between massage and muscle endurance, given that this study found no such change, it might have been better to use the grasp and squeeze technique or the grasp and knead technique, which have a stronger muscle pump action than effleurage. The knowledge base related to manual therapy for recovery from muscle fatigue has many gaps, so hopefully the authors will continue their research, building on the outcomes and issues raised by this study, for the sake of improving occupational health and sports medicine.

11. Abstractor and date

Fujii R, 8 December 2011.