

## THE EFFECTS OF MASSAGE ON UPPER LIMB BLOOD FLOW

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### Introduction

There is a general assumption among both athletes and clinicians that soft tissue massage is an effective therapeutic modality, hence its wide use in the post-exercise setting. It is thought to enhance muscle recovery following intense physical exercise by increasing blood flow to the affected area, thereby improving oxygen delivery to, and metabolite removal from, the recovering muscles. There is, however, relatively little scientific evidence to support its effect on the physiological factors associated with post-exercise recovery. The purpose of this study was to evaluate the effects of soft tissue massage on brachial artery blood flow, skin blood flow and skin temperature.

### Methods

10 male and 5 female healthy volunteer subjects with a mean (+SD) age of 21.1 (+5) years received three five-minute bouts of deep effleurage and petrissage massage to their left forearm whilst in supine lying. Measurements of heart rate (HR), blood pressure (BP), forearm skin temperature (SKT), forearm skin blood flow (SKBF) and limb blood flow at the brachial artery (BABF) were taken at rest, during each one-minute rest period between bouts of massage, and immediately following the last bout.

### Results

This study found that there were no significant changes in HR, BP or BABF throughout the testing procedure. There were significant ( $P < 0.05$ ) increases in both SKT and SKBF.

### Discussion

It is likely that the increases in SKT and SKBF were due to the friction resulting from the application of the massage on the skin. The absence of an increase in arterial limb blood flow (BABF) suggests the possibility that blood is being diverted from the underlying muscle tissue to the skin. If this is the case, it may be detrimental to the recovery of the muscle following intense exercise and would therefore question the physiological effectiveness of massage in post-exercise settings.

### Conclusions

The findings of this study were that limb blood flow is not increased by the application of vigorous soft tissue massage, but that skin blood flow and skin temperature are increased. Further study is required in order to ascertain the effect of massage on muscle blood flow following exercise.

### Bibliography

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