

EFFECTS OF A NEW MASSAGE TECHNIQUE ON DELAYED ONSET MUSCLE SORENESS (DOMS)

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Since antiquity, massage has been prescribed among sports competitors for enhancing the human performance as well as recovery from intense exercise. The benefits of massage has often been attributed to different physiological responses. However, there is a lack of concrete information regarding the responsible mechanisms for described or supposed effects.

Unaccustomed muscle exercise in duration, intensity or modality (i.e. eccentric exercise) cause delayed onset muscle soreness (DOMS). DOMS, for which symptoms and characteristics are well known (Mac Intyre, 1995), can be detriment to exercise adherence and can have a drastic effect on performance. Thus, manual massage is classically used whereas the effects on muscle soreness are equivocal (Tiidus, 1997).

The following study tries to quantify real effects of a massage technique (LPG® System) on the recovery from DOMS induced by eccentric exercise.

Protocol

10 healthy men participated in this study as experimental subjects during 7 days. They performed a 40 minute down-hill (10 %) run.

The massage was done every day, for 10 minutes, on just one thigh. The major parameters measured were : thigh circumference, muscle soreness and muscle strength. Significant differences are noticed between the massaged and non massaged side. Thigh circumference does not increase on the side which has been massaged as the massage has probably limited the development of the oedema mobilizing interstitial or intracellular liquid.

On the massaged side, the pain is less present which is probably due to the absence of oedema. The recovery of the post-exercise strength decrease (about 15%) is effective at J+2, but only on the massaged side. The reduction (decreasing) of the painful phenomena could explain this evolution. Contrary to what is proven by most studies on manual massaging, this method is effective for the recovery of muscle soreness even though the mechanisms involved are still to be elucidated.

Results and Discussion

The 3 main results show the following:

- A significant increase ($P<0.01$) of the untreated thigh circumference as compared with the treated thigh (Figure 1). This increase of the circumference thigh is induced by muscle oedema which is limited by the treatment.
- Muscle soreness during maximal isometric contraction (max at D2) is significantly reduced ($P<0.01$) on the treated side (Figure 2) probably due to the absence of oedema.
- An approximate 15 % post-exercise decrease of the maximal isometric strength of the quadriceps muscle (Figure 3). At D2, this decrease persists on the untreated side whereas the recovery is effective on the treated side ($P<0.02$). The decrease of muscle soreness while contracting probably helps the recovery of the muscle function.

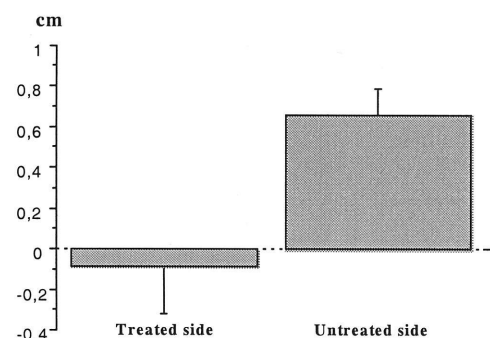


Figure 1 : Changes in thigh circumference at D2

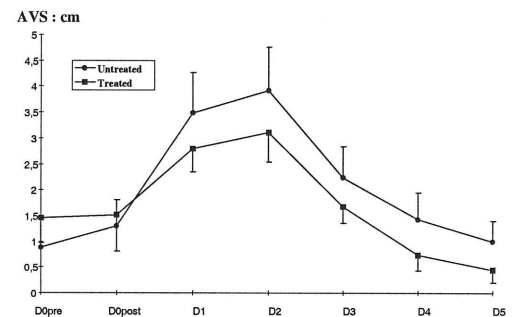


Figure 2 : Soreness during isometric contraction

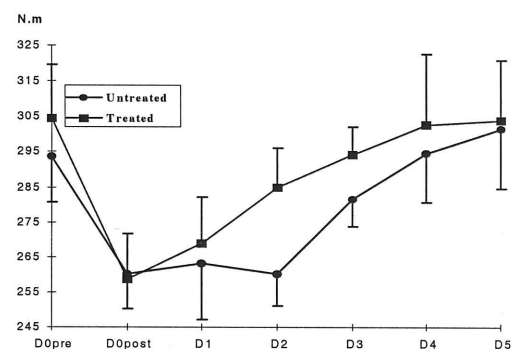


Figure 3 : Maximal isometric strength

Conclusion

The massage technique used is efficient for DOMS recovery. Mechanisms in role are not clearly established although it is probable that the massage facilitates the liquid mobilization in order to limit the oedema. The difference of efficacy in comparison with manual massaging is probably due to the technique itself and to the fact that tissue mobilization achieved with the system used is not manually possible.

References

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Key words

muscle soreness, massage, recovery