

# SUBSTANTIATING THE THERAPEUTIC EFFECTS OF SIMULTANEOUS HEAT-MASSAGE WITH PHYSICAL THERAPY MODALITY FOR TREATMENT OF LOWER BACK PAIN : A RANDOMIZED CONTROLLED FEASIBILITY TRIAL

Tae-Hwan Kim, M.D, Yong-Soon Yoon, M.D  
Department of Rehabilitation Medicine, Presbyterian Medical Center (Jesus Hospital)

## BACKGROUND

There are various therapeutic options for the conservative management of lower back pain (LBP). A combination of two or more treatment options may be more effective in the clinical management of non-specific LBP. In this study, we compared the effects of simultaneous heat-massage with physical therapy modality in patients with subacute LBP.

## METHODS

40 patients with LBP were allocated to one of two groups: a heat-massage group (HMG) and physical therapy group (PTG). Both groups received 40 minutes of therapy, once daily five times a week for a total of four weeks.

The outcomes were measured at baseline, at 2 weeks (2 W) and 4 weeks (4 W) following intervention (Figure 1).

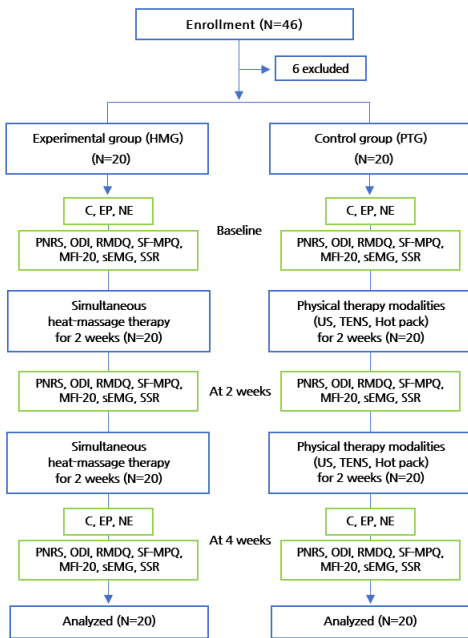


Figure 1. Flow diagram

Serum Cortisol (C), Serum Epinephrine (EP), Serum Norepinephrine (NE), Pain numeric rating scale (PNRS), Oswestry disability index (ODI), Roland-Morris disability questionnaire (RMDQ), Short-form McGill pain questionnaire (SF-MPQ), Multidimensional fatigue inventory (MFI-20), Surface EMG (sEMG), Sympathetic skin response (SSR), Therapeutic ultrasound (US), Transcutaneous electrical nerve stimulation (TENS).

## RESULTS

The PNRS, ODI, RMDQ, and SF-MPQ scores improved after 2 W and 4 W in both groups. There was no significant difference between both groups.

The levels of Cortisol were not changed significantly after treatment. The levels of serum EP and NE decreased in the HMG (Figure 2).

BDI and MFI-20 decreased more in HMG than PTG (Figure 3).

%MVIC and SSR latency decreased while SSR amplitude increased in HMG (Figure 4).

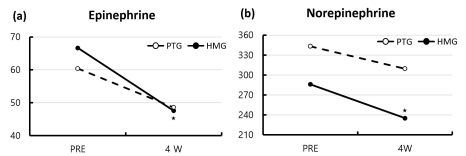


Figure 2. Change of EP, NE in both groups

(a, b) There was a significant decrease in serum EP and NE levels at 4 weeks compared to baseline in the HMG ( $p < 0.05$ ).

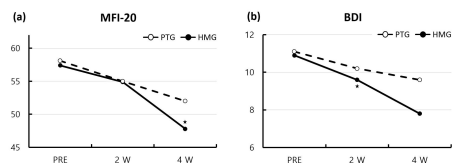


Figure 3. Change in MFI-20, BDI in both groups

(a) The MFI-20 of both groups were improved at 2 weeks (2 W), but there was no significant difference. However, at 4 weeks (4 W), The MFI-20 of the HMG showed a significant improvement compared to that of the PTG ( $p < 0.05$ ).

(b) The BDI of the PTG was improved at 4 W compared to PRE and 2 W, whereas that of the HMG was improved at 2 W ( $p < 0.05$ ).

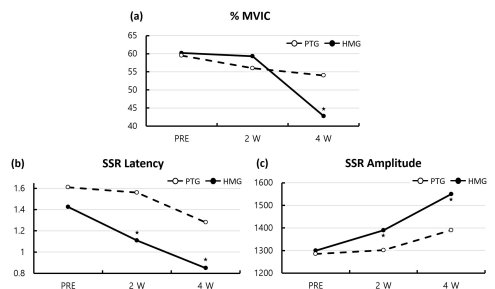


Figure 4. Change in sEMG, SSR in both groups

(a) The levels of the normalized sEMG signals (%MVIC) were significantly decreased at 4 weeks (4 W) in both groups. However, there was a decrease in the HMG compared to the PTG at 4 W ( $p < 0.05$ ).

(b, c) In a comparison between the two groups, the latency, and amplitude of the SSR were significantly different at 2 weeks (2 W) and 4 W compared to at baseline (PRE) ( $p < 0.05$ ).

## CONCLUSIONS

Following 4 weeks of combined therapies, heat-massage was not superior to physical therapy modality alone. Both treatments were shown to be effective in improving LBP and pain-related disability. However, heat massage was shown to have a better effect on the control of autonomic nerve function and underlying moods.

## REFERENCE

- Preyde, M. Effectiveness of massage therapy for subacute low-back pain: A randomized controlled trial. *CMAJ Can. Med. Assoc. J.* 2000, 162, 1815-1820.
- Mayer, J.M.; Ralph, L.; Look, M.; Erasala, G.N.; Verna, J.L.; Matheson, L.N.; Mooney, V. Treating acute low back pain with continuous low-level heat wrap therapy and/or exercise: A randomized controlled trial. *Spine J. Off. J. North Am. Spine Soc.* 2005, 5, 395-403. <https://doi.org/10.1016/j.spinee.2005.03.009>.