



THE EFFECTIVENESS OF MIRROR THERAPY IN TREATING PHANTOM LIMB PAIN IN AMPUTEES

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INTRODUCTION

Phantom limb pain (PLP) is common in patients with limb amputation (Casale, 2009) affecting 50-80% of patients (Richardson, 2010). PLP can influence the patient's quality of life and may hinder prosthetic rehabilitation. Mirror therapy (MT) has been studied as a treatment for PLP but the effectiveness has not been compared with the more common treatment, non-narcotic drug therapy (DT). If MT is as effective as DT in treating PLP, MT could be an initial treatment for PLP, thereby decreasing dosages of medication. The primary objective was to determine the effectiveness of MT in decreasing PLP in upper and lower extremity amputees hypothesizing that MT will be equally effective as DT for reducing PLP.

METHOD

Study Design: Cross over study approved by the University of Michigan Institutional Review Board. Subjects with unilateral amputations, who have been taking medication for PLP for at least 2 weeks were randomized to start either MT or DT. Expected sample subject size is 15.

Protocol: After tapering off of the drug, each group completed either MT or DT for 4 weeks, a week of no DT or MT therapy, and then completed the other therapy program for 4 weeks.

Outcome Measure: Survey questions based on the Prosthetics Evaluation Questionnaire (PEQ-validated by Legro, 1998) were sent via postal mail weekly concerning PLP. Pain score results were measured on a visual analog scale (VAS).

Data Analysis: PEQ trends were compiled and analyzed for the current sample size. Repeated measures ANOVA will be used to determine statistical significance when sample size reaches 15.

RESULTS

Preliminary data (5 subjects; age: 47 ± 7.8 years; gender: 4M/1F; drug amt: 840 ± 610 mg) was representative of the MT group results due only to subject randomization (see Figure 1). Subject data were included in analysis until they discontinued participating (two dropped out, two stopped returning surveys, and one was inconsistent with returning surveys after week 4). Data will be updated as subjects are recruited.

DT scores were less intense than MT scores. Therapy preference for the 3 that completed the study: 2 for MT and 1 for DT. Statistics were unable to be conducted at this time due to limited sample size.

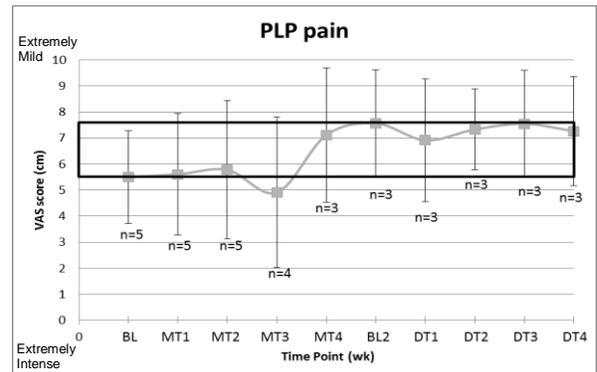


Figure 1: VAS scores for PLP pain in the MT group over the 11 weeks. MT – Mirror therapy, DT – drug therapy, BL – baseline, n – # of subjects. Vertical bars indicate standard deviation. The box represents a two point window (Geisser, 2010).

DISCUSSION AND CONCLUSION

The VAS scores are primarily within the 2 point area of no clinical difference (Geisser, 2010) suggesting MT may be as effective as DT. In week 4 of MT, the subjects reported a decreased pain level than the previous 3 weeks before beginning DT. The MT program length may need to be increased in order to determine if there is indeed an upward trend starting at MT4. Of the three patients that completed the study, 2 preferred MT and 1 preferred DT. More subjects are needed to determine significance, but early results suggest that MT may be a promising alternative to DT. Future research will be needed to determine whether the amount of/length of time on MT or patient history influences the effect of MT.

CLINICAL APPLICATIONS

If MT is as effective as DT, MT could be a low cost non-invasive initial treatment for PLP, thereby decreasing dosages of medication for patients.

REFERENCES

- Casale, R, et al. Eur J Phys Rehab Med, 45:559-66, 2009.
- Richardson, C. In: Amputation, Prosthesis Use, and Phantom Limb Pain, 137-156,2010.
- Geisser, ME, et al. Pain, 149:373-378,2010.
- Legro MW, et al. Arch Phys Med Rehab, 79:931-8, 1998.