Effectiveness of Biofreeze® on shoulder pain and in-office exercise performance: A preliminary pilot study

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Biofreeze® is a topical analgesic, frequently used in the office or given to a patient for home use as a way to mitigate pain during the course of treatment. Rehabilitative exercises are considered an important component of care for shoulder pain patients, although pain can be a limiting factor in the advancement of rehabilitation. The purpose of this study is to evaluate the addition of Biofreeze® to an in-office group of shoulder pain patients to determine its impact on pain reduction. Methods: Patients 18-64 years old with mechanical shoulder pain who are candidates for Funhab® were randomized into two groups (N=20). The Control Group (N=10) received Funhab® alone while the Intervention Group (N=10) received Funhab® plus Biofreeze® just prior to initiating the in-office exercise program. Values of pain (NPRS) and disability (ASES) were recorded at baseline (B), 2 weeks (T2), and 4 weeks (T3). Hypotheses were addressed using repeated measures ANOVAs with Tukey LSD post hoc comparisons. The ANOVA tested for the main effects of group differences, differences over time and the interaction of group*time changes. Significant main effects ($p<.05$) were further examined through Tukey post hoc comparisons. Results: A total of 34 participants enrolled in the study, with 18 whole completed the entire data collection process. Of the 18 participants who completed the study, 10 were in the BF group and 8 in the Control. The average age was 39.5 years. There was a significant difference for the ASES over time ($p=0.008$). The Biofreeze group significantly increased from B(x=60.5) to T2(x=72.6) and the Control group significantly increased from B(x=59.1) to T3(x=77.1). There was a clinical significance for the Biofreeze Group from T1(60.5) to T2(72) and T1(60.5) to T3(74) and control group from T1(59) to T3(77). The control group also significantly decreased NPRS over time ($p=0.008$). Specifically, NPRS significantly decreased from B(x=5.5) to T2(x=3.8) and from B(x=5.5) to T3(x=2.6). The Biofreeze group did not change between time points. There were no between group differences for any variables. Conclusion: The results of this study indicate a decrease in pain and disability over time. There were no difference between groups for any variables. The control group significantly decreased their pain over time. Additionally, both groups' disability values significantly and clinically increased over time. However, the Biofreeze had significant improvements initially while the control group significantly improved over the course of 4 weeks. Limitations included only following the progression of pain and disability for 4 weeks and a relatively small sample size. Furthermore, the amount of days since onset of pain varied greatly among patients. This variability may have influenced the outcomes of the study. Clinical Relevance: Progression of therapeutic exercises can be limited by pain and the associated disability. While both groups improved their disability scores, the Biofreeze® group had greater improvements initially and then leveled out while the control group gradually improved over the entire four weeks. Although both groups improved, the results indicate the use of Biofreeze for initial disability improvements in a shoulder pain population. This is important since the ability to decrease shoulder with Biofreeze® would allow health care professionals to advance patients through a therapeutic exercise program without the restriction of pain.