

## Research Abstract

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**Research Article:** Effects of Biofreeze vs. Ice on Acute, Non-Complicated Neck Pain (Abstract).

Effects of Biofreeze vs. Ice on Acute, Non-Complicated Neck Pain

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**Background:** Cryotherapy has long been used by physical therapists and chiropractors in the management of acute pain and more recently it has been shown to effectively manage chronic pain. Multiple studies have demonstrated that both ice and menthol decrease blood flow and help to control pain; however, there is limited research to determine which form of cryotherapy works better on individual patients.

**Methods:** Fifty-one males and females between the ages of 19 and 65 (37 +/- 11.2 years) with bilateral non-radicular, acute neck pain (myalgia) were given both ice and the topical analgesic Biofreeze® on each side of the neck. The patients had no history of surgery in the neck nor had received a cortisone injection in the neck in the last year. The study was randomized so that the ice was on the left side of the neck and the Biofreeze® was on the right side or vice versa. Thus, both sides of the neck had one cryotherapy modality. The patients were asked to rate their pain on a 0-10 Visual Analog Scale (VAS) for each side of the neck both before and immediately following the 10 minute treatment. In addition, the patients were asked to answer 2 questions about which modality they would use in the future for pain control and the level of comfort of each modality during its application on a 5-point scale (1 = Very Unlikely or Very Uncomfortable and 5 = Very Likely or Very Comfortable). Finally, the patients were asked the following day to pick whether they preferred ice or Biofreeze® and to pick which modality had a longer lasting effect.

**Results:** Overall, when asked to rate the comfort and preference, patients preferred Biofreeze® 8 to 1 (p=0.000). The average score on the 5 point Likert scale was 4.20 for Biofreeze® and 2.57 for ice. In addition, 9 out of 10 subjects reported that Biofreeze® lasted longer (p=0.000). Further, the average score on the 5 point Likert scale was 4.47 to 2.63 for Biofreeze® and ice respectively. For actual levels of pain change, the average pre-treatment VAS score went from 6.24 to 3.65 for Biofreeze® and from 6.31 to 5.00 for ice. A paired t-test demonstrated that both ice and Biofreeze® had a significant reduction on pain levels (p = 0.000); however, there was nearly 2 times the reduction of pain on the Biofreeze® side.

**Conclusions:** Both ice and Biofreeze® significantly decreased pain levels; however, Biofreeze decreased pain nearly 2 times as much as ice. In addition, it was rated as substantially more comfortable, patients preferred it, and it lasted longer 9 out of 10 times. This is the first study to evaluate solely the immediate effects of two different cryotherapy methods and as such it is not unexpected that the results of this study would differ slightly from other published studies evaluating menthol products. Conservative care specialists are often looking for methods to improve patient satisfaction and compliance and with the results significantly favoring Biofreeze® this is recommended as the primary method of cryotherapy application on the first visit.

**Future Considerations:** More studies are needed to determine whether this short term effect can be extrapolated to long term improvement in outcomes, improved patient satisfaction and improved patient compliance.

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