

Effect of Biofreeze® gel on power output and blood lactate during a 30-second bout of high-intensity anaerobic exercise

Michael E. Rogers, Jeremy Patterson, Cali Simmons, Will Hawkins

Department of Human Performance Studies, Wichita State University, Wichita, Kansas, USA

Biofreeze® gel has been reported to reduce acute pain. However, the effect of Biofreeze on the acute pain/discomfort experienced during high-intensity anaerobic performance has not been evaluated, nor its possible ergogenic effect. **PURPOSE:** To determine if the topical application of Biofreeze gel enhances power output during a 30-second sprint while blood lactate levels rise. **METHOD:** 30 participants (14 male; 16 female) aged 20-38 (24.4 ± 4.8) years each completed two trials, one with Biofreeze gel and one without, with 48 hours between trials. For the trial with gel, a dose of 1ml of gel for every 200 cm² sq cm of surface area was

applied bilaterally to the anterior thigh area of each participant. For both trials, following a brief (2-3 sec) unloaded acceleration period, participants pedaled as fast as possible against a load of 0.75 kg • kg⁻¹ body mass for 30 sec. Peak and average power for the 30 sec trials, average power for each 5 sec interval, and overall fatigue index were recorded. Blood lactate measures were obtained immediately after each trial. **RESULTS:** Mean ± SD of the two trials are provided below. There were no differences (p<0.05) in any variable between trials. Additional analyses also revealed that, although males achieved greater power outputs compared to females, there were no differences between trials when grouped by gender. (See Table Below)

DISCUSSION: A wide variety of ergogenic aids are used to enhance athletic performance. These are often nutritional supplements, but may include other strategies such as stretching and massage. Anaerobic performance does not appear to be enhanced by using BioFreeze gel. Future studies should address the therapeutic benefits of using this product following intense exercise.

	<u>With Biofreeze</u>	<u>Without Biofreeze</u>
Peak power (W)	804.7 ± 268.9	790.0 ± 272.8
Average power over 30 sec (W)	561.5 ± 159.7	545.7 ± 156.8
Average power 0-5 sec (W)	746.1 ± 241.4	732.9 ± 237.7
Average power 5-10 sec (W)	638.5 ± 191.6	634.4 ± 189.6
Average power 10-15 sec (W)	561.4 ± 168.0	556.1 ± 166.0
Average power 15-20 sec (W)	505.3 ± 148.2	500.2 ± 148.8
Average power 20-25 sec (W)	456.8 ± 128.5	452.5 ± 130.1
Average power 25-30 sec (W)	409.6 ± 110.4	406.1 ± 112.1
Fatigue Index (%)	50.0 ± 0.12	50.0 ± 0.14
Lactate (mmol)	9.28 ± 5.69	8.88 ± 3.8