

Are Ice Baths an Effective Form of Active Recovery?

01/11/2023

Written by: Rhea Arora - Junior in Exercise Physiology

Mentor: Toni Uhrich

Edited by: Mike Haischer

Key Points:

- **Ice baths are a common form of active recovery for athletes to reduce soreness.**
- **Cold water immersion reduces body temperature and reduces blood flow to the affected areas.**
- **Evidence suggests that cold water immersion used exclusively as a form of recovery provides little to no advantage to athletes.**

The use of cold-water immersion is used as a form of recovery after vigorous exercise and an aid in long-term training adaptation. The physiology behind ice baths is that sitting in an ice bath reduces body temperature and blood flow throughout the body, blunting the inflammatory response commonly present after intense exercise (Figure 1)^{1,2}. Studies about the effects of hydrotherapy have also stated an added psychological benefit through an endorphin rush with cold water immersion leading to a reduction of fatigue during immersion³.

Active recovery from intense exercise is crucial for athletes, especially after repeated efforts. While cold water immersion is widely perceived as an effective option; there is debate about whether or not reducing the inflammatory response after intense exercise has any real benefit. Inflammation is a natural, protective body response and needs to happen for the body to heal. There are three steps for soft tissue injuries to heal; inflammation, repair and remodeling². Icing is effective to prevent pain or soreness after an intense workout but the inflammatory response slows until blood rushes back to the affected area and the soft tissue warms again. Therefore, cold water immersion may not be advantageous because it is prolonging the body's natural inflammatory response.

Studies suggest that cold water immersion is no more effective than other forms of active recovery that minimizes inflammatory responses after intense exercise^{1,4}. No significant relationship between fatigue levels, muscle soreness, and overall wellness were found with athletes using cold water immersion as a recovery method compared to athletes that did not. Also, little difference in athlete performance in the long term and short term were observed with athletes that used cold water immersion as a form of recovery compared to athletes that did not (Figure 2)³.



Figure 1: Ice baths may blunt the inflammatory response after intense exercise by lowering body temperature and peripheral blood flow.

Are Ice Baths an Effective Form of Active Recovery?

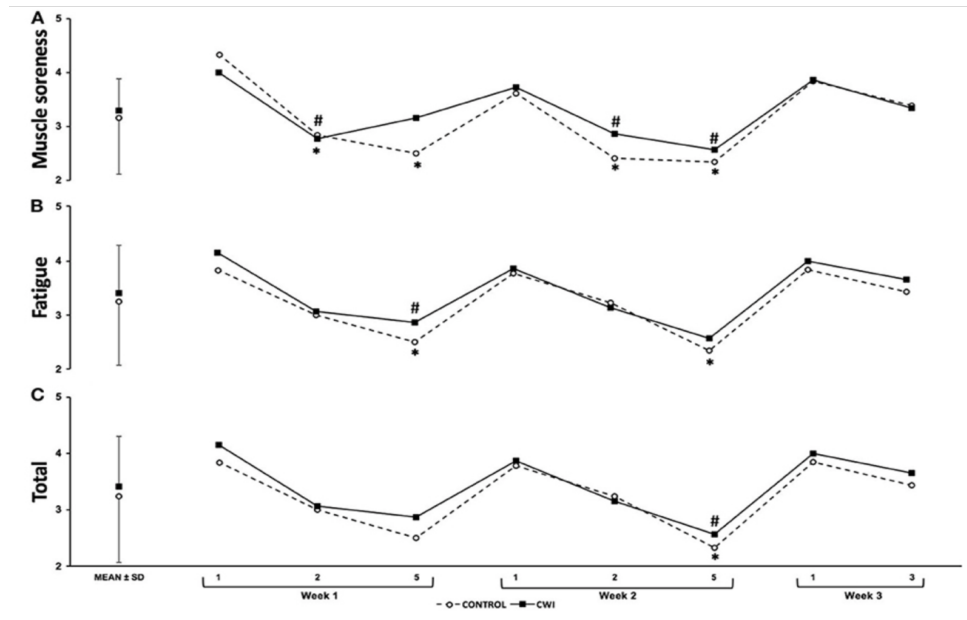


Figure 2: Relation of control group (dotted line) and group with cold water immersion (CWI - solid line) over the course of three weeks assessing muscle soreness, fatigue, and total wellness. The overlap of the lines indicates no significant differences between athletes that recover with cold water immersion versus athletes that do not. Over the course of the three-week exercise training sessions, overall wellness was similar between the group that did use CWI and the group that did not use CWI.³

In conclusion, while there are many reported physiological and possible psychological benefits to cold water immersion, there is no significant evidence to prove the benefits of the exclusive use of cold-water immersion compared to a comprehensive approach of varied recovery techniques to better recover from intense exercise.

References

1. Peake, J.M., Roberts, L.A., Figueiredo, V.C., Egner, I., Krog, S., Aas, S.N., Suzuki, K., Markworth, J.F., Coombes, J.S., Cameron-Smith, D. and Raastad, T. (2017), The effects of cold water immersion and active recovery on inflammation and cell stress responses in human skeletal muscle after resistance exercise. *J Physiol*, 595: 695-711. <https://doi.org/10.1113/JP272881>
2. Berra, Lindsay. "The Cold, Hard Truth about Icing Your Injuries." *Men's Health*, 24 Nov. 2019, <https://www.menshealth.com/fitness/a29710918/icing-sore-muscles/>.
3. Lateef F. Post exercise ice water immersion: Is it a form of active recovery? *J Emerg Trauma Shock*. 2010 Jul;3(3):302. doi: 10.4103/0974-2700.66570. PMID: 20930987; PMCID: PMC2938508.
4. Tavares F., Simões M., Matos B., Smith Tiaki B., Driller M. (2020), The Acute and Longer-Term Effects of Cold Water Immersion in Highly-Trained Volleyball Athletes During an Intense Training Block. *Frontiers in Sports and Active Living*, 10.3389/fspor.2020.568420. <https://www.frontiersin.org/articles/10.3389/fspor.2020.568420>