Cold water baths reduce muscle soreness but evidence lacking on safety

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Plunging into cold water after exercise may be an effective way to reduce muscle soreness, but it is unclear whether there are harmful side effects. These are the conclusions of a new systematic review of cold water immersion interventions published in *The Cochrane Library*.

Delayed onset muscle soreness (DOMS) is associated with stiffness, swelling and soreness a day or more after exercise. One increasingly popular method that both elite and amateur athletes use to try to prevent or reduce soreness is immersing themselves in cold water or ice baths. The claim is that this cold water immersion technique, sometimes referred to as cryotherapy, reduces muscle inflammation and its ensuing effects. The researchers wanted to assess the strength of clinical evidence about how well it works, and whether there is any evidence of harm.

The authors included 17 small trials involving 366 people in their review. Participants were asked to get into a bath or container of cold water after running, cycling or resistance training. In most trials, participants spent five to 24 minutes in water that was between 10ºC and 15ºC, although in some cases lower temperatures were used or participants were asked to get in and out of the water at set times. In the studies that compared cold water immersion to resting or no intervention, there was a significant reduction in soreness one to four days after exercise. However, few studies compared cold water immersion to other interventions.

"We found some evidence that immersing yourself in cold water after

exercise can reduce muscle soreness, but only compared to resting or doing nothing. Some caution around these results is advisable because the people taking part in the trials would have known which treatment they received, and some of the reported benefits may be due to a placebo response," said the lead author of the study, Chris Bleakley of the Health and Rehabilitation Sciences department at the University of Ulster in Country Antrim, Northern Ireland. "There may be better ways to reduce soreness, such as warm water immersion, light jogging or using compression stockings, but we don't currently have enough data to reach any conclusions about these interventions."

The range of different exercises, temperatures and timings employed by the various studies made it difficult to establish any clear guidelines for safe and effective cold water immersion. There was also a lack of evidence about any harm that could be caused by the intervention, as most studies failed to report ill effects. The authors say higher quality studies are needed.

"It is important to consider that cold water immersion induces a degree of shock on the body," said Bleakley. "We need to be sure that people aren't doing anything harmful, especially if they are exposing themselves to very cold water for long periods."

More information: Bleakley C, McDonough S, Gardner E, Baxter GD, Hopkins JT, Davison GW. Cold-water immersion cryotherapy) for preventing and treating muscle soreness after exercise. *Cochrane Database of Systematic Reviews* 2012, Issue 2. Art. No.: CD008262. DOI: 10.1002/14651858.CD008262.pub2