

Does Cooling and Cryotherapy Aid in Recovery After Intensive Exercise?

Various forms of cryotherapy (cooling) have been utilized extensively in the sports community and also amongst casual exercisers. Expedited recovery, especially after intensive exercise or performance, is important. Poppendieck, Faude, Wegmann, and Meyer (2013) mentioned possible benefits of cooling which include reducing muscle damage by decreasing muscle temperature as well as possibly reducing inflammation; reducing heart rate; reducing peripheral edema; and managing soreness or pain (analgesic effects). However as Poppendieck et al. (2013) noted, the specific physiological processes that allow the benefits of cooling to be observed remain inconclusive. Popular methods of cryotherapy in athletics include cold water application, cold water immersion (CWI), ice/cold packs, cooling rooms, cooling vests, and cold drinks.

Poppendieck et al. (2013) referenced two other systematic reviews regarding the use of cryotherapy and exercise recovery, one by Halson (2011) and the other by Leeder et al. (2012). Poppendieck et al. (2013) noted that Halson (2011) found that cryotherapy had a greater effect on the recovery of weight-bearing activities as compared to non-weight-bearing activities (e.g. swimming, cycling), while Leeder's et al. (2012) study found CWI beneficial in decreasing delayed-onset muscle soreness in athletes and casual exercisers. Challenges noted in both studies include undetermined details regarding treatment specifics like duration of treatment, ideal temperature of cooling, best modality, and subjects (ranging from untrained casual exercisers to elite athletes) most likely to benefit from cryotherapy practices.

The meta-analysis study by Poppendieck et al. (2013) focused on the performance recovery (as opposed to just general recovery after exercise) of trained athletes using post-exercise cooling methods. Criteria for inclusion in the meta-analysis included: trained athletes were competitive on the regional level or higher and were active at least 3 times per week; and post-exercise combination therapies such as active recovery plus cooling were eliminated so that only the effects of pure cooling were valid (Poppendieck et al., 2013). Poppendieck et al. (2013) examined four types of performances (endurance, strength, sprint and jump) and identified three cooling methods (CWI, cryogenic chambers, and cooling packs).

Generally, Poppendieck et al. (2013) found that cryotherapy was most effective for sprint recovery. The benefits of cryotherapy on strength and jumping performances were negligible and inconclusive, which concur with the results by Leeder et al. (2012). Sprinting, as noted by Poppendieck et al. (2013), recruits mainly strength and neuromuscular coordination, and since the effects of cryotherapy were undetermined relating to strength recovery, it is possible that cryotherapy is beneficial to the recovery of neuromuscular coordination. Of the cooling modalities, Poppendieck et al. (2013) found CWI to be most effective.

It seems that cooling and cryotherapy have their place in exercise recovery, but as demonstrated by Poppendieck et al. (2013), much further research is needed in order to arrive at more evidence-based practices and guidelines to serve the public. For myself in my practice, I am comfortable with reviewing the need for cryotherapy (e.g. icing of injuries etc.) on a case-by-case basis with the guidance of a qualified healthcare professional.

References

Poppendieck, W., Faude, O., Wegmann, M., & Meyer, T. (2013). Cooling and performance recovery of trained athletes: A meta-analytical review. *International Journal Of Sports Physiology & Performance*, 8(3), 227-242.