

# Perception of Cold Water Immersion among Elite Athlete's

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**Keywords:** Cold Water Immersion, Pain, Performance, Soreness.

**Abstract:** Background Delayed onset muscle soreness is a common symptom after over-load training. It typically begins 12-24 hours post exercise and lasts up to 72 hours, resulting in muscle pain and reduced function. Cold-water immersion (CWI) has emerged as an effective method of recovery, reducing pain and enhancing function. However, limited literature exists regarding the psychology of its perceived effectiveness. Therefore, athletes' pain, perceptions of performance and expectations post-CWI were investigated. Methods Eight male rugby players participated in a 2 weeks cross-over trial comprising of 15 minutes of CWI (12-13°C) vs passive recovery after 20 minute step-up exercises. Three questionnaires were self-completed, two investigating the experience of CWI and perceived performance, immediately post CWI and the third investigating expectations, 48 hours later. A focus group was held 48-hour post-CWI. Results were analyzed using a mixed methods approach. Results All players found this CWI protocol acceptable. For most in this cohort, there was a perception that CWI would enhance performance and expect it to reduce pain more than passive recovery. The focus group confirmed the questionnaire findings. Conclusion Player perceptions of CWI might have a significant psychological impact on recovery outcomes.

## 1 BACKGROUND

Delayed onset muscle soreness is a common symptom after over-load training. It typically begins 12-24 hours post exercise and lasts up to 72 hours, resulting in muscle pain and reduced function (Crow et al, 2007).

Cold-water immersion (CWI) has emerged as an effective method of recovery, reducing pain and enhancing function (Ingram et al, 2009). It suggests that the diminish of the nerve impulse associated with greater tissue cooling may reduce muscle spasm and pain perception (Analgesia effect) (Wilcock et al, 2006). Moreover, psychological factors, such as expectancy, have been suggested to significantly contribute to both positive and negative sporting performance (Cook and Beaven, 2012). However, limited literature exists regarding the psychology of its perceived effectiveness. Therefore, athletes' pain, perceptions of performance and expectations post-CWI were investigated.

## 2 METHODS

Eight male rugby players participated in a 2 weeks cross-over trial comprising of 15 minutes of CWI

(12-13°C) to the waist level vs passive recovery after 20 minute step-up exercises. Psychological effect was determined by three questionnaires. It were self-completed, two investigating the experience of CWI, pain level and perceived performance, immediately post CWI and the third investigating expectations, 48 hours later. A focus group was held 48-hour post-CWI. Pain level was measured using VAS tool. Results from the questionnaires were analysed using mixed methods approach. Thematic analysis of the transcript for focus groups identified four themes: Awareness, Motivation, Response and Preferences of using CW.

## 3 RESULTS

All players found this CWI protocol acceptable. For most in this cohort, there was a perception that CWI would enhance performance and expect it to reduce pain more than passive recovery. The focus group confirmed the questionnaire findings. CWI was better than passive recovery by 95%,  $p < 0.005$ .

## 4 CONCLUSIONS

Previous experience and expectation can play an essential role for improving the performance. The application of the CW of a short period of time was preferable to the players. Understanding of the CWI benefits among the players has improved their body's response. Hence, player perceptions of CWI might have a significant psychological impact on recovery outcomes.

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