



## What is the effectiveness of a whole-body cryotherapy chamber treatment for reducing acute muscle soreness in adult athletes compared to no treatment?

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<b>Relevant Allied Health Discipline</b>	Physiotherapist, Clinical Exercise Physiologist, Occupational Therapist
<b>Sources searched</b>	SPORTDiscus (68), PubMed (26), EMBASE (12) on 16 April 2021.
<b>Highest level of Evidence found</b>	Randomised controlled trial
<b>Quality appraisal of the body of Evidence</b>	<b>Strength of Evidence:</b> The strength of the evidence was high as 3 studies were randomised clinically controlled trials, whilst 1 was a randomised crossover trial with the final study being a controlled clinical trial.
	<b>Quality of Evidence:</b> The quality of evidence was moderate to high. However, blinding of the participants was not possible due to the intervention creating a possible risk of confounding results. Additionally, there were no reports of the assessors being blinded presenting a risk of measurement bias.
	<b>Statistical significance:</b> Two studies reported no statistical significance for the reduction of muscle soreness compared to a control or placebo, whilst two studies reported a significant difference, particularly within 24 hours post-exercise. The final study was inconclusive and reported a possible benefit returning muscle soreness to baseline at 48 hours post-exercise.
	<b>Clinical significance:</b> There is evidence for the benefit of WBC to be used in an acute setting. However, the limitations surrounding WBC such as accessibility and affordability for the general public may influence the use.
	<b>External Validity/Applicability:</b> It is difficult to reflect the review findings on to the wider general population due to the relatively small sample sizes. Further research should consider a larger and varied (physical activity level) to further generalise to the wider population.
<b>Summary of Evidence findings</b>	Five peer-reviewed studies were found to contrast the effectiveness of whole-body cryotherapy (WBC) in reducing acute muscle soreness. Three studies were in favour of the effects of WBC, with two studies indicating an acute response. Whilst the final two studies reviewed indicated no significant effect of WBC compared to a control.
<b>Conclusions</b>	The research suggests that there is some evidence for the effectiveness of WBC to reduce muscle soreness, particularly in an acute (24 hour) setting. However, effectiveness is not conclusive and requires further research with larger sample sizes and variations of WBC in order to understand its efficacy.
<b>Implications for clinical practice</b>	The studies reviewed do not directly translate to the general population, accessibility and affordability need to be considered for this intervention as there may be more appropriate interventions available such as cold-water immersion (CWI) (Bleakley, 2012).

1. Haq, A., Ribbans., W. & Baross, A.W. (2021). The effects of age and body fat content on post-downhill run recovery following whole body cryotherapy, *International Journal of Environmental Research and Public Health*, 18(6), 2906.
2. Hausswirth, C., Louis, J., Bieuzen, F., Pournot, H., Fournier, J., Filliard, J. & Brisswalter, J. (2011). Effects of whole-body cryotherapy vs. far-infrared vs. passive modalities on recovery from exercise-induced muscle damage in highly-trained runners, *PLoS One*, 6(12), E27749–E27749.
3. Qu, C., Wu, Z., Xu, M., Qin, F., Dong, Y., Wang, Z. & Zhao, J. (2020). Cryotherapy models and timing-sequence recovery of exercise-induced muscle damage in middle- and long-distance runners, *Journal of Athletic Training*, 55(4), 329–335.
4. Wilson, L.J., Cockburn, E., Paice, K., Sinclair, S., Faki, T., Hills, F.A. ... Dimitriou, L. (2018). Recovery following a marathon: a comparison of cold water immersion, whole body cryotherapy and a placebo control, *European Journal of Applied Physiology*, 118(1), 153–163.
5. Wilson, L.J., Dimitriou, L., Hills, F.A., Gondek, M.B. & Cockburn, E. (2019). Whole body cryotherapy, cold water immersion, or a placebo following resistance exercise: a case of mind over matter?, *European Journal of Applied Physiology*, 119(1), 135–147.

This evidence summary has been prepared by undergraduate students as part of the HLTH 3057 Advanced Evidence Based Practice course. Conclusions and implications for clinical practice reported are provisional based on the evidence identified in this review and should be contextualized to local practice, clinical expertise and patient values. For further information on the review process please contact [steve.milanese@unisa.edu.au](mailto:steve.milanese@unisa.edu.au)