Influence of cold water immersion and cherry juice on recovery following a 42.2km trail run.

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Both cherry juice (CJ) (Howatson et al, 2009, *Scandinavian Journal of Medicine and Science in Sport, 20, 843-852*) and cold water immersion (CWI) (White and Wells, 2013, *Extreme Physiology and Medicine*, 2) are effective for recovery following strenuous exercise. Therefore, this study examined whether CWI in conjunction with CJ is more effective for recovery than either alone. With ethical approval 38 endurance-trained males (age 40 ± 7 years; height 1.8 ± 7.7 m; mass 76.2 ± 10.0 kg) were randomly assigned to one of four interventions (placebo (PL); CJ; CWI; CWI and CJ (MIX)), before completing a 42.2km run. Markers of muscle damage (muscle soreness (DOMS); maximum voluntary isometric contraction (MVIC); creatine kinase (CK)), inflammation (interleukin-6 (IL-6); C-reactive protein (CRP)) and oxidative stress (protein carbonyls (PC); superoxide dismutase (SOD); Thiobarbituric acid reactive substances (TBARS)) were measured at baseline (B), and immediately (P) (IL-6, PC and SOD only), 24h and 48h post run. Probabilistic magnitude based inferences analyses (difference; ±90%CI; difference; x/÷90%CI for blood variables which are reported as factors), for changes over time, revealed MIX was *likely harmful* versus PL (-11; ±7%), CWI (-9; ±7%) and CJ (-8; ±8%) for changes in MVIC B-24h. MIX was *likely, possibly* and *likely harmful* versus PL (1.4; x/÷1.5), CWI (1.2; x/÷1.7) and CJ (1.7; x/÷1.6) for CK B-48h. B-24h MIX was *possibly, most likely* and *very likely harmful* for changes in CRP versus PL (1.8; x/÷2.7), CWI (8.2; x/÷2.3) and CJ (5.4; x/÷2.6). B-post MIX was *likely harmful* (2.8; x/÷2.4) and *possibly harmful* (2.0; x/÷2.4) in comparison to PL and CWI for changes in IL-6. B-48h MIX was *likely, likely* and *very likely harmful* in comparison to PL (1.4; x/÷1.5), CWI (1.8; x/÷1.6) and CJ (2.1; x/÷1.5) for changes in SOD. B-24h MIX was *likely* (0.5; x/÷1.8) and *possibly* (0.7; x/÷1.8) *beneficial* for TBARS in comparison to PL and CJ. Independently both treatments have been found to improve recovery; together they may limit blood supply to damaged tissues and reduce some oxidative stress markers which may be necessary for an accelerated recovery. However, further investigation is needed to clarify this and any other potential mechanisms. In conclusion, combined use of CWI and CJ is detrimental to recovery, based on measures of muscle function, inflammation and oxidative stress, following a 42.2km run.