Water or Pool Based Recovery

Do pool or water based interventions aid recovery?

The research focuses on some deep water running and also underwater jet massage. In addition the temperature of the water is questioned: hot, cold or contrast, and this overlaps with the research into ice baths.

What limited research has been done would suggest the following:

- Cold water immersion might be better than hot, but contrast hot and cold might be even better.
- Underwater massage jets may enhance neuromuscular recovery
- Deep water running may restore strength and reduce soreness post plyometric session.
- One paper showed that the recovery interventions including pool recovery were equally effective done the next day as done immediately post exercise on the physiological parameters measured at 48hours.

(see table on next page)

Title	Authors	Source	Key points	Conclusions	Questions?
The use of recovery methods post exercise	Reilly T Ekblom B	Journal of sports sciences June 2005 23(6) 619 -627	• Multi intervention paper: see ice bath section • Deep water running	• Same day or day after activity study showed restored strength and reduced soreness post a plyometrics session	Evidence based best practice and good overview of multi interventions.
Effect of Aqua Exercise on recovery of lower limb muscles after downhill running	Takahashi J, Ishihara K, Aoki, J	Journal of Sports Sciences Aug 2006 24(8) 835 -842	• Warm underwater jet massage • 14 jun track and field • Measured biochemical factors and neuromuscular function • 2 training weeks including strength and power sessions I intervention week and I control week	• continuous jumping power decreased • ground contact time increased significantly less ($P < 0.05$) • serum myoglobin increased more than during the control week.	Small numbers Same study as Viitasalo ? Different locations Japan and Finland?
Warm underwater jet massage improves the recovery from intense physical exercise	Viitasalo et al	European Journal of Applied Physiology 71(5) Sept 1995 431-438	• Warm underwater jet massage • Neuromuscular function • Biochemical parameters • Muscle soreness • 14 junior track and field • Randomised training week • Water jet massage intervention	Suggests that the underwater intervention in conjunction with intense strength/power training increases release of proteins from muscle tissue into blood and enhances the recovery of neuromuscular capacity	Same protocol as Takashi.

The effect of hydrotherapy on the signs and symptoms of delayed onset muscle soreness	Vaile J, Halson S, Gill N, Dawson B	European Journal Of Applied Physiology Vol 102(4) March 2008	• 1 control, 3 interventions over 8 month period: passive recovery, cold water immersion, hot water immersion, contrast water therapy • Strength Trained males test was leg press.	• Measures: squat jump, isometric squat, pain, thigh girth and bloods at 24,48, 72 h post exs. • Cold water immersion and contrast therapy improved the recovery isometric force and dynamic power and a reduction in localised oedema. Hot water immersion was effective in isometric force recovery but had no affect on other parameters..	Randomised cross over design.
Physiological Response to Water Immersion: a method for sport recovery	Wilcock I, et al	Physical Therapy in Sport Vol 5 Issue 1. Feb 2004, p26-32	• Overview of possible physiological responses	• Intracellular – intravascular fluid shifts • Reduction muscle oedema • Increased cardiac output without increasing energy expenditure • Increased blood flow and possible nutrient and waste transportation • Psychological effect with reduced cessation of fatigue • Temps: cool to neutral temps may have best response	

Effects of immediate post-game recovery procedures on muscle soreness, power and flexibility levels over next 48 hours	Dawson B et al	Journal Science and Medicine in Sport 8 (2) June 2005 210-221	• Looked at timing of intervention best immediately post exs or next day? • Controls and pool walking, stretching, hot/cold • Aussie rules football	• No difference in values within 48 hours for immediate compared to next day. • No 72 hour measures	

Anecdotal Pool Recovery Strategies

www.ask.net.au/downloads/recovery_pool_session.pdf	Pool recovery session
www.slideshare.net/umekinu/fatigue-and-recovery/	Lecture slides on multi recovery strategies including water immersion
www.fitness4football.com/injury-prevention/recoverystrategies.htm	Tips for recovery for football, typical pool recovery session