

FAQ's about Recovery Strategies

1. How do hydrotherapies work?

Although some research has been conducted in recent times very little has been published as results from research undertaken by many professional clubs and sport academies, are often kept in-house. One of the few published articles on the effectiveness of hydrotherapies comes from research with nationally ranked Finnish track and field athletes (Viitasalo et al.1995). Researchers demonstrated that underwater massaging (using the jets in a spa) following plyometric training helped to maintain explosiveness for the following day. In contrast, passive rest after such training resulted in a significant reduction in explosiveness. One of the major factors fatigued by plyometric training is the peripheral nervous system (PNS) and it was postulated that underwater massaging helped the PNS recover faster. This has also been the recommendation of Sayers (1994).

The protocols used by the Finnish researchers were very similar to those used by the ancient Romans. Essentially, a routine that involves having a shower, followed by a spa (39 to 40°C) for three minutes, and then a cold shower or a plunge into a cold pool (10 to 15°C) for 30 to 60 seconds. The warm environment produces vaso-dilation and the cold vaso-constriction. Three to five sets of this protocol with rapid opening and closing of the peripheral circulatory system accelerates blood flow. This has been demonstrated by research at the University of Canberra.

A contrast temperature protocol involving a hot pool, with no underwater massaging, and cold plunge (same protocol as outlined above), was also used by Jo Sanders and Mark Sayers (University of Canberra) in 1996 to measure lactate recovery in high performance hockey players after a series of Wingate tests. A comparison of lactate clearances following passive rest, light exercising (active recovery) and the contrast immersion techniques was undertaken. Results indicated that lactate levels are recovered equally fast by using either the contrast water immersion protocol or the active recovery protocol. Lactate recovery following passive rest was significantly slower (Sanders, 1996. unpublished honours thesis).

Showering within 5 to 10 minutes at the end of a training session, especially contrast temperatures (30 seconds warm 30 seconds cold x 3 reps) is a beneficial way to accelerate recovery of both lactates and peripheral neural fatigue. A few small-scale field studies (Darren Smith, formerly Australian Institute of Sport, unpublished) have confirmed that lactate recovery is accelerated with this regimen and similarly with some post exercise cooling protocols.

Note: Spas should be used only if the athlete is in a healthy state and has no recent soft tissue injuries. Athletes should also limit their spa immersion time to

no more than five minutes as they are likely to experience a large drop in blood pressure and this can result in fainting.

References:

Sanders, J. (1996). 'Effect of contrast-temperature immersion on recovery from short-duration intense exercise'. Unpublished thesis, Bachelor of Applied Science, University of Canberra.

Sayers, M. (1994). "Neuromuscular Fatigue and Recovery: a brief review" In *Proceedings of the Australian Coaching Council's Conference*, Australian Sports Commission, Canberra.

Viitasalo, J.T. K., Niemela, R., Kaappola, T., Korjus, M., Levola, H.V., Mononen, H.K., Rusko, and T.E.S. Takala, (1995). 'Warm underwater water-jet massage improves recovery from intense physical exercise', *European Journal of Applied Physiology*, (Vol. 71, p. 431-428).

2. I can't get my athletes to record their resting heart rate in the morning. They are so inconsistent, what can I do to get some measure of their adaptation to training?

Monitoring adaptive responses is very important as not only a measure of the effectiveness of training but also as a gauge for the amount and type of recovery that is required. For the healthy functioning athlete, adaptation refers to a positive response to training stimuli. With good planning and management maladaptive responses are avoidable so it is important for both coach and athlete to have a systematic approach to monitoring and managing information about an individual's adaptation to training and external stress.

Research about athlete's training diaries as effective indicators of possible illness onset have indicated that a comprehensive / broad set of variables should be monitored rather than resting heart (RHR) rate alone (Mackinnon & Hooper, 1994; Hooper et al. 1995). There are many variables that can influence RHR readings and many athletes are not reliable recorders of their own RHR. An example of a monitoring sheet including these variables has been in use by high performance athletes at the Australian Institute of Sport since 1996 (for a free copy log on to www.ask.net.au). This takes about 30 seconds to complete and can be filed in a training. Some elite Australian rugby teams are using a modified version of this sheet with players completing it in about 15 seconds when they attend their strength training sessions. Results are reviewed by coaching staff daily and any unusual responses are investigated. This has resulted in the detection of several potentially major problems at an early stage and ensured early support for the wellbeing of the players concerned.

The frustration for many coaches is the lack of consistency with which many athletes record these variables. Some choose to ignore recordings of any kind and do not maintain records or a training log. The coach can still provide an alternative for the recalcitrant athlete. A simple and quick self-assessment method for the coach is to present a monitoring sheet to the player when they arrive at training. Smiley Faces 😊 😐 😞 have been used effectively by numerous Olympic athletes in Australia and Canada, at both junior and high performance levels. Sheets take about five seconds to complete and the variables selected can be changed to suit different circumstances. The aim is for athletes to learn to assess their response to training stress and external stress on a regular basis. Regular monitoring will help athletes recognise when something is outside their normal response range and encourage them to be proactive by contacting their coach, or physiotherapist, or medical specialist for help.

3. Should we be do a recovery pool session straight after a match? Is it still beneficial if we leave it till the next day?

Post game / event recovery pool sessions are very popular in Australian and New Zealand. A typical recovery pool session lasts about 10-15 minutes (a lesson plan for a basic session is at www.ask.net.au). Pools are excellent environments in which to conduct recovery activities after hard sessions or games. Both active and passive recovery techniques can be used depending on the temperature of the water in the pool. During active recovery work, water provides buoyancy and resistance properties which allow the individual to undertake gentle exercise with minimum impact on the body. Immersing the body in cool water (c.22 - 28°C) following hard exercise minimises post exercise oedema and much of the ensuing residual tension, as a result of the hydrostatic pressure experienced by the immersed body parts. These factors together with water's capacity for efficient heat transfer enhance the effectiveness of recovery techniques post game or training. The practicalities of accessing a pool immediately after training or a game can make this option impractical however so many teams choose to do their pool session early the next day for logistical reasons and to curb post game drinking customs!

The choice between hydrotherapies or an active rest routine after training provides for an interesting debate. It is essential to replenish energy stores as soon as possible after training. Active recovery for 10 to 15 minutes following training requires energy. Therefore active pool recovery may interfere with the restoration of muscle glycogen after training if athletes already have depleted energy stores. Those teams/squads that have used post game pool sessions effectively without compromising glycogen stores had included **a very aggressive** re-hydration and refuelling strategy post game and during the pool session itself. There is some belief that refuelling strategies can be aided by light aerobic activity due to increased blood flow to the fatigued muscles.

The energy demands required for a spa or shower routine are much less. Re-hydration and refuelling can occur concurrently with either strategy. One benefit reported by athletes is that they find the hydrotherapies more relaxing and enjoyable than active recovery after a hard session or game. Developing an effective post-competition routine is very important as it helps athletes to unwind and recover psychologically.