

## Recovery Methods

Most, if not all, competitive exercise participation places considerable demand on all of the body's physiological systems. In addition to these demands, it is not uncommon for mental fatigue to occur following competition; however the effects of mental fatigue are probably more susceptible to modification by the outcome of the event when compared to the physical effects of competing. With the integrity of so many of the body's systems being compromised by the event, and the fact that some athletes may have minimal time to recover (i.e., multiple events in a single day, or two or three events and possibly an equal number of training sessions within a seven day period), the rate of recovery between participation in successive exercise bouts is acknowledged as an increasingly important determinant of subsequent performance. Additionally, insufficient recovery before a successive bout of exercise, be it either training or competition, may increase the chances of injury.

“the rate of recovery between participation in successive exercise bouts is acknowledged as an increasingly important determinant of subsequent performance”

Most sports require considerable muscular involvement from stretch-shortening actions; examples of which are turns, decelerations and rapid changes of direction. These aspects of competition are associated with muscular actions that are known as being eccentric. For those who have never come across terms relating to the modes of muscular force production; there are essentially three types: concentric, eccentric and isometric. The different definitions relate to the different characteristics of the muscle as it produces force; briefly, concentric muscle actions produce force as the muscle length shortens (i.e., a bicep curl when the bicep shortens as the weight is lifted), eccentric muscle actions produce force as the muscle lengthens (i.e., similar to the action of the quadriceps when walking down a flight of stairs), whereas isometric muscle actions produce force without a change in muscle length (i.e., pushing against an immovable object, force is still being produced but muscle length isn't changing). It is the eccentric actions that are associated with muscular pain in the 24-48 hours following them being performed; a phenomenon known as delayed onset of muscle soreness (DOMS).

“eccentric movements such as turns, decelerations and rapid changes of direction are associated with muscular pain in the 24-48 hours after them being performed.”

The causes of DOMS are unclear; however the severity of effects are governed by the number of prior bouts of eccentric muscle actions; known as the repeated bout effect where even one bout of eccentric exercise has protective effects from muscle injury. Full recovery may take several days and athletes that do not have the luxury of being able to fully recover from previous training or competition prior to the subsequent exercise bout may

experience compromised performance thereafter. Strategies that increase the speed of recovery from competition have application throughout the competitive calendar but even more so in tournament or knock-out competition events when recovery time between exercise bouts is short.

Scientific studies have found that training whilst still suffering from DOMS reduces the quality of subsequent muscular performances, a statement which will not surprise anyone who has tried to train using the same body part that was previously exercised using new methods that include eccentric muscle actions. Recognising the demands of competition, a number of physical and nutritional recovery strategies have been investigated in athletes. Some of the most common methods include...

**Active recovery:** Low intensity exercise designed to increase blood flow to previously exercised muscles allowing for a “pumping” of substances out of the cells that are detrimental to performance.

**Contrast water therapy:** Repeated cycles of immersion or exposure of body parts to water of contrasting temperatures (hot or cold) in attempts to cause changes in the diameter of blood vessels and cause the “pumping” effect explained in active recovery without using further energy.

**Cryotherapy (Ice baths):** Exposing the body, or parts of the body, to cold to reduce the negative effects of soft-tissue damage.

**Compression garments:** The use of garments of specific fibre composition (not to be confused with sports clothing relating to temperature manipulation) that facilitate recovery from exercise.

**Rehydration:** The use of specific compositions and timings of drink that reverse the fluid deficits incurred during exercise.

**Nutrition:** The use of specific nutritional strategies relating to the intake of different types of food that aim to replenish the body’s stores used during exercise.

**Sleep quality:** One of the most important tools that you have to recover from exercise is sleep.

It is important to note that specific scientific strategies are employed in each and every one of these methods in a manner that ensures that recovery time is reduced when compared to normal rest.