Revitalising body and soul: physiological and psychological strategies for recovery

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Recovery is an extremely important aspect of training. It focuses on identifying physiological and psychological strategies to allow athletes to maximise training gains while minimising the chances of overtraining, illness and injury. While many coaches understand the physiological benefits of recovery, fewer coaches understand the psychological benefits that can also be gained from appropriate recovery techniques.

Psychological considerations in recovery

Under-recovery or poor recovery can contribute to stress, staleness and burnout. Athletes must be well versed in a variety of recovery techniques and be diligent about applying them. Recovery strategies include regeneration (physical repair), physiological and behavioural strategies (for example, icing, relaxing, etc.), and some coping responses (for example, debriefing). Increased physical, mental and/or emotional demands and stressors on the athlete require greater recovery. Athletes' training programs may need to be adjusted to allow for a greater emphasis on recovery during periods of increased training or personal stress. The psychological gains from good recovery practices include increased motivation, a sense of well-being and the reduction of training and/or life stress.

More psychological benefits are listed under the various recovery strategies below. While these strategies are by no means exhaustive, they offer a range of options that are frequently used by athletes in enhancing their recovery.

Cool Down

Most athletes understand the benefit of an appropriate warm-up before training and competition, yet many fail to recognise the importance of a cool-down. Gradually slowing down the intensity of exercise for 5-15 minutes at the end of a session, followed by static stretching for 5-10 minutes after the cool-down, will help to remove waste products from muscles and reduce post-exercise muscle soreness, while helping the body to return to the resting state gradually. The cool-down period also allows time to think about the training/event and begin the debriefing process.

Hydration

Proper hydration - during preparation, competition and training - will improve athletic performance, reduce the potential for thermal injury and speed the rate of recovery. Studies have demonstrated that athletes typically replace only about 50 per cent of their sweat loss, and thus often undertake subsequent training sessions in a dehydrated state.

Individual 'hydration profiles' can highlight athletes who are at risk of dehydration due to poor fluid consumption and/or high sweat rates:

- weigh athlete in minimal clothing before and after session
- loss of 1kg = 1litre fluid loss = fluid deficit for session
- 1500ml of fluid should be drunk for every 1kg of lost body weight over subsequent 2-4 hours to restore fluid balance.
Contrast therapy

Contrast therapies (hot spa or shower/cold plunge pool or shower) exposes the body to alternating hot and cold-water environments, enhancing recovery by increasing blood flow through alternating vasoconstriction and vasodilation. This improves waste removal and nutrient delivery. Contrast therapy often results in the athlete feeling refreshed and alert after a hard session, which also helps them to prepare for subsequent sessions.

The recommended protocol for contrast therapy is:

- Hot: 3-4 minutes spa/hot shower (approximately 40°C).
- Cold: 30-60 seconds plunge pool/cold shower (approximately 11°C)
- Repeat three times.

Athletes should avoid contrast therapy if they have illnesses, open wounds, acute injuries, or serious bruising (Halson et al. 2004).

Pool therapy

Pool sessions can be used for active recovery techniques such as range of motion exercises and lap swimming, and passive recovery techniques such as stretching. Sessions are best conducted in a warm pool (approximately 28°C) (Calder 2000).

Massage

Massage after hard sessions/games can help to facilitate recovery by minimising the effects of fatigue, reducing muscle tension, and lowering stress levels. It increases blood circulation in localised areas and the mechanical warming and stretching of soft tissues provides temporary flexibility gains (Calder 2000). Massage also enhances relaxation and promotes a sense of well being within the athlete.

Nutrition

Exercise depletes the body’s stored form of CHO (glycogen) in the liver, muscles and other energy reserves (that is, lean body mass and fat). Eating a high-carbohydrate/moderate-protein snack within 30 minutes after exercise helps to replenish muscle glycogen. It also has protective benefits for the immune system, as well as promoting rapid synthesis of protein for muscle repair (Burke 2001).

Athletes should eat immediately (or within 20 minutes) after exercise. Moderate to high glycemic index (GI) foods are the best choice (for example, fruit, fruit juice, muesli, breakfast bars or bread). A snack containing 15-50g of CHO should be sufficient until the next meal. For competitions involving continuous aerobic activity for more than two or three hours (for example, cycling, triathlon, marathon or cross-country skiing), athletes should consume 50-100g CHO (1g CHO/kg BM) immediately afterwards and then repeat the same amount after two hours or until normal meal patterns are resumed. A moderate amount of protein (10-20g) should be included in the after-exercise snack (Burke and Deakin 2000).

Self-monitoring

Using a ‘daily measures’ training diary is another way to monitor the recovery process. Daily recordings encourage athletes to monitor and recognise their body’s physiological and psychological responses to training, competition and life in general. Athletes should record resting heart rate, hours of sleep, energy levels, training quality and effort and general/overall feelings. These should be reviewed regularly to check adaptation to training.

Sleep
Quality and quantity of sleep affect an athlete's ability to cope with, and recover from, hard training sessions. Sleep provides regeneration and restoration of the body's systems to allow adaptation to training.

**Relaxation**

Using relaxation techniques can enhance an athlete's physiological recovery from competition. Athletes should be well-practised in progressive muscle relaxation (focusing on each muscle group one at a time and progressively relaxing the body, usually from toes to head), visualisation, meditation, and various breathing techniques.

**Debriefing**

Debriefing after a competition or training can be very helpful in dealing with the emotional and mental demands of competition. Athletes should mentally review the session, including how they felt and what they learned. This can be done with the aid of the sport psychologist or coach, but the athletes can also debrief themselves by analysing their performance and deciding what to focus on in their next session (Halson et al. 2004).

**Other psychological techniques that may aid recovery**

- Athletes should have a good awareness of their short and long-term goals. This helps them to stay motivated and to adhere to training and recovery protocols.
- All aspects of their lives should be nurtured, not just sport. Having good life balance allows athletes to devote their energies to training and recovery.

Adherence to appropriate recovery techniques will assist athletes to feel rested and refreshed after training or competition. These positive feelings enhance their psychological recovery and well-being, and help ensure they stay motivated to continue training and competing to the best of their ability.

Remember: preparation for next training session or competition starts at the end of the previous session - recovery is a vital ingredient in your athletes' next performance.

**Table 1: Timetable for recovery**

<table>
<thead>
<tr>
<th>Before training/competition</th>
<th>Eat and drink pre-event meal that has been practised and works for you.</th>
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<tbody>
<tr>
<td></td>
<td>Keep well hydrated.</td>
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<td>Monitor pre-session weight in minimal clothing.</td>
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<td>Make sure you warm up properly, including dynamic stretches.</td>
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<tr>
<td>First 5-10 minutes afterwards</td>
<td>Cool down properly with light aerobic exercise.</td>
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<td></td>
<td>Eat post-event snack with high GI, CHO and protein.</td>
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<td></td>
<td>Use set static stretching routine.</td>
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<tr>
<td></td>
<td>Check post-session weight in minimal clothing.</td>
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</table>
and after towel drying.
Work out fluid deficit (1500ml for each 1kg lost) and drink!

10-20 minutes afterwards
Continue to hydrate.
Contrast therapy.
Self-massage.

Within two hours afterwards
Eat more food.
Continue to hydrate.

That evening
Have a hot shower.
Continue to hydrate.
Relaxation techniques.

Next day
Check urine colour – ‘well-hydrated’ means urine should be clear/pale.
Eat healthy foods, choosing plenty of CHO-rich food.
Pool recovery session.
Debrief – with yourself, your coach or sport psychologist.

References

