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POST-EXERCISE RECOVERY STRATEGIES

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Post-exercise recovery can be considered on a continuum, ranging from very short periods of recovery between intervals or training sets, through to recovery between training sessions or competitive events separated by a few hours or over consecutive days. Athletes generally spend more time recovering from than they do in actual training/competition. Recovery is an important aspect of the exercise-adaptation cycle. Optimising recovery is essential for reducing the risk of injury and illness and the associated sequelae of non-functional over-reaching and overtraining.

Intense exercise disrupts many of the major physiological systems within the body. Within skeletal muscle, intense exercise leads to glycogen depletion, protein breakdown, tissue damage and remodelling. Within the cardiovascular system, intense exercise causes dehydration, post-exercise hypotension, pooling of blood in the lower limbs and a transient increase in sympathetic nervous input to the heart. Within the nervous system, intense exercise can reduce central drive and interfere with excitation-contraction coupling in muscle. Alterations within these individual physiological systems are often linked with (and influence) other physiological systems. For example: (i) alterations in the endocrine system can influence growth/repair of muscle and connective tissue, regulation of cardiovascular function, hydration and immune function; (ii) changes in thermoregulation can affect cardiovascular and renal function, and (iii) alterations in immune function can influence growth/repair of muscle and connective tissue and thermoregulation. Recovery from exercise is therefore a complex and multifaceted process.

Recovery from exercise occurs naturally with time. However, many athletes train more than once a day and compete on a regular basis. These demands increase the need to recover more rapidly after exercise. Post-exercise recovery strategies can be divided into two main categories of nutritional and physical interventions. Nutritional interventions include intake of major foodstuffs including carbohydrate and protein, or intake of supplements (e.g., amino acids, antioxidants, anti-inflammatory compounds). Physical interventions include active recovery (i.e., low-intensity exercise on land or in water), cold water immersion, cryotherapy, compression garments, pneumatic intermittent compression, neuromuscular electrical stimulation, vibration therapy, massage and stretching. These interventions are generally aimed at removing metabolic by-products in muscle, restoring muscle function and reducing muscle soreness and swelling after exercise. Evidence for the benefits of active recovery for reducing blood lactate after exercise is equivocal. The most effective strategy for restoring muscle strength and power after exercise is to wear compression garments. Cold water immersion can assist recovery of muscle power, but not muscle strength after exercise. Compression garments, cold water immersion and massage all help to reduce muscle soreness following exercise. The supporting evidence for other recovery strategies described above is either mixed or non-existent.

Future research into post-exercise recovery strategies should focus on physiological mechanisms of action, systematic comparison after different modes of exercise, the effectiveness of single vs combined strategies, as well as the optimum timing and frequency of when to apply such strategies.

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Time: 11:00am – 12:30pm
Co-Presenters: Dr Jonathan Peake; Prof Aaron Coutts; Prof Louise Burke
Panel Practitioner: Dr Vincent Kelly
Session Chairperson: Dr Shona Halson