Active versus Passive Recovery Techniques

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Athletes training for competitive sports particularly at elite level are frequently exposed to demanding training sessions two or three times a day as well as exhaustive competition. Failure to appropriately recover between large volumes of intense training sessions can result in physiological and psychological stresses that can impair performance and increase the risk of injury. Adequate recovery after training sessions decrease fatigue, accelerates the rate of physiological regeneration, facilitates overload and enhances super-compensation thus improving fitness levels. Recovery can therefore be considered as a significant component of athletic training and performance.

Various recovery modalities are currently being used by coaches and athletes in an attempt to accelerate recovery and enhance performance. Numerous studies have investigated the effectiveness of active (light exercise) and passive (resting) recovery modalities.

Current literature strongly supports the superiority of active recovery methods over passive recovery. The main objective of active recovery is to return "pooled" blood from the previously working muscles back to the central circulation.

This process also facilitates the removal of blood lactate from circulation post exercise. The main metabolic pathway for lactate removal is oxidation in the tricarboxylic acid cycle. The functioning of the tricarboxylic acid cycle is a topic for another discussion, what is important to note is that lactate oxidation predominantly occurs in active skeletal muscle. A secondary pathway for lactate elimination is its reconversion to glycogen via gluconeogenesis; this is a metabolic pathway that results in the generation of glucose from a non-carbohydrate carbon substrate. Reports indicate that 13 to 27% of lactate may be converted to glycogen during recovery. The body uses glycogen as the preferred energy source for the working muscles during exercise. The majority of the literature advocates that active recovery may be the most preferred recovery method as opposed to passive recovery due its enhanced ability to lower blood lactate concentration. However, further research is required to examine the effects of active recovery on other physiological processes in the post exercise recovery period before a definite conclusion can be made on the relative merits of active recovery versus passive recovery.

Passive recovery still has an important role to play in the recovery continuum. The principle of overload requires the training program to stress the organ system such as the skeletal muscle above the level to which it is accustomed. This process results in structural damage to the skeletal muscle and perhaps the connective tissue as well. Although this sounds harmful or counterproductive, an organ system increases its capacity in response to training overload.

Training gains or adaptation occurs while resting during the physiological regeneration process. Research indicates that passive recovery enhances super-compensation during regeneration in order to facilitate adaptation to training overload. Having a good night sleep after a hard training day or taking one day off for rest in a training week will enhance the physiological regeneration process and also prevent overtraining.

Overtraining may result in injury or reduce the athlete's resistance to disease. Furthermore, overtraining may result in a psychological staleness, which can be identified by a general lack of enthusiasm on the part of the athlete.

Irrespective of the type of recovery method used, rest and recovery forms part and parcel of training. If integrated properly into the training regime and at the appropriate time, it will aid to enhance performance. Failure to implement a well balanced training programme interspersed with appropriate rest and recovery cycles is a recipe for disaster.

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