

Documento de lectura

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Fuente : Footballscience.net

## Recovery in football

Several forms of recovery exist and depending on the time, equipment and staff available, post-exercise recovery strategies may vary.

Usually, recovery procedures can be divided into active and passive recovery.

### Active recovery

- Low/intensity exercise at various percentage of VO<sub>2</sub>max (1-6) - *see references below*
  - Running (7, 8)
  - Cycling
  - Resistance training
  - Water exercise (1)
  - Stretching (7, 8)

### Passive recovery

- Stretching
- Cryotherapy/Water immersion (cold, warm, contrast) (9, 10)
- Eating/Hydration (8, 11-13)
- Massage (2, 3, 14-16)
- Rest/sleep (3-6, 15)
- Sauna (17)
- Electrostimulation (1)
- Equipment (compression socks etc.) (18-20)

### Combined methods

- Massage and active methods (2)

## Active versus passive recovery

There are several studies which investigated the effect of active vs. passive recovery.

It seems that active recovery was superior over passive recovery in removal of lactate (2, 5, 6, 15, 16, 21-24). However, the success of active recovery seemed to depend on the intensity of activity (1-6, 23).

A possible downfall of active recovery seemed to be the smaller (24) and/or a negative effect (25, 26) on glycogen resynthesis (the re-establishment of glycogen stores from glucose). The highest rate of glycogen resynthesis was seen during the initial two hours (27) post-exercise (and simple sugars seemed to be better suited compared to complex sugars during that time (28)). However, the rate of glycogen resynthesis was also dependent on the type of exercise and reported higher in short term high intensity and resistance exercise compared to prolonged exercise (29).

However, combined methods were also shown more effective than active and passive recovery (2).

With the mentioned information in mind it seems important to look for certain aspects/variables/exercises and possible time-frames to decide over recovery procedures. We have therefore defined two categories.

### A) Physical performance

Physical performance	Active recovery	Passive recovery
Sprint ability	~ 5 h (30)	
High intensity exercise	shorter	longer (4, 31)
Repeated sprint ability	~ 48 h (7)	
Isokinetic knee extension	~ 27 h (30)	
Isokinetic knee flexion	~ 51 h (30)	

### B) Physiological variables

Physiological variable	Active recovery	Passive recovery
Lactate removal		~ 45 min (24)
Glycogen resynthesis	~ 48 h (7) ~ 69 h (30)	~ 1 hour - 80% of pre-exercise values (12) ~ 2 hours - 60% of pre-exercise values (25)
Muscle soreness		

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