

# Compression Socks

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Are compression garments an effective form of recovery? Based on a meta-analysis by Hill et al, there may be some merit to squeezing that soreness out.

Soreness is the perception of pain due to exercise-induced muscle damage (EIMD) and the inflammatory response that ensues. "EIMD is characterized by a number of symptoms including temporary reductions in muscle strength, decreased rate of force development, reduced range of motion, swelling, increased feelings of soreness and the appearance of intracellular proteins in the blood." This makes consecutive days of hard efforts, whether in training or competition, difficult. Going forward, certain posts will address evidence based recommendations on optimizing recovery.

Since this is a meta-analysis, it searched all the evidence that explored compression garments and combined their results. They looked for studies that looked at muscular power, strength, soreness and presence of creatine kinase, an enzyme associated with muscle damage.

## Study inclusion criteria

- Participants were randomized into a compression garment or control group
- Measured at least one of the outcome variables and assessed at baseline and again at 25 and/or 48 and/or 72 h after the exercise bout
- Study population could be male or female from any training background
- The compression garment was worn after, or during and after the damaging exercise

## Study exclusion criteria

1. Compression garment was not applied within 2hr of exercise completion
2. Experimental group received multiple treatments or the control group undertook any practice that could improve recovery
3. Insufficient data

The meta-analysis came up with 12 studies that met the criteria. Amongst the 12 studies there was a range of abilities from untrained to elite. None of the studies looked at cyclists specifically. There were a total of 205 subjects (136 men and 69 women) with a mean age of 22.3 years. After data analysis they came up with the following results. The results looked at the percentage of people who would receive benefit and to what extent (mld, moderate, large). They also looked at the heterogeneity of measures, or how different the outcomes were and whether they could be compared for statistical analysis.

Outcome	% of people likely to benefit from compression	Heterogeneity of measures
Muscular power	66% (moderate)	Minor (0.001%)
Muscle strength	69% (moderate)	Minor (4.8%)
Muscle soreness (DOMS)	66% (moderate)	Minor (0.001%)
Creatine kinase	66% (moderate)	Moderate (37.4%)

Their results indicated that there is moderate benefit to using compression garments after, or during and after exercise for all of the included outcomes. This would suggest improved recovery post exercise and a greater ability to perform a subsequent bout. The mechanistic reasoning follows an idea that extends beyond exercise and into edema related pathology.

As you increase the compression of a limb, the pressure gradient between your blood vessels and tissue changes. In doing so, it limits the amount of fluid from entering the tissue due to an inflammatory response (swelling). In the same way you elevate and compress an ankle sprain, with muscle damage after exercise, you are trying to mitigate that inflammatory response (whether we should be reducing inflammation is another argument) to reduce its symptoms. Compression also helps clear out damaged tissue by aiding the lymphatic system. These mechanisms however are still unclear.

A meta-analysis is a strong organization of evidence, however this particular analysis is limited by the weak methods of the selected studies. There was limited blinding of participants, sequence generation and allocation concealment were largely unclear, and there was a range of compression types and locations used. In addition, none of the included studies were cycling specific. All in all, this is ok evidence to suggest that compression garments could help aid in recover after exercise but no one way can be specified as the best.

### Source

Hill, Jessica, et al. "Compression Garments and Recovery from Exercise-Induced Muscle Damage: A Meta-Analysis." *British Journal of Sports Medicine*, 2013.