



Compression Garments and Exercise

The use of compression clothing, such as elastic undergarments and tights, is showing more popularity among athletes and fitness enthusiasts. As with most new products, injury prevention and improved performance is purported to be a benefit from using such garments.

Compression clothing is designed to provide some firmness to underlying tissue without restricting movement. Lycra or spandex is the majority material used in compression garments. Some manufacturers construct certain portions or panels of the garment with high Lycra content to overlay certain muscle groups or include rubber elastic re-enforcements. Stockings can be designed with graduated compressive forces. An internet browser search using the term "compression garments" can provide examples of designs and composition of currently available items.

Proponents of compression garments believe they can enhance proprioception and reduce muscle oscillation as well as enhance lactate removal, optimize blood flow, reduce blood pooling and reduce swelling. (Proprioception is the sense of position and movement of the limbs and the sense of muscular tension.)

M.J. Barry (1990) used elastic tights and measured the amount of lactate in blood post exercise. One group wore the tights during the exercise and during recovery. Another group wore the tights only during the exercise and a third group did not wear tights. There was no significant difference among these groups. The investigators assumed that blood lactate is the chemical causing delayed onset muscle soreness, but this assumption is of questionable validity. They did not measure the degree of delayed onset muscle soreness

A group of researchers lead by W.J. Kraemer (2001) conducted an experiment using a compression garment around the elbow. Basketball fans would recognize this garment because Allen Iverson routinely wears one. A group of untrained women wore a compression sleeve for 5 days after performing arm curls of sufficient intensity to stimulate delayed onset muscle soreness. Runners would recognize delayed onset muscle soreness as the feeling which occurs the day after a particularly hard race. Results of this investigation demonstrated that swelling, perceived muscle

soreness and any impact to the elbow joint range of motion were all reduced in those subjects that had used the compression sleeve.

K.D. Brandon (1996) studied volleyball players who completed 10 maximum vertical jumps, one every 3 seconds, and failed to demonstrate that compression shorts increased vertical jump height, but the athletes were better able to maintain power output during repeated jump efforts, that is, less fatigue. The mechanism which enhanced performance in this muscular power based activity is theorized to be a result of improved proprioception, which may have enhanced jump technique. The awareness of the orientation of the body in space, and the direction, extent and rate of movement of the limbs, depend in part on information derived from sensory receptors in the joints, tendons and muscles. Compression garments, sleeves and braces are thought to improve our proprioceptive abilities. One would think the more “together” someone is, the better they should move in a coordinated manner.

A follow up study (K.D. Brandon 2003) of track and field sprinters and jumpers was conducted with similar results. An interesting part of this study used slow motion video to measure thigh muscle oscillations when landing during a maximum vertical jump test. The investigators found significant reduction in muscular oscillation when landing from a vertical jump in individuals wearing compressive shorts compared to non compressive garments. Additionally, as one would expect, they demonstrated that skin temperature under the garment was significantly higher in individuals wearing compression garments compared to loose fitting ones.

I find the decrease in muscular oscillation particularly interesting. Using slow motion video analysis of injured runners, I often observe significant oscillations of muscles and limbs, particularly in individuals with shin splints, and have wondered what would be the most appropriate treatment to address excessive oscillations of limbs. Perhaps using “shin sleeves” could dampen the excessive vibration of the lower leg.

More recent research by T. Bernhardt (2005) used shorts with significantly more compression and resistance than that offered by spandex compression shorts. He found no difference in balance, agility, proprioception and endurance of muscular power in healthy subjects wearing or not wearing elasticized compression shorts.

Compression garments are a relatively simple mechanical modality which may have the potential to enhance sport performance and recovery from exercise or training. The evidence supporting this belief is weak. The

rationale given for using compression garments seems logical, especially in the management of injuries.

As with any intervention, there is a risk of harm or side effects. Potential adverse effects include a risk of heat illness or injury, they can hurt your pocket book and depending on your physique, they may make you look like a human sausage. (This is a bad thing.)