PERCEIVED MUSCLE SORENESS IS IMPROVED BY POST EXERCISE COMPRESSION GARMENTS: A CRITICALLY APPRAISED TOPIC

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Focused Clinical Question: Muscle soreness is a recurrent complication among athletes of all activity levels. One of the most common interventions used by clinicians to address this dilemma includes compression devices. The effects of compression devices on muscle soreness are currently unknown. The purpose of this research was to critically appraise the literature to determine the effects of compression garments (CG) on muscle soreness.

Data Sources: A PICO formatted question was used to structure our search. The PICO question was searched as followed: Population: Athlete OR Adult; Intervention: Compression Garment OR Clothing; Comparison: None; Outcome: Muscle Soreness. The following sources of evidence were utilized: PubMed, Medline, CINAHL, Sports Discus, and PEDro Database. Other resources were found through review of reference lists and hand searches. Studies that focused on the utilization of compression garments on athletes to reduce muscle soreness were found within this search.

Study Selection: The selected studies explored the effects of compression garment use during and post exercise on muscle soreness. Inclusion criteria included studies measuring creatine kinase as a blood marker for muscle damage, running/sprinting as the exhaustive exercise, English-only articles of Level 3 or higher published within the last ten years, humans only research, and athletes eighteen years or older. Articles consisting of resistive training were excluded.

Data Extraction: The specific outcomes that were gathered from the four studies included creatine kinase levels and perceived muscle soreness.

Summary Measures: Duffield et al (2010) utilized a repeated measures ANOVA with $P < 0.05$ to determine significant differences between groups. A Cohen’s $d$ was calculated to determine effect size (ES) ($P = 0.08; d = 0.62$). Duffield et al (2007) utilized a repeated-measures analysis of variance, Tukey post hoc (HSD) tests with a $P < 0.05$, and a Cohen’s $d$ for ES. A significant difference and large ES was noted for muscle soreness and creatine kinase ($P < 0.05$). Hamlin et al utilized magnitude based inferences about ES and conducted the Cohen’s value (compression $7.21 \pm 2.67$, placebo $8.69 \pm 3.21$; ES $0.51, P = 0.08$, rating: moderate). Hill et al utilized repeated-measures ANOVA, a Greenhouse Geisser correction factor, and an LSD post hoc analysis with $P < 0.05$ to identify differences between groups. Muscle soreness exhibited a significant time by group effect ($F(4,1) = 30.8, P = 0.001$) and a significant group effect ($F(1,22) = 4.451, P = 0.046$).

Evidence Appraisal: The quality of evidence was determined by the PEDro scale and Levels of Evidence via Centre for Evidence Based Medicine.

Search Results: Six studies were obtained when utilizing the search parameters and data sources. However, upon review of the inclusion and exclusion criteria, only four articles addressed the specific clinical question.

Data Synthesis: Meta-analysis was not utilized in this review of research due to the variance of the included studies’ outcomes. The data was summarized via narratives and a table format.

Evidence Quality: Two of the four studies obtained a PEDro score of 4/10, one study had a score of 3/10. Three of the four studies were categorized as Level IB, and the fourth study was classified as Level IIB.

Conclusions: While compression garments may not positively impact biomarkers associated with muscle damage, compression garments provide an effect that results in reduced perceived soreness and the potential for improved performance.

Word Count: 544