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The Effect of Compression Socks on Blood Lactate Levels During Maximal Exercise

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Abstract

While many studies have shown the benefits of compression socks on recovery, few have examined benefits during exercise. **Purpose:** To determine if compression socks are beneficial in improving performance during maximal and submaximal workloads. It was hypothesized that wearing compression socks during exercise will increase time to lactate threshold and reduce sub-maximal lactate levels. **Methods:** Fourteen healthy college-aged female athletes (soccer players, basketball players, and running club members) completed two maximal treadmill tests, one with CEP compression socks and the other wearing Under Armour hockey liner socks. Heart rate (HR), respiratory exchange ratio (RER), oxygen consumption (VO_2), rating of perceived exertion (RPE), and blood lactate were measured during both trials. **Results:** When comparing hockey socks to compression socks, HR ($p=0.006$) and RER (0.012) were significantly different. All other variables, including $\text{VO}_{2\text{max}}$ ($p=0.620$), VO_2 plateau ($p=0.917$), and total test time ($p=0.881$) were not significant, however, $\text{lactate}_{\text{max}}$ ($p=0.142$) approached significance. **Conclusion:** Compression socks reduced HR, and may increase lactate removal in female athletes, indicated by the significantly increased RER. Both the decreased HR_{max} and increased RER_{max} can be attributed to increased venous return from the compression socks.