

Perceived Exertion and Affective Responses During Normal and Lower Body Positive Pressure Treadmill Running

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Lower body positive pressure (LBPP) treadmill running has been shown to produce a decrease in perceived exertion (RPE) when compared to normal treadmill (TM) running at comparable velocities. Lower RPE has also been shown to be related to more positive affect (FS) due to reduced physical demand. However, the separate effect of treadmill type (normal vs. LBPP treadmill) on RPE and FS is unknown. **PURPOSE:** To examine the interaction effect of treadmill type and three different running velocities on RPE, and separately, FS. **METHODS:** Thirteen moderately trained participants (age: 25.8 ± 7.2 years; BMI: $25.5 \pm 3.3 \text{ kg} \cdot \text{m}^{-2}$) completed counterbalanced bouts of running exercise on a normal treadmill and LBPP treadmill at 60% (40% of body weight supported) for 4 min stages at 2.24, 2.68, and 3.13 $\text{m} \cdot \text{s}^{-1}$. Participants reported RPE and FS at the end of every stage. **RESULTS:** Repeated measures ANOVA indicated a significant interaction between treadmill condition and velocity on RPE, $F(2, 22) = 5.027, p < .05$, partial $\eta^2 = .314$. There was no significant difference in RPE between conditions at the 2.24 $\text{m} \cdot \text{s}^{-1}$ velocity ($p > .05$). RPE was significantly lower in the LBPP treadmill ($M = 10.42, SE = .668$) compared to TM ($M = 11.83, SE = .705$) at both the 2.68 $\text{m} \cdot \text{s}^{-1}$ velocity, $F(1, 11) = 8.048, p < .05$, partial $\eta^2 = .423$ and in the LBPP treadmill ($M = 11.67, SE = .711$) compared to TM ($M = 13.83, SE = .806$) at the 3.13 $\text{m} \cdot \text{s}^{-1}$ velocity, $F(1, 11) = 9.437, p < .01$, partial $\eta^2 = .462$. The interaction between treadmill condition and velocity on FS approached significance ($p = .078$). There was no significant difference in FS between conditions at the 2.24 $\text{m} \cdot \text{s}^{-1}$ velocity ($p > .05$). FS was more positive in the LBPP treadmill ($M = 2.417, SE = .379$) compared to TM ($M = 1.667, SE = .482$) at the 2.68 $\text{m} \cdot \text{s}^{-1}$ velocity, $F(1, 11) = 4.068, p = .069$, partial $\eta^2 = .270$. FS was significantly more positive in the LBPP treadmill ($M = 1.750, SE = .538$) compared to TM ($M = .833, SE = .672$) at the 3.13 $\text{m} \cdot \text{s}^{-1}$ velocity, $F(1, 11) = 5.863, p < .05$, partial $\eta^2 = .348$. **CONCLUSIONS:** Findings suggest that changes to both treadmill velocity and weighting may account for 35-46% of variance in perceived exertion and affective valence. In turn, this may have compliance implications for rehabilitative and obese populations using LBPP treadmill exercise.