

The Influence of Series Elastic Bands on Energy during Acceleration Training

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Series elastic bands have been used as a form of acceleration training with limited research. **PURPOSE:** The purpose of this study was to examine the effects of series elastic bands on energy during acceleration training. **METHODS:** Twenty volunteers (mean \pm SD; age 20 ± 1 years; body mass 74.6 ± 10 kg; height 177.2 ± 11.8 cm) participated. Four different bands (Flexbands, Speed and Explosion, Stow, OH) were tested (listed in order of increasing resistance): RED, BLACK, PURPLE, and GREEN. Tying four bands of the same color in a series created an elastic band chain (EBC). One end of the EBC was secured to a custom designed slide tension assembly (Sweeney Automation, Baltimore, MD) while the other end went around the waist of the participant prior to walking to the 14-foot starting position so slack was removed from the EBC. Elastic potential energy (PE), kinetic energy (KE), and total energy (TE) for each EBC were then determined at one-foot intervals in a ten-foot training range. The slide tension assembly recorded band force based on EBC elongation length, and an electronic timing system (Brower Training Systems, Speedtrap 2, Draper, UT) recorded the time taken to run through the ten-foot range. **RESULTS:** Based on one-foot interval force and time zero-intercept regression analysis constants and energy calculations, intensity increases associated with each EBC resulted in an increase in elastic PE, decrease in KE, and increase in TE (refer to Figures). **CONCLUSION:** Despite TE increasing, the diminishing KE and elevated elastic PE appear to have detrimental effects on acceleration training as series elastic bands increase in resistance.



