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Sport-Specific Conditioning Test Performance and VO_{2max} Following Four Sessions of Maximally Explosive Training

Amber L. Whittaker, Kerry Lynch, Anna Brennan, Evan Eibner, Amar Naboulsi, Mallory Boyd, Jerome Thomas, Ethan Robbins, Bilal Chaudhry, Ryan Hughes, Harmon Bennett, and Scott Mazzetti. Salisbury University, Salisbury, MD

Burgomaster et al. (2005) found significant improvements in aerobic exercise capacity following only two weeks of intense sprint-interval training, demonstrating the potency and efficiency of intense exercise. How these adaptations translate to a more sport-specific conditioning test remain unclear. **PURPOSE:** The purpose of this study was to examine the influence of two weeks of maximally explosive sprint and resistance training on sport-specific conditioning test performance and VO_{2max}. **METHODS:** Eight men (21±1.9yrs) with >1 year of training experience performed 4 training sessions consisting of 3x10s leg (.075 kg·kg BW^{-1}) and 3x5s arm (.025 kg·kg BW^{-1}) cycling sprints interspersed with 4x10 maximally explosive repetitions (reps) of squat and bench press (50% of 1-RM) with 120s rests between sets over two weeks. During training, peak power (W) was collected for each bench press rep using a weight room accelerometer, and data were summed for each set. Bench press peak power data were analyzed for changes over the four sessions. Before and after training, sport-specific conditioning was tested with a modified yo-yo intermittent recovery test, which required subjects to perform as many reps as possible of a med ball throw (3kg) and 9.14m agility sprint with 20s rests. Participant VO_{2max} was also tested pre and post training on a cycle ergometer. Two men (20.5±0.7yrs) completed all pre- and post-testing, but did not undergo training. Data were analyzed using ANOVA's and Tukey HSD post hoc analyses. Data are Means SD (sig. at p 0.05). **RESULTS:** During training, the sum of peak power (W) for each bench press set (of 10 reps) was significantly greater during sets 3-4 compared to set 1 during the last two training sessions. The number of reps completed on the sport-specific conditioning test (pre 14.4±5.0, post 28.9±11.6 reps) and VO_{2max} (pre 42.3±6.7, post 45.6±5.8 ml/kg/min) increased significantly in the training group but not the untrained control group (yo-yo pre 14.5±5.0, post 15.0±1.5 reps; VO_{2max} pre 42.5±1.6, post 41.8±1.7 ml·kg·min^{-1}). **CONCLUSION:** Intense exercise training elicited rapid improvements in anaerobic and aerobic fitness, demonstrated by increased sport-specific conditioning test performance and cycling VO_{2max} following 4 explosive exercise training sessions. Further, muscle power during bench press training was sustained at higher levels by the third training session. **SIGNIFICANCE/NOVELTY:** Our findings demonstrate that sport-specific conditioning test performance can be improved rapidly after only 4 intense training sessions, despite dissimilar testing and training modes. Specifically, sport-specific conditioning testing entailed kneeling med ball throwing, sprinting, and rapid change of direction, while training included short cycling sprints interspersed with lower- and upper-body explosive resistance exercise.