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### A Comparison of Warm-up Effects on Maximal Aerobic Exercise Performance in Children

Avery D. Faigenbaum, Jie Kang, Michael DiFiore, Caitlyn Finnerty, Andy Garcia, LeeAnn Cipriano, Jill A. Bush, Nicholas A. Ratamess, The College of New Jersey, Ewing, NJ

Cardiopulmonary exercise testing is a valid and reliable method for evaluating aerobic fitness in children, yet there are no accepted warm-up protocols for pediatric exercise testing. **PURPOSE:** The aim of this study was to compare the warm-up effects of treadmill walking (TW) with a dynamic bodyweight warm-up (DY) on maximal aerobic exercise performance in children. **METHODS:** Sixteen healthy children ( $10.9 \pm 1.5$  yrs) were tested for peak oxygen uptake ( $\text{VO}_2$  peak) on 2 nonconsecutive days following different 6-min warm-up protocols. TW consisted of walking on a motor-driven treadmill at 2.2 mph and 0% grade whereas the DY warm-up consisted of 9 progressive bodyweight movements including dynamic stretches, lunges, and jumps. **RESULTS:** Maximal heart rate was significantly higher following DY than TW ( $193.9 \pm 6.2$  vs  $191.6 \pm 6.1$  bpm, respectively;  $P = 0.008$ ). No significant differences between DY and TW were found for  $\text{VO}_2$  peak ( $54.8 \pm 9.6$  vs  $51.8 \pm 8.7$  ml/kg/min;  $P = 0.09$ ), maximal minute ventilation ( $68.9 \pm 14.8$  vs  $64.9 \pm 9.4$  L/min;  $P = 0.27$ ), maximal respiratory exchange ratio ( $1.12 \pm 0.1$  vs  $1.11 \pm 0.1$ ;  $P = 0.85$ ) and total exercise time ( $614.0 \pm 77.1$  vs  $605 \pm 95.0$  sec;  $P = 0.55$ ), respectively. **CONCLUSION:** These findings indicate that the design of the warm-up protocol can influence the heart rate response to maximal aerobic exercise and has a tendency to influence  $\text{VO}_2$  peak in healthy children. A DY warm-up could be a viable alternative to a TW warm-up prior to pediatric exercise testing.