Sex Difference in Cardiorespiratory Stress from High-Intensity Interval Exercise

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ABSTRACT

High-intensity interval exercise is time efficient and has similar cardiorespiratory health benefits as moderate-intensity continuous exercise. However, the prescription of high-intensity exercise may differ between men and women due to sex differences in cardiovascular function. PURPOSE: Therefore, the objective of this study was to examine whether sex differences exist for absolute and relative oxygen uptake (VO\textsubscript{2}) and heart rate (HR) when exercise was performed at a percentage of maximal cycling work rate measured in watts (W\textsubscript{max}). METHODS: We recruited 8 active college-aged participants (5 men, 3 women). Participants completed an incremental maximal exercise test on a cycle ergometer while VO\textsubscript{2}, HR, and W\textsubscript{max} were recorded. On a separate day, participants completed a high intensity interval session (4 min bouts with 3 min active recovery) prescribed at 65% W\textsubscript{max} for each bout and at 15% W\textsubscript{max} for the recovery. VO\textsubscript{2}, HR, and W were averaged from the last minute of each exercise bout for analysis using an independent t-test for sex comparisons. Data are reported in means ± standard deviations and significance was set at P<0.05. RESULTS: Men exercised at a greater absolute workload than women during interval exercise (191±14 vs. 95±15 W; P<0.0001). Absolute VO\textsubscript{2} was higher in men than women during exercise (2.7±0.4 vs. 1.5±0.3 L/min; P<.001), but heart rate was similar between sexes (172±7 vs. 176±4 bpm, P=0.23). Relative VO\textsubscript{2} (67±11 vs. 74±6 %VO\textsubscript{2}max; P=0.15) and HR (95±3 vs. 93±3 %HR\textsubscript{max}; P=0.30) were also similar during exercise between sexes. CONCLUSION: In summary, these preliminary data suggest prescribing high-intensity interval exercise at a percentage of maximal work rate results in similar relative cardiorespiratory stress between men and women.