

Acute Effects of Different Volumes of High-Intensity Interval Training and Continuous Aerobic Exercise in Vascular Reactivity

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ABSTRACT

Endothelial dysfunction is characterized by the unbalance between vasodilatory and vasoconstrictor mechanisms. Furthermore, this is recognized as the initial step to developing cardiovascular disease. Exercise plays an important role in both cardiac rehabilitation and cardiovascular risk prevention. However, some new exercise modalities, such as high-intensity interval training (HIIT), are becoming more popular, and limited information about their effect on the endothelium is available. **PURPOSE:** to determine what volume of HIIT will improve endothelial function than continuous moderate exercise intensity. **METHODS:** Six young apparently healthy subjects were recruited for seven laboratory visits. The first visit included a graded exercise test, in which lactate levels, oxygen consumption, heart rate, and RPE were collected. HIIT intensity was determined by workloads when lactate levels were higher than 4.0 mmol/l. Following visits were in a randomized order in which 5 different volumes (i.e., 1 to 5, 1-min repetitions with 3-min rest) of HIIT were completed and one bout of moderate-intensity exercise, lasting 30-minutes. Flow Mediated Dilation (FMD) data were obtained at three different times (Pre, Post-10-min, and Post-60-min). FMD in every time point was calculated by $[(\text{Peak brachial artery diameter} - \text{Basal brachial artery diameter}) / \text{Basal brachial artery diameter}] \times 100$. **RESULTS:** No significant differences in FMD were observed between different volumes of HIIT or time ($p > 0.05$). Additionally, a trend to a biphasic response can be observed within the different volumes of HIIT and time (Figure). **CONCLUSION:** It appears that an acute session of HIIT does not enhance endothelial function, regardless of the HIIT volume.