ABSTRACT

THESIS: Vascular adaptations following a high intensity interval training intervention

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DEGREE: Master of Science

COLLEGE: Applied Science and Technology

DATE: May 2015

PAGES: 87

Purpose: The purpose of the present study was to assess vascular health at three time points of an 8 week high intensity interval training (HIIT) intervention. Vascular assessment included augmentation index at 75 beats per minute (AIx@75), pulse wave velocity (PWV), and carotid intima media thickness (CIMT). Methods: Eighteen young, sedentary, males (age: 24.7 ± 5.1 yr., BMI: 26.7 ± 5.8 Kg·m⁻²) volunteered to participate in the study. Subjects participated in an 8 week HIIT intervention. To complete the training, subjects visited the laboratory 3 times a week for 8 weeks. Training consisted of a 5 minute warm up followed by consecutive 30 second bouts of high intensity cycling with 4.5 minutes of active recovery between bouts. Each two week period an additional 30 second bout was added beginning with 3 repeated bouts in weeks 1 and 2, and ending with 6 repeated bouts by week 7 and 8. Vascular assessments were taken at baseline, after four weeks and after eight weeks of training. Data were analyzed using repeated measures ANOVA. Pairwise comparisons after Tukey’s LSD adjustment were used to identify significance between measurements. Pearson correlations determined the relationship between baseline values and change scores at 8 weeks. Significance was set at p < 0.05. Results: A
significant training stimulus was observed by noting a significant decrease in FI from pre-
training to post-training (p <0.05). There were no significant changes (p > 0.05) in measures of
PWV, aortic PP, or AIx@75, or CIMT after 4 or 8 weeks of HIIT. Baseline levels of PWV and
Alx@75 were negatively correlated to the change score after 8 weeks of HIIT (p < 0.05)

Conclusion: The findings of the present study demonstrate that 8 weeks of HIIT is an
insufficient stimulus to reduce PWV, AIx@75, or CIMT in a group of young, healthy men. The
present study indicates that baseline arterial stiffness is a prerequisite for vascular adaptation.