TACSM Abstract

The Influence of High-Intensity Interval Exercise on Vitamin-D Concentrations in Healthy Individuals

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ABSTRACT

Vitamin D (VD) deficiency is one of the most common deficiencies in the world due to various factors (e.g., lack of sun exposure and dietary considerations). Currently the utilization of exercise may act as an intervention for VD deficiencies to promote increases in VD concentrations in healthy populations. This could largely be due to the loss of calcium from aerobic exercise (AE), leading to a hormonal response [(e.g., parathyroid hormone (PTH)] and the activation of cytochrome's (e.g., CYP2R1, CYP27B1) responsible for the regulation of VD. Thus, AE may serve as an intervention to promote VD synthesis due to the impacted biological mechanisms placed upon the body. **PURPOSE**: To determine changes in VD concentrations in healthy individuals, following an acute bout of HIIE. **METHODS:** Thirty-five apparently heathy and physically active individuals (22 = M and 14 = F, age = 37.7 ± 12.6, %BF = 19.3 ± 7.0) were recruited for participation in the study. All participants completed an initial testing session where measures of body composition, health status, and cardiorespiratory fitness [(VO_2Reserve (VO_2R)] were assessed using standardized protocols. Following baseline assessments, participants returned to the lab 48-HR later to perform one bout of HIIE for 30-minutes on a treadmill. Participants completed six high- and low-intensity stages, with each stage consisting of 3-minute intervals of submaximal exercise at 80% VO_2R and 2-minute recovery intervals at 40% VO_2R. Venous blood samples were obtained at three-time points (e.g., pre-exercise, 1-HR post-exercise, 24-HR post-exercise) from the most prominent antecubital vein. Data were analyzed using a paired samples t-test to assess differences between VD concentrations at the sampled time points. **RESULTS**: Significant differences were observed between the three-time points. VD concentrations significantly increased from pre-exercise to 1-HR ($t = -14.372$, $p < .001$) and 24-HR post-exercise ($t = -9.468$, $p < .001$). However, VD concentrations were not significantly different from 1-HR to 24-HR post-exercise ($t = 0.728$, $p = .471$). **CONCLUSION**: HIIE could be utilized as a potential intervention to improve VD concentrations in healthy individuals. Future research should examine the effects of HIIE in individuals with VD deficiencies to assess its role in promoting VD synthesis.