

IL-10 and IL-8 Changes Following Treadmill and Cycling High-Intensity Interval Training

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ABSTRACT

Pro-inflammatory and anti-inflammatory cytokines have been documented to change in response to long-duration, aerobic exercise. Little work has been performed in high-intensity interval training (HIIT). Furthermore, it has yet to be elucidated whether the modality of HIIT affects this inflammatory response. **PURPOSE:** The purpose of this study was to investigate the changes in IL-8 and IL-10 cytokine concentrations pre-post and post-1hr following HIIT protocols using two different exercise modalities, treadmill running (TM) and stationary cycling (CE). **METHODS:** Eight young, healthy, recreationally active volunteers (1 female, 7 males; 25.50 ± 3.25 years) completed a 4x4 HIIT protocol (4-minute 85-95% HR_{max} active; 3-minute 60-70% HR_{max} recovery) on both a treadmill (TM) and a stationary cycle (CE). All participants completed both modalities in a randomized order 1 week apart. Blood samples were collected using Tasso+ devices attached to the upper arm. Plasma was isolated and frozen at -80C until protein analysis. IL-8 and IL-10 were measured using the Millipore HCYTOMAG60K assay. Data are presented as percent change, post- and 1h-post HIIT bouts. **RESULTS:** IL-8 was elevated by 8.11% immediately following TM HIIT and did not change following CE HIIT (0.3%). Following 1-hour of recover, IL-8 increased a further 28.96% after TM and increased by 2.08% after CE. IL-10 concentration was increased by 14.41% 1-hour following TM HIIT; however, it did not change 1 hour following CE HIIT. **CONCLUSION:** The immune system plays an important role in the maintenance of health. This study demonstrated that a higher-impact exercise (TM) elicits a proinflammatory response that persists for 1 hour after training. However, this pro-inflammatory response was not observed in the lower-impact CE modality. Accounting for differences in inflammatory response between modalities of HIIT is important when designing exercise programs for populations with impaired immune systems. Future work should be performed to identify differences in immune cell function following various HIIT modalities.