

## **C-Reactive Protein Changes Following Treadmill and Cycling High-Intensity Interval Training**

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### **ABSTRACT**

The acute inflammatory response to exercise has been well-studied in long duration activities such as marathons and triathlons; however, little work has been done investigating this response in high-intensity interval training (HIIT), which is characterized by intermittent bouts of higher and lower intensity cycles. **PURPOSE:** The purpose of this study was to investigate the changes in C-reactive protein (CRP) immediately following and 1-hour post HIIT protocols using two different exercise modalities, treadmill running and stationary cycling. **METHODS:** Eight young, healthy, recreationally active volunteers (1 female, 7 males;  $25.50 \pm 3.25$  years) completed a 4x4 HIIT protocol (4-minute 85-95% HR<sub>max</sub> active; 3-minute 60-70% HR<sub>max</sub> 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. CRP was measured using CRP ELISA kits (Millipore CYT298). Data are presented as percent change, pre- and post-HIIT bouts. **RESULTS:** CRP concentration did not change (-0.06%) immediately following TM HIIT, however, it increased by 7.88% immediately following CE HIIT. After 1 hour of recovery, CRP decreased by -5.40% following TM HIIT and -6.16% following CE HIIT. **CONCLUSION:** The results of this study illustrate the different inflammatory profile changes immediately following HIIT exercise between a higher-impact exercise (TM) and a lower-impact exercise (CE). However, both modalities showed a similar decrease in CRP after 1 hour of recovery in relation to baseline values. This information can be useful when creating exercise interventions for populations that have altered inflammatory profiles. Future work should investigate the effects of other HIIT modalities (e.g., rowing) and protocols (e.g., 10x1) on the inflammatory and metabolic responses to exercise.