Treadmill Walking Increases Percent of Circulating Monocytes (CD14+) Expressing CX3CR1 In Older Adults

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ABSTRACT

CX3CR1 is a chemokine receptor for the chemokine CX3CL1. Expression of CX3CR1 may influence the inflammatory response of the innate immune system. The **PURPOSE:** of this study was to examine the relationship between CX3CR1 expression on circulating monocytes with physical activity level and mode of exercise in healthy, older adults. **METHODS**: Twenty-four healthy older adults (63.0 ±5.0 years) were recruited for this study. Participants were divided into two groups based on self-reported physical activity level: physically active (PA) and physically inactive (PI). Participants completed a randomized complete crossover trial of 30 minutes moderate-vigorous intensity cardiorespiratory endurance (CRE) or resistance exercise (RE) on two separate visits. Blood samples were collected from each person at rest (PRE), immediately after exercise (POST), and 1-hr recovery after exercise (RECOV). Monocyte cell surface markers were measured by flow cytometry. **RESULTS:** PA participants (N=12, est. VO_2max=45.3±16.8 mL $\cdot kg^{-1} \cdot min^{-1}$) had a higher estimated VO_2max than the physically inactive participants (N=12, est. VO_2max=35.0± mL $\cdot kg^{-1} \cdot min^{-1}$). Percent of circulating monocytes expressing CX3CR1 was higher ($p<0.05$) in CRE RECOV (92.3%±2.5) than CRE POST (90.1%±2.98). No other differences ($p\geq0.05$) were observed within the PA group between PRE, POST, and RECOV timepoints for the CRE or RE modes of exercise. No differences ($p\geq0.05$) were observed within the PI group for time or mode of exercise. No differences ($p\geq0.05$) were observed between the CRE and RT modes of exercise within the PA group or the PI group at each PRE, POST, and RECOV timepoints. **CONCLUSION**: Differences in monocyte expression of CX3CR1 were observed between the POST and RECOV stage following a 30-minutes CRE (treadmill) exercise intervention within the PA group. Time differences were observed between PA and PI groups. No other differences in CX3CR1 were observed within PA and PI groups following a 30-minute moderate-vigorous exercise intervention. Further research is needed to determine potential differences if CX3CR1 physical activity status and mode of exercise influence the inflammatory response of an acute exercise bout.