

Exercise training modulates M1/M2 macrophage phenotype in adipose tissues of obese mice

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Purpose: Recent investigations suggest that exchange of macrophage phenotype (M1/M2) in adipose tissues is associated with chronic low-grade inflammation in obesity. Although exercise training inhibits inflammatory cytokine gene expressions in adipose tissues, it remains unclear whether exercise training affects a phenotypic switch in adipose tissue macrophage polarization. Therefore, we newly investigated the effect of exercise training on a macrophage phenotypic switch in adipose tissues. **Methods:** Male C57BL/6 mice were divided into four groups; normal diet (ND) control, ND exercise, high-fat diet (HFD) control, and HFD exercise. Mice ran on a treadmill at 12-20 m/min for 60 min/day, for 16 weeks. Adipose tissues were obtained from epididymal fat pads. **Results:** Although mRNA expressions of CD11c and TLR4, which are M1 macrophage specific markers, significantly increased in adipose tissues in the HFD control group, the expressions decreased significantly in the HFD exercise group compared with the HFD control group. Although CD163, a M2 macrophage specific marker, mRNA expression significantly decreased in adipose tissues in the HFD control group, the expression increased significantly in the HFD exercise group compared with the HFD control group. **Conclusion:** Exercise training induced a phenotypic switch from M1 macrophage to M2 macrophage in adipose tissues of obese mice.