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INFLAMMATION STATUS OF HEALTHY UNTRAINED YOUNG MEN: INITIAL RESPONSE TO RESISTANCE TRAINING

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Resistance training (RT) is recommended for the maintenance and improvement of health (Kraemer, Ratamess, & French, 2002). RT has been shown to reduce markers of sub-clinical inflammation (Calle & Fernandez, 2010) and reduce fat stores (Donnelly et al., 2009). Our primary aim was to study the effects of four-week resistance training (RT) period on inflammation markers in previously untrained men and the possible relationship between the changes in abdominal fat mass and the changes in inflammation status.

A total of 68 physically active and healthy untrained young men started with RT (3x8-15x50-80% of 1RM) performed twice a week for a 4 week. In addition, the control group (n=12) was asked to maintain their habitual physical activity and exercise level. Abdominal fat mass was estimated with dual-energy absorptiometry (DXA) and fasting venous blood samples were drawn from an antecubital vein before and after RT. High-sensitivity C-reactive protein (hs-CRP), interleukin (IL)-6, monocyte chemo attractant protein 1 (MCP-1) and selected adipocytokines (resistin, adiponectin and leptin) were determined by enzyme-linked immunosorbent assay (ELISA) with commercial reagents.

RT significantly increased circulating resistin concentration ($p = 0.039$, $ES = 0.546$) and MCP-1 concentration ($p = 0.039$, $ES = 0.548$). However, a significant decrease in circulating leptin concentration was observed ($p = 0.006$, $ES = 0.799$). After the RT period, abdominal

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fat mass was significantly reduced ($-3.2 \pm 6.8 \%$, $p=0.001$, $ES=0.969$). Significant correlation was observed between change in abdominal fat mass and change in leptin concentration. All the variables stayed statistically unaltered in control group.

Already short-term 4 week RT reduced abdominal fat mass and circulating leptin concentration. In addition, to these health beneficial results, resistance training induced unwanted pro-inflammatory alterations. RT induced a significant increase in MCP-1 and resistin concentrations. Taken together, the results of this study indicate that the initial response to RT has anti-inflammatory effect but it may also elicit an increase in some of the pro-inflammatory markers in an untrained population. Thus, caution must be taken when designing resistance training programs for people with no background in RT.