Dokumenttyp: journal article

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Titel des Beitrags: Immunomodulatory effects of aerobic training in obesity.

Abstract: Physical inactivity and obesity are independent risk factors for atherosclerosis. We analyzed the immunomodulatory capacity of 10-week intensified exercise training (ET) in obese and lean athletes. Markers of the innate immune response were investigated in obese (ONE: ET>=55 km/week). Circulating dendritic cells (DC) were analyzed by flow-cytometry for BDCA-1/-2-expression. TLR-2/-4/-7 and MyD88 were analyzed by RT-PCR and Western blot. Circulating oxLDL levels were analyzed by ELISA. BDCA-1 expression at baseline was lower in ONE compared to both other groups (ONE 0.15%; LNE 0.27%; LE 0.33%; P<.05), but significantly increased in ONE after training (+50%; P<.05). In contrast, BDCA-2 expression at baseline was higher in ONE (ONE 0.25%; LNE 0.11%; LE 0.09%; P<.05) and decreased in ONE after the 10-week training period (-27%; P<.05). Gene activations of TLR-4 and TLR-7 with corresponding protein increase were found for all three groups (P<.01/P<.05) compared to pre training. A reduction of oxLDL levels was seen in ONE (-61%; P<.05). Intensified exercise induces an increase of BDCA-1+ DCs and TLR-4/-7 in obese athletes. We hereby describe new immune modulatory effects, which-through regular aerobic exercise-modulate innate immunity and pro-inflammatory cytokines in
obesity.

Zeitschriftentitel / Abkürzung:
Mediators Inflamm

Jahr:
2011

Band:
2011

Seiten:
308965

Sprache:
eng

Pubmed:

Print-ISSN:
0962-9351

TUM Einrichtung:
ventive und rehabilitative Sportmedizin

Occurences:
- Einrichtungen > Fakultäten > Fakultät für Medizin > Kliniken und Institute > Poliklinik für Präventive und Rehabilitative Sportmedizin > 2011

entries: