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Physical activity as a non-pharmacologic treatment to be prescribed in osteoarthritis

Giuseppe Musumeci

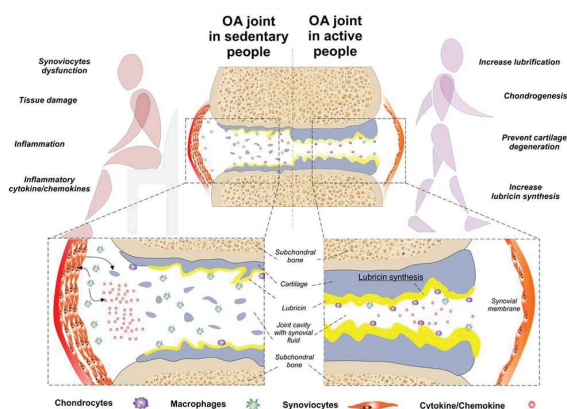
University of Catania, Italy

Purpose: The purpose of this study was to investigate the influence of Moderate Physical Activity (MPA) on the expression of osteoarthritis (OA)-related (IL-1, IL-6, TNF- α , MMP-13) and anti-inflammatory and chondroprotective (IL-4, IL-10, lubricin) biomarkers in the synovium of an OA-induced rat model. The MPA-based approach may support joint tribology and synovial lubrication, leading to improved joint function and pain relief. In addition, in pathologic conditions, synoviocytes type A secrete cathepsins, MMPs and pro-inflammatory cytokines/chemokines into the extracellular matrix, triggering tissue damage.

Methods: A total of 32 rats were divided into four groups: Control rats (Group 1); rats performing MPA (Group 2); anterior cruciate ligament transection (ACLT)-rats with OA (Group 3); and, ACLT-rats performing MPA (Group 4). Early OA was induced through the anterior cruciate ligament transection (ACLT) technique. Analyses were performed using Hematoxylin & Eosin staining, histomorphometry and immunohistochemistry.

Results: In Group 3, OA biomarkers were significantly increased, whereas, IL-4, IL-10, and lubricin were significantly lower than in the other groups. The results from MPA experimental group (Group 4) highlighted the decreased expression of OA-related biomarkers (IL-1, TNF- α , MMP-13) and the increased expression of chondroprotective ones (IL-4, IL-10 and lubricin).

Conclusions: We hypothesize that MPA might partake in rescuing Type B Synoviocyte Dysfunction at the early stages of OA, delaying the progression of the disease and finally postponing the need for joint replacement.



e: g.musumeci@unict.it