

Exercise and Nutrition effects on cartilage degenerative disorders

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Healthy lifestyle based on appropriate diet and not sedentary habits became of fundamental importance for the healthy aging and prevention of several diseases. The beneficial effects of Extra Virgin Olive Oil (EVOO), the main source of culinary and dressing fat of Mediterranean diet, have been, and still are, widely studied thanks to its anti-inflammatory and antioxidant properties. Lubricin is a chondroprotective glycoprotein, serving as a critical boundary lubricant between opposing cartilage surfaces. A joint injury causes an increased cytokine expression, which is associated with decreased lubricin production and predisposes to cartilage degeneration, leading to osteoarthritis. The aim of this study was to evaluate the beneficial role of EVOO-enriched diet and physical activity on cartilage tissue through the expression of lubricin in knee joints of rats after injury represented by anterior cruciate ligament transection (ACLT). To this purpose, we performed histomorphometric, histological, immunocytochemical, immunohistochemical, western blot and biochemical analysis for lubricin and interleukin-1 evaluations in articular cartilage and synovial fluid of rats. The results showed the beneficial effect of physical activity (treadmill training) and EVOO supplementation on the rat articular cartilage. ACLT determined an increase in interleukin-1 expression and a significant decrease in the lubricin expression, while physical activity and EVOO supplemented diet, determined that the values returned to a normal level when compared to the control group. In conclusion, the results showed a beneficial effect of the conjunction of EVOO-based diet, corresponding to the Mediterranean diet, and physical activity on the preservation of articular cartilage tissue.

Keywords

Extra Virgin Olive Oil, Physical Activity, Cartilage, Inflammation, Lubricin, Osteoarthritis