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The role of ambulatory mechanics in the initiation and progression of knee osteoarthritis

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This review examines recent in-vivo studies of ambulation and discusses the fundamental role of mechanics of ambulation in the initiation and progression of osteoarthritis at the knee.; Recent studies have supported earlier findings that a high adduction moment at the knee during ambulation was most frequently reported to influence the progression of medial compartment osteoarthritis. In contrast to previous findings in patients with osteoarthritis, recent work on healthy subjects reports that cartilage thickness increases with high ambulatory loads. Kinematic changes were associated with the initiation of osteoarthritis. Recent studies of subjects with high risk factors for knee osteoarthritis (obesity and anterior cruciate ligament injury) reported a relationship between kinematic changes during ambulation and the initiation of osteoarthritis at the knee. This review also contrasts the relative influence on osteoarthritis of knee mechanics measured during ambulatory and nonambulatory activities.; The initiation of osteoarthritis occurs when healthy cartilage experiences some condition (traumatic or chronic) that causes kinematic changes during ambulation at the knee to shift the load-bearing contact location of the joint to a region not conditioned to the new loading. The rate of progression of osteoarthritis is associated with increased load during ambulation.
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