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Biomechanical considerations in patellofemoral joint rehabilitation

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Abstract

Patellofemoral joint biomechanics during leg press and leg extension exercises were compared in 20 normal subjects (10 men, 10 women) aged 18 to 45 years. Knee moment, patellofemoral joint reaction force, and patellofemoral joint stress were calculated for each subject at four knee flexion angles (0°, 30°, 60°, and 90°) during leg press and leg extension exercises.

All three parameters (knee moment, patellofemoral joint reaction force, and patellofemoral joint stress) were significantly greater in leg extension exercise than leg press exercise at 0° and 30° of knee flexion ($P < 0.001$). At 60° and 90° of knee flexion, all three param eters were significantly greater in leg press exercise than leg extension exercise ($P < 0.001$). Patellofemoral joint stresses for leg press and leg extension exercises intersected at 48° of knee flexion.

This study demonstrates that patients with patello femoral joint arthritis may tolerate rehabilitation with leg press exercise better than with leg extension exercise in functional ranges of motion because of lower patel lofemoral joint stresses.