

Correlation between Eccentric Quadriceps Torque with Pain, Physical Function and Range of Motion in Women with Grade II Osteoarthritis

Fares Arab

Jamia Hamdard University, India

Abstract

Knee Osteoarthritis is the 4th leading cause of year lived with disability (YLDs) in women, accounting for 3% of total global YLDs. Knee Osteoarthritis leads to decrease in activities of daily living (ADL). Previous study in Indian settings particularly in New Delhi state reports prevalence of osteoarthritis in female around 3.63% out of the total number of musculoskeletal disorders. Osteoarthritis is the major cause of pain. Quadriceps weakness is the common clinical sign with moderate to severe knee OA and it results in physical dysfunction; however, there is a gap in previous data exist relating quadriceps weakness in early stage of the disease in women.

In India, the occupation of the majority of affected females with knee osteoarthritis found to be house workers. The reason could be attributed to the current ADL manifested in carrying heavy objects, ascending and descending long stairs, sitting on ground, squat position for daily activities like washing, cooking, toileting, worshipping, and also reasons like more weight distributing, obesity, broader pelvis and reduced physical training of lower limbs to match the muscle strength for this type of activities.

Osteoarthritis (OA) is a slowly evolving articular ailment that looks to originate in the cartilage and affects the underlying bone, tender tissues, and synovial fluid. This situation normally takes place late in existence, principally affecting the hand and huge weight-bearing joints which includes the knee. It is miles particularly disabling when the knees are affected, because it limits the ability to walk, to upward thrust from a chair, and to use stairs. Due to the fact 30% to forty% of folks over the age of 60 years have knee OA, three it is miles likely to make a contribution significantly to incapacity in the fashionable populace.

Ladies with OA of the knee have much less quadriceps strength than age-matched wholesome women. It's miles extensively believed that quadriceps muscle weak point in knee OA sufferer's consequences from disuse atrophy secondary to joint ache. Isometric quadriceps strength has been correlated with the pass-sectional vicinity of this muscle group in wholesome older ladies. However, to our knowledge, no current observe correctly describes the relation between dynamic energy (concentric and kooky) and move-sectional place of the quadriceps and hamstring muscle groups in patients with OA. Consequently, it is miles unsure whether this muscle weakness is defined on the idea of faded muscle groups in patients with OA.

Knee Osteoarthritis (OA) may be a chronic disease that manifests as pain, stiffness, swelling and muscle weakness, causes purposeful impairment because of lower limb muscle weakness, and is one amongst the foremost common diseases within the older persons. A previous study according that subjects with knee pain had a considerably higher incidence of extensor muscle femoris extensor muscle weakness once a 30-month amount than subjects while not pain which patients with knee OA had a seventy-six reduction in eccentric quadriceps strength than healthy subjects. Meanwhile, extensor muscle weakness could contribute to worsening of knee pain. Also, extensor muscle strength is one amongst the intrinsic factors poignant the knee functions.

Furthermore, patients with knee OA have impaired interception when put next to healthy folks. Some studies delineate impaired interoception as related to the presence of pain, and knee pain was a big predictor of decrease in balance. Also, the studies found that pain had effects, not solely on muscle strength however conjointly on interoception.

In patients with knee OA, belittled muscle strength and interoception area unit famous to be plagued by swelling in addition as pain. Swelling is understood to trigger the spinal repressive mechanism of extensor motor neurons, and to scale back muscle activity, thereby decreasing interoception. However, there are a unit varied opinion on the results of knee pain alone on extensor muscle weakness, specifically belittled interoception and balance stability in patients with knee OA, while not swelling. It is unclear whether such purposeful impairments in patients with knee OA area unit because of swelling, or plagued by the degree of pain, as connected studies area unit scarce. There are a couple of studies that designed to check those results for every knee pain stage in OA and healthy subjects. Therefore, during this study, we tend to aim to analyze patients with knee OA while not swelling that had completely different degrees of pain in both sides of knee joints.

The purpose of this study was to analyze the results of knee pain on extensor muscle strength, hinge joint interoception, and equilibrium stability. we tend to be planned to check outcomes between every knee within the same patient with knee OA. we tend to conjointly investigate the correlation between extensor muscle strength, hinge joint interoception, and equilibrium stability. The strength Associate in Nursing endurance of the knee extensor muscle and flexor muscle muscles were evaluated victimization an isokinetic ergometer. The supreme strength of the quadriceps femoris and hamstring was measured for every knee at sixty % (4 repetitions) and a hundred and eighty % (20 repetitions), and mean power for every was calculated. the utmost peak torsion (Nm) for every speed was additionally recorded. This live has glorious intra-rater responsibility in patients with knee OA.

Sample of the study was Ninety volunteering female subjects with knee osteoarthritis.

Instrument used, Isokinetic dynamometer (Biodex Multi-Joint System 4, Biodex Medical Inc., NY, USA).

Symptoms data collected using Reduced WOMAC questioner.

This study was done to determine if the cause of pain in early degree of knee OA is the reduced eccentric torque of quadriceps, then it is expected that a muscle-strengthening protocol that included strengthening of quadriceps muscle, through eccentric exercise, would be able to overcome the symptoms of pain and improve function of women with early stages of knee OA and/or prevent the disease progression.

The conclusion, the self-reported symptoms of pain, physical dysfunction, and the measured range of motion in early stage of knee OA in women is correlated with eccentric knee extensor torque. Thus, designing eccentric quadriceps strengthening protocol for these patients would be recommended to improve the function and reduce pain.