

Effects of a Single Dry Needling Session on Knee Range of Motion in Patients with Osteoarthritis

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Abstract:

This study aimed to investigate the impact of dry needling on improving knee range of motion (ROM) in individuals with knee osteoarthritis and to examine the correlation between knee ROM measurements in prone and wall squat positions. In this pre-post study, twenty-two patients with knee osteoarthritis participated. Knee ROM was assessed in two ways: first, using a manual goniometer, and second, mobile photographic capture followed by smartphone software (Angle Meter 360) in both prone and wall squat positions. Dry needling was applied to the quadriceps, gastrocnemius muscles, and surrounding knee tissues. ROM was measured before and after the dry needling intervention. Paired t-tests and Pearson correlation analysis were used to assess pre-post differences and measurement associations. The analysis showed a significant improvement in knee ROM post-treatment (ANOVA, $p < 0.001$). The improvement was consistent in both measurement positions, with a correlation coefficient of ($r=0.618$, $p=0.002$) between prone and wall squat assessments. Moreover, manual goniometer measurements were strongly correlated with smartphone software measurements ($r=0.706$, $p<0.001$). A single session of dry needling effectively improves knee ROM in patients with knee osteoarthritis. The wall squat is an accurate position for knee ROM assessment, and smartphone software can replace a manual goniometer.

Keywords:

Knee osteoarthritis, range of motion (ROM), Dry needling, Smartphone-based measurement.