

Abstract

Goal: The aim of this study is to determine the impact of quadriceps exercises using variations of squats on physiotherapy for knee injuries in young basketball players. Specifically, we focus on the influence on pain in the injured area, knee joint stability, thigh circumference, and lower limb performance.

Methodology: Study participants are active basketball players randomly divided into intervention and control groups. Both groups underwent three measurements with a two-week interval between each. From the first measurement, intervention group participants were instructed in two exercises (step-up squat, split squat). Participants were assessed using the Y Balance test, Hop test (series of 4 jump tests), and subjective pain evaluation using the VAS scale.

Results: Data analysis showed that exercise targeting the quadriceps femoris muscle have a positive effect on reducing pain in the injured knees. The intervention group exhibited a significant reduction in pain by 29 % more than the control group, although there was no significant increase in thigh circumference. However, data analysis demonstrated a significant improvement in knee stability by 46 % compared to the control group.

Conclusion: A significant effect of exercises targeting the quadriceps femoris muscle on knee pain and stability after knee injuries has been demonstrated. Conversely, the positive effect of this strengthening on thigh circumference and overall lower limb performance has been refuted.

Keywords: knee injuries, sports injury rehabilitation, quadriceps femoris muscle exercises, basketball