



A Comparative Evaluation of Knees-Over-Toes and Knees-Behind-Toes Exercise Protocols on Improving Functional Movement Screen Scores from 2 to 3

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HEP 1 & 2



Study Design. This quantitative study utilized a 6-week testing design to compare the effects of two distinct home exercise interventions, the knees-over-toes program and the knees-behind-toes program, on Functional Movement Screen (FMS) Deep Squat performance.

Introduction. In recent years, researchers have become interested in the impact of various squatting techniques on promoting functional range of motion and knee joint health. Two major strategies have been studied: the knees-over-toes method and the knees-behind-toes method. One limitation of these studies is that they do not address how different squatting mechanics alter Functional Movement Screen (FMS) performance.

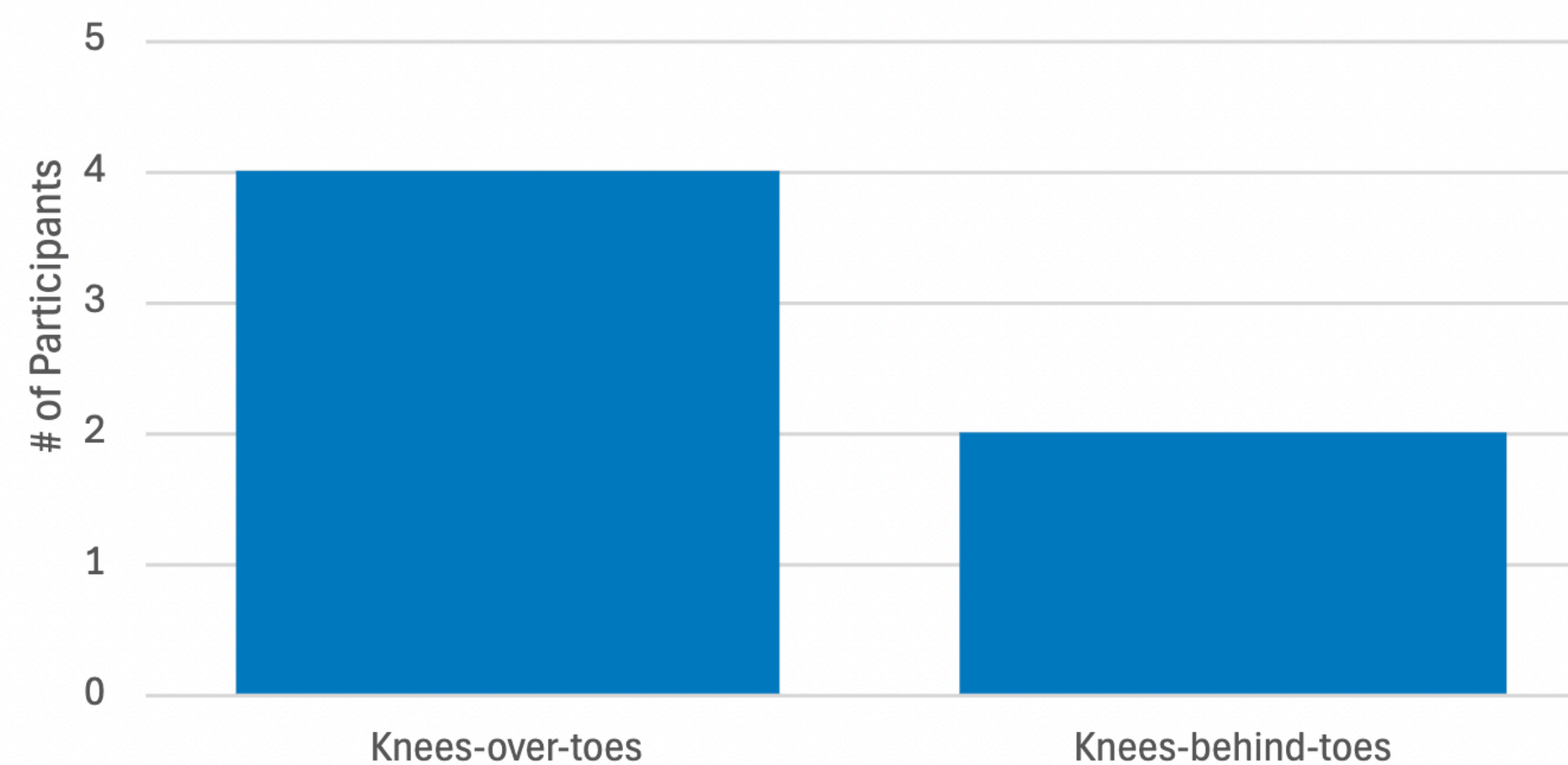
Methods.

- Participants completed a dynamic warm-up before testing. Two trained evaluators scored each FMS Deep Squat, resolving discrepancies by consensus.
- Ten participants were chosen based on their ability to score a “2” on the FMS Deep Squat assessment.
- Participants were assigned to either group 1 or 2 and performed their home exercise program 3 times per week. Exercise intensity increased every 2 weeks.
 - KOT: Focused on anterior knee translation and mobility.
 - KBT: Focused on posterior chain strength and stability.
- Participants were asked to complete their assigned HEP 3 times per week for 6 weeks.

Score of 2 (heels elevated) vs
Score of 3 (heels on floor)



Deep Squat Score Improvements (2 → 3) by Exercise Program



References.

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- Barnett, T. (2023, August 12). *Knees over Toes: Promoting Functional Range of Motion*. Physiotherapy & Sports Injury.
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Results. After the intervention period, the knees-over-toes exercise group demonstrated greater improvements in deep squat performance compared to the knees-behind-toes group. Specifically, 4 out of 5 participants (80%) in the knees-over-toes group improved to a score of 3, whereas 2 out of 5 participants (40%) in the knees-behind-toes group achieved the same improvement.

A one-sided independent samples t-test indicated that the difference between groups was not statistically significant ($p = .121$). This lack of significance may be attributed to the small total sample size ($n = 10$), which limits statistical power and the ability to detect between-group differences.

Conclusions. Despite the nonsignificant p-value, the observed trend favors knees-over-toes exercises for improving FMS Deep Squat scores. These preliminary findings suggest that knees-over-toes training may have a more positive effect on squat mobility and stability compared to knees-behind-toes exercises. Future studies should include a larger and more diverse sample to evaluate group differences better and strengthen statistical conclusions.