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The Relationship of Tibial Angle and Posterior Glide with Deep Knee Flexion Varification of Immediate Effect of Manual Physical Therapy Using X-ray Imaging

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【Purpose】

Deep knee flexion produces posterior displacement of meniscus by excessive posterior glide of the tibia. It increases the load to the joint surface and is considered a cause of osteoarthritis of the knee. However, physical therapists often use the posterior tibial glide technique to increase the range of motion of the knee flexion.

The aim of this study is to determine the immediate effect of a method of manual physical therapy (MPT), which is designed to improve the knee flexion with the controlled angle of tibia.

【Methods】

5 Subjects without a history of knee pathology participated in this study. Using X-ray picture, the femoro-tibial angle and the femoro-tibial distance was measured with the knee deeply flexed in supine heel touching the buttock under 4 conditions (No Particular Approach; NPA, After Classical knee flexion exercises; AC, With tibial tilt manipulation technique of MPT under taken; WM, After tibial tilt manipulation technique of MPT; AM).

【Results】

Femoro-tibial Angle in NPA $57.3 \pm 4.69^\circ$, AC $58.7 \pm 4.52^\circ$, WM $58.1 \pm 4.67^\circ$, AM $59.4 \pm 4.51^\circ$. Femoro-tibial Distance in NPA 3.97 ± 0.53 cm, AC 3.93 ± 0.32 cm, WM 4.02 ± 0.37 cm, AM 4.03 ± 0.30 cm.

【Discussion】

With Manual Physical Therapy Technique, the inclination angle of tibia was the largest, and the distance between the tibia and the femur was the longest, during deep knee flexion. These two results imply that MPT technique can improve the range of motion for knee flexion with the inhibition of excessive posterior glide of tibia and get rid of the risk of the arthritis.