

무릎의 굽힘과 폼에 대한 이상 치료

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Abnormal Treatment of Flexion and Extension of Knees

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● 요약 ●

Subjects will flex and extend their knees in a prone posture while keeping the pelvis in a neutral state after having straightened the knees and hip. The angle of the manual measurement of an average person when bent is between 110°~135°. If the person complains of pain at the time of flexion, it signifies the presence of abnormality in the knee joints and muscles. The number and proportion of the patients were measured through this experiment.

키워드: 안쪽돌림(Lateral Flexion), 회전(Rotation), 통증(Pain)

I. Introduction

The knee is composed of the knee joint and other structures besides the joint. The knee joint is made up of a distal section of the femur, the proximal section of the tibia, and the distal section of femur along with the knee bones. Moreover, it is a synovial joint, with articular capsule of knee, wrapping around the knee. There is also a meniscus between the distal section of the femur and the proximal section of the tibia to play an important role on the body weight, the dispersion of external force, the protection of articular cartilage, and the stability of the joint and synovia. Various ligaments, muscles and tendons are present inside and around the knee joint to assist with the maintenance of stability.

Relevant researches include [1], which is a thesis that explains the Anterior Cruciate Ligament (ACL) force. With the ACL removed, kinematic measurements during knee extension were significantly greater than those during knee flexion between 5° and 45°. The direction of knee flexion-extension movement is an important variable in determining ACL forces and knee kinematics produced by axial tibial force.

II. Flexion and Extension

If the knees are subjected to stimulation continuously, the knee cartilages will be damaged. This will induce severe pain in the knees. It may also cause swelling that becomes even more painful if pressed. People may experience inconvenience when walking due to such damage to the knee cartilages.

The subject lies down on a mattress in a prone posture. At the time, the knees and hip are straightened and the pelvis is kept in a neutral state. Flexion refers to bending of the knees in the proper direction under this state. The angle of flexion of an average person will be between 110°~135°. Flexion of the knees is illustrated in Fig. 1.

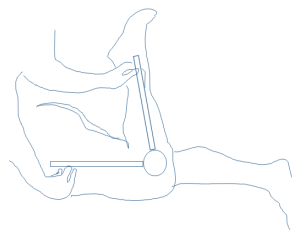


Fig. 1. Flexion of knees

The subject lies on the mattress in a prone posture as in

the case of flexion of knees. At the time, the knees and hip are straightened and the pelvis is kept in a neutral state. Extension refers to full straightening of the knees in the proper direction under this state. The angle of extension of an average person will normally be 0°. Extension of the knees is illustrated in Fig. 2.

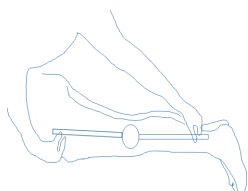


Fig. 2. Extension of knees

III. Therapy

In order to prevent injuries during daily life, start with the rotation of the ankle in the morning. Then, walk by raising the knees slightly higher while strolling after having had a light meal during lunch. Other than this, it would be highly recommendable to nurture the habit of slowly walking up the stairs. In the evening, the body is substantially more loosened than in the morning, making it ideal to do an exercise that one likes. Make sure to warm up and loosen the joints and muscles through stretching prior to commencement of any type of exercise. Moreover, one must adjust the intensity of an exercise in consideration to one's physical stamina.

IV. Experiments

Experiment was conducted on 20 ordinary people for the measurement of flexion and extension of knees, and the subjects with abnormalities are indicated in Table 1 below.

Table 1. Experimental Results

Categories	After measurement	After treatment
Abnormality in flexion	5	2
Abnormality in extension	5	2
Anormality in both	4	1

V. Conclusion

The subjects will flex and extend the knees in a prone posture while keeping the pelvis in a neutral state after having straightened the knees and hip. The angle of the manual measurement of

an average person when bent is between 110°~135°. If the person complains of pain at the time of flexion and extension, it signifies the presence of abnormality in the knee joints and muscles. Appropriate therapy and prevention methods were proposed to the patients in this thesis.

REFERENCES

- [1] Markolf, K. L., Jackson, S. R., Foster, B. and McAllister, D. R. "ACL forces and knee kinematics produced by axial tibial compression during a passive flexion-extension cycle," J. Orthop. Res., Vol. 32, pp. 89-95, 2014