

PROPRIOCEPTION OF ANKLE JOINT IN YOUNG HOCKEY PLAYERS

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INTRODUCTION: Postural control stability is significantly affected by proprioception in the lower limb. Moreover, the lack of proprioceptive feedback that results from injuries, such as ankle injury, may allow the excessive or inappropriate loading of a joint⁴, and is one of the factors that leads to progressive degeneration of the joint and continued deficits in joint dynamics, balance, and coordination. Much clinical research has demonstrated that individuals with proprioception and neuromuscular response deficits as a result of injury, lesions, and joint degeneration are less capable of maintaining postural stability and equilibrium. However, no normal reference data on ankle proprioception represented by kinesthesia in healthy young people are available. And if some exercise, such as hockey /skating exerts effects on ankle proprioception is unclear. The objectives of the study were to study the ankle kinesthesia in plantarflexion-dorsiflexion and inversion-eversion movements in healthy young people and young hockey players so as to get a preliminary understanding to the ankle proprioception of healthy young people and to examine the effects of hockey exercise on ankle proprioception.

METHODS: 5 healthy young males with average 76.0 kg body weight and 175.0 cm body height and without any regular exercise habit were recruited from university students and formed sedentary group (S group). 5 elite hockey players with average 72.2 kg body weight and 180.2 cm body height were recruited from university and local hockey clubs and formed hockey group (H group). A custom-made device was used to measure ankle kinesthesia during plantarflexion-dorsiflexion and inversion-eversion at 0.4 degree / sec rotation velocity of ankle joint (Xu. et al., 2004). The subject's foot was rested on the platform of the device. By a thigh cuff and a scale of the device, the extremity can be adjusted to where the foot is in contact with the platform and only 50% of the limb weight is bared by the foot. At least two randomized trials were conducted in each movement. The mean values of the two angles sensed in one direction were calculated. Independent t-test and paired t-test were used to examine any significant differences in the measurements in body weight and body height between groups, measurements of kinesthesia between left and right ankles within group, and measurements of kinesthesia of ankle joint during plantarflexion-dorsiflexion and inversion-eversion between two groups.

RESULTS AND CONCLUSION: Statistical analysis showed that there were no any significant differences in body weight and body height between two groups. No any significant differences were found in kinesthesia of ankle joint in plantarflexion-dorsiflexion and inversion-eversion movements between dominant and no-dominant sides. Comparing with S group, H group showed significant better measurement scores of kinesthesia in plantarflexion and dorsiflexion movements ($p=0.009$ and 0.016 respectively). Mean kinesthesia in plantarflexion is 1.72° in H group and 2.35° in S group respectively. Kinesthesia of ankle joint in dorsiflexion is 1.69° and 2.67° in H group and S group respectively. The results indicate that hockey exercise results in significant training effects on ankle proprioception.

REFERENCES:

Xu DQ, Hong Y, Li JX, Chan KM (2004) Effect of Tai Chi Exercise on Proprioception of Ankle and Knee Joints in Old People. *British Journal of Sports Medicine*. 38: 50-54