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The Effect of Hip Abductor Muscle Strength and Ankle Dorsiflexion Range of Motion on Injury Risk of Anterior Cruciate Ligament

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The purpose of this study was to examine the effect of hip abductor muscle strength and ankle dorsiflexion range of motion (ROM) on injury risk of anterior cruciate ligament (ACL). Eighteen collegiate female basketball players participated (Age: 20.2 ± 1.3 years). Two-dimensional (frontal and sagittal plane) knee kinematics data during drop vertical jump (DVJ) were captured with digital video camera (Myer et al.). Knee valgus motion and knee flexion ROM were calculated from video frame at the initial contact, and the video frame at maximum knee valgus motion and maximum knee flexion ROM. Body mass, tibia

length and Q/H ratio were measured. Using these parameters, the probability of high knee load (PHKL) were calculated by Nomogram (Myer et al.) in both knees. Ankle dorsiflexion ROM and hip abductor strength were measured. There was a poor negative correlation between PHKL and hip abductor muscle strength. Ankle dorsiflexion ROM was small in high PHKL group compare with low PHKL group. These results indicate that hip abductor muscle strength and ankle dorsiflexion ROM influence to ACL injury risk. So, the hip and ankle functions are important to consider the ACL injury risk.