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Does laterality exist during side step cutting in female basketball player?

Urabe Yukio, Iwata Shou, Moriyama Nobuaki, Morita Miho, Maeda Noriaki

Graduate School of Health Sciences, Hiroshima University

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【Purpose】

Anterior cruciate ligament (ACL) injury occurs in left leg more frequently than right leg, but the cause is not clear. So, it is very interesting to analyze the difference of causes of ACL injury between both legs. To compare the difference of left and right knee joint kinematics between 90°direction side step cutting (SSC). This study was performed on the hypothesis that smaller maximum knee flexion and larger knee valgus in left knee.

【Methods】

21 female collegiate basketball players participated in the study. Their average age, height, weight, length of career as basketball players was 21.2 years, 163.4 cm, 56.6 kg, and, 6.5 years respectively. Motion of each subject during 90°SSC was recorded by 6 high-speed (200 frames/s) CCD camera system (Ditect, Japan) and 3D analyzed with knee kinematics. Each subject performed 5 trials and average change of knee joint angle were calculated. All subject were right dominant legs and they kick the ball with right legs. The statistical analysis were performed using ANOVA compared with dominant vs. non-dominant leg with knee flexion angle and knee valgus angle. The level of statistical significance was $p < 0.05$.

【Results】

The result showed bimodal curve of peak knee valgus in both knees. Maximum flexion occurred at stop phase after contacting subjects'leg on floor, and maximum valgus occurred almost simultaneously. In left leg, maximum knee flexion angle was lower by approximately 5 degrees than right leg. On the other hand, knee valgus angle was higher by 2 degrees. No significant difference of angular change between both knees was showed.

【Discussion】

There was no significant difference between left and right leg, however, lower flexion and higher valgus angle were observed in left knee. Continuous research with more subjects may certify the result.