

KINEMATICAL CHARACTERISTIC BETWEEN SQUAT MOVEMENT WITH AND WITHOUT BASE LOADS IN BASEBALL CATCHER

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Abstract

Catcher is a critical position player in baseball. Their major tasks not only to catch more than 130 pitches, but also to avoid baserunner stealing to further base. The catcher utilizes different squat postures when base with or without baserunner. Therefore, the purpose of the study was to compare kinematical parameters of lower extremity between squat movement with and without base loads in baseball catcher. Six elite catchers were recruited from Division I baseball team in Taiwan. Subject randomly performed squat movement with and without base loads, respectively. Motion Analysis System with ten digital high-speed cameras at 240 Hz was used to record two types of squat movements. The squat movement was divided into stable squatting phase, standing phase and throwing phase. Results of paired t-test revealed that the squat movement with base loads has significant larger angles of knee joint ($76.15 \pm 14.54^\circ$) and ankle joint ($76.55 \pm 8.99^\circ$) than angles of knee joint (57.18 ± 17.00) and ankle joint (67.99 ± 7.56) in the squat movement without base loads during stable squatting phase ($p < .05$). There were no significant difference in hip joint and during standing phase and throwing phase ($p > .05$). The findings revealed that knee and ankle joint angles have different kinematical characteristic in squat movement with and without base loads during stable squat phase. The results suggested that baseball catcher to have higher squat position when there was a base runner on base.

Keyword : baseball