EMG ANALYSIS OF THE LOWER EXTREMITY BETWEEN VARYING STANCE SQUAT WIDTHS IN BASEBALL CATCHER THROWING

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INTRODUCTION: In baseball, a catcher has to squat for long periods of time and complete ball throwing using a squat stance. Individual difference is often observed in each catcher's squat posture, and stance squat width, which affects the catcher's performances and the muscle activity of lower limbs, has seldom been studied. The purpose of this study will be to investigate muscle activity in lower extremity when throwing is performed with varying stance squat widths.

METHODS: Six collegiate male catchers who had catching experience for more than ten years participated in this study. Surface EMG system (1000 Hz) and an eight-camera Eagle System (500 Hz) were used. The EMG system was also used synchronously to record the muscle activity of 8 muscles (bilateral tibialis anterior (TA), bilateral gastronemius medialis (GM), bilateral rectus femoris (RF) and bilateral biceps femoris (BF).

RESULTS:

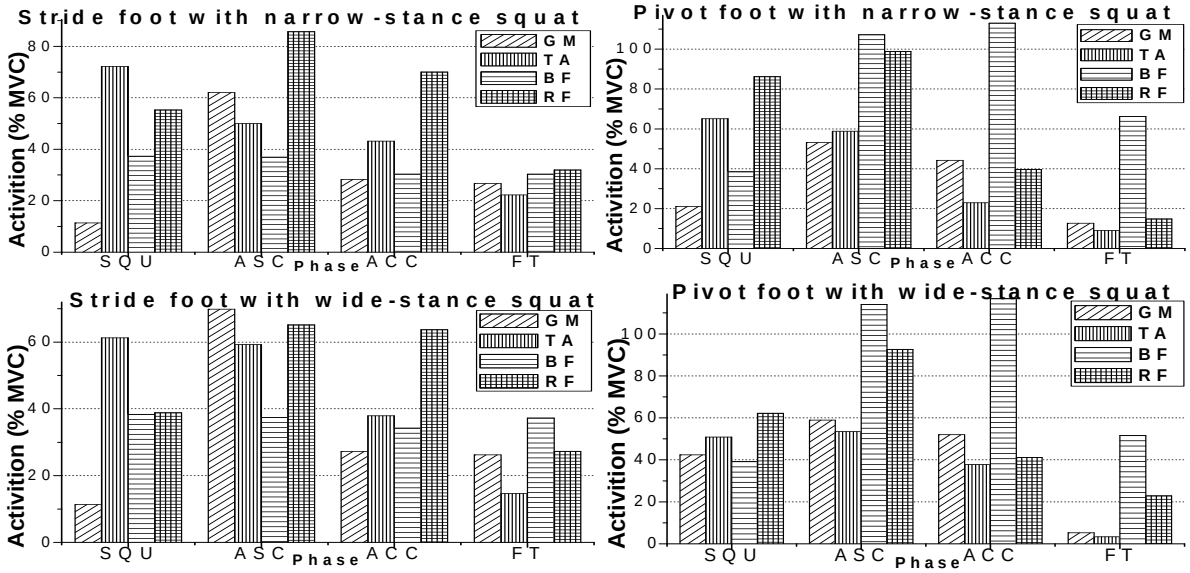

Figure 1: The muscle activity of stride and pivot foot between varying stance squat widths. (SQU:Squat, ASC:Ascending, ACC:Acceleration, FT:Follow-throught)

DISCUSSION: The results of wide-stance squat shown in figure 1 indicated that the wide-stance squat probably reduced the activity of RF in squat phase. Muscle activity of RF and BF in ascending and acceleration phases of throwing were different between stride and pivot foot.

CONCLUSION: The data provided in the article indicate that the using of varying stance squat widths has had a significantly effect on the activity of RF.

REFERENCES:

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