

## THE RELATIONSHIP OF MUSCLE REACTION TIME AND THE FUNCTIONAL ANKLE INSTABILITY OF FOOTBALL (SOCCER) PLAYERS

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**Keywords:** ankle instability, muscle reaction time

### Introduction

Lower extremity muscle reaction time (MRT) is one of the most important indicators of ankle instability. Many studies have shown that MRT is more prolonged in unstable ankles than in normal ankles. However, in only a few studies have the details of the reaction times of each muscle been focused upon. Therefore the purpose of our present study was to determine the relationship of reaction time in each lower extremity muscle in football players with functional ankle instability (FAI).

### Methods

The subjects were 30 collegiate football players comprising 18 healthy subjects (Con Group) and 12 with functional ankle instability (FAI Group). Each group was defined by the Karlsson score which was determined based on a questionnaire on ankle condition. MRT was measured using a trap door that simulated the mechanism of an inversion/ankle sprain. Electromyographical data (EMG) on the peroneus longus muscle (PL), the peroneus brevis muscle (PB) and the tibialis anterior muscle (TA) was recorded. MRT was defined as the length of time between when the Trapdoor had begun to tilt and the onset of muscle contraction.

### Results & Discussion

The MRT of PL and PB was significantly more delayed ( $p < 0.05$ ) in the FAI Group ( $85 \pm 11.4$  and  $74.8 \pm 10.3$  ms) than in the Con Group ( $66 \pm 13.9$  and  $74.8$  ms). However, there was no significance between the TA in the FAI Group and that of the Con Group.

### Conclusion

It is suggested that the MRT of the PLs and PBs of football players with FAI are prolonged in connection with FAI. However, MRT in the TA is not prolonged and has no connection with FAI.

### References

1. Menacho Mde O et al. (2010). J Electromyogr Kinesiol. 20(4): 559-65.

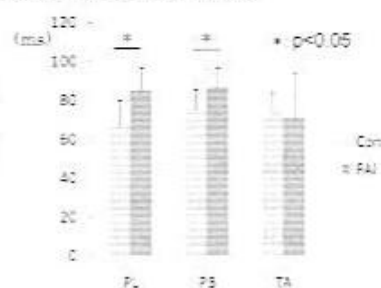


Figure 1. The difference of MRT