

## DYNAMIC BALANCE OF INJURED DIVISION I COLLEGIATE ATHLETES ON TWO DIFFERENT SURFACES

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**Objective:** Limited information exists regarding injury prevention techniques or isolation of those factors that may predispose an athlete to injury. The current project attempted to lay the foundation for such research by evaluating the dynamic balance performance of collegiate athletes under two different surface conditions.

**Design and Setting:** Division I athletes from one collegiate institution, were tested over 12 10-second trials (6 trials per leg) while performing a modified single limb balance test on the NeuroCom Balance Master (NCBM) under 2 conditions (foam, force plate). **Subjects:** The subject population consisted of 49 athletes, both male (18) and female (31), from 6 varsity sports. **Measurements:** Each participant was monitored during practices and competitions for lower extremity injuries (LEI). Sixteen participants sustained a LEI during the data collection period (14 participants' were included for further analyses). Changes in center of pressure (CoP) distances were calculated using the raw data from the NCBM. The data were analyzed using a 2x2 (side tested and surface condition) repeated measures ANOVA.

**Results:** The analyses revealed a significant interaction between side and condition ( $F=9.67, p<.002$ ). There was no significant difference between the CoP distances for the each leg ( $p>.059$ ); however, there was a significant difference between the CoP distances on the different surfaces ( $F=21.684, p<.000$ ). **Conclusions:** The CoP distances for the ( $n=14$ ) participants differed for each surface condition. Specifically, a longer path length was noted for the CoP on the foam surface, than for the force-plate only. This indicates that athletes must shift their CoP more on a changeable surface (i.e. foam block) in their endeavor to remain balanced when landing in a single-limb balanced position. The lack of a significant difference between performance on the right and left leg would seem to indicate that the side injured is not a function of balance performance. However, the results illustrate that these ( $n=14$ ) athletes performed significantly worse on the foam surface, compared to the force-plate only surface. Future research is needed to see if this protocol is effective in discriminating individuals that may be predisposed to a LEI.

**Key Words:** Center of Pressure distance, lower extremity injury, epidemiology