Single Limb Postural Control Throughout a Collegiate Football Season

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Context: It is estimated that college football players sustain an average of 3 subconcussive blows to the head per game. Limited research has demonstrated that collegiate football players present with decreased static postural control, as measured using the Balance Error Scoring System, at the end of season compared to baseline. Interestingly, neurocognitive test scores in collegiate football players were not found to differ preseason, midseason and postseason. Authors hypothesized that using neurocognitive tests may not have been sensitive enough to detect the effects of the subconcussive impacts. Force plate data provides valid information of postural control. The purpose of this study was to evaluate static postural control throughout a collegiate football season in players who had sustained no known concussion throughout a season. **Methods:** This case series consisted of 45 volunteers from a Division I collegiate football team (age = 20.55 ± 1.50 years, height = 183.22 ± 7.24 cm, weight = 99.42 ± 21.88 kg) with no known concussion at time of first data collection visit. Participants completed three data collection visits (early season, mid-season, end-of-season). At each visit, participants completed three successful 30-second trials of single limb, eyes closed balance on a force plate. The following center of pressure (COP) force plate outcomes were analyzed: COP sway in the mediolateral (ML sway) and anteroposterior (AP sway) directions, COP pathlength, COP maximum path velocity, and 95% ellipse. For each outcome, a repeated measures ANOVA was conducted to compare means over time. Post hoc t-tests were used for those differences that were found to be significant. A significance level was set *a priori* at $P \leq .05$. **Results:** Significant differences were found for COP sway in AP ($F_{2,129} = 4.28$, $p = .017$) and ML ($F_{2,129} = 10.66$, $p < .001$) directions. For both measures, postural control was worse at end-of-season (COP AP sway = 0.08 ± 0.37; COP ML sway = 0.071 ± 0.45) compared to early season (COP AP sway = 0.319 ± 0.46; COP ML sway = 0.556 ± 0.67). There were no differences between early season and midseason and no differences between midseason and end-of-season. There were no statistical differences between COP pathlength ($F_{2,129} = 0.32$, $p = .730$), COP maximum path velocity ($F_{2,129} = 0.33$, $p = 0.72$), or 95% ellipse ($F_{2,129} = 1.739$, $p = .182$). **Conclusions:** Our results show inconclusive postural control differences in non-concussed football athletes throughout a season. Further analysis of our participants is planned to determine if playing time may impact balance during a season. At this time, it does not appear that a football season has an impact cognitive function as measured via static postural control.