Context: The average length of football player participation is greater than ten years, which may result in an accumulation of countless subconcussive hits. There is some speculation these hits could result in long-term cognitive impairments. It is currently not known if the numerous repetitive contacts sustained during participation in preseason football practices could alter cognitive function and symptom reports. Objective: To examine the effects of two-a-day preseason practices on cognitive function and reported subjective symptoms of division I football players. Design: A prospective, repeated measures design. Setting: Division I University Sports Medicine Department and training camp facility. Patients or Other Participants: 17 collegiate male athletes, (age=20.7±2.08 years, height = 186.47±6.48 cm, mass= 106.65±24.91 kg) were recruited from a division I University during the 2006 football preseason. Athletes were selected based on the following criteria: 1) were currently participating in division I varsity football 2) had not suffered a concussion in the previous 3 months 3) had full participation during the period of two-a-day practices, and 4) had a history of ≤3 previous concussions. Interventions: All subjects took the Immediate Post-Concussion and Cognitive Testing (ImPACT) for baseline measurement (pre-) before the start of two-a-day practices, during (mid-) (5-6d following pre) and after (post-) (10-12d after pre) two-a-day practices. Separate repeated measures analysis of variance were used to compare each dependent variable across time (3 levels: pre-, mid-, and post- two-a-days) and Tukey post hoc analyses were done when differences were significant (p<.05). Main Outcome Measures: Dependent variables included verbal memory composite score (VEM), visual memory composite score (VIM), reaction time composite score (RT), processing speed composite score (PS), total symptoms endorsed (TSE), and total symptom score (TSS). Results: We found significant differences for RT (p=.036), TSE (p=.004) and TSS (p=.004). RT was significantly slower at post- (.600±.092 sec) as compared to pre- (.565±.058) two-a-day practices. TSE was significantly higher at mid (3.41±3.47) compared to pre (.71±1.31) and post (1.12±1.56). TSS was also significantly higher at mid (12.06±14.88) compared to pre (1.59±2.72) and post (2.77±4.16). There were no significant differences across time for VEM (p=.476), VIM (p=.569) and PS (p=.640). Conclusions: We found slower RT at the conclusion of two-a-day practices and no alterations in other cognitive function, suggesting that the repetitive contact activity sustained during a short period of time does not produce deficits in memory or processing speed. The increase in reported symptoms and symptom severity during the middle of two-a-days could be the result of the physical and mental demands of these practices. Further research is warranted to identify whether long-term exposure to repetitive contact activity alters cognitive function and reported symptoms in collegiate football athletes.

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