The Acute Effect of Caffeine Ingestion on ImPACT™ Test Performance
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**Context:** The management of mild traumatic brain injury (MTBI) has become an area of great concern and controversy in the athletic setting. Numerous states have adopted legislation mandating evaluation procedures and return to play criteria for interscholastic athletics, while other sport governing bodies have adopted similar policies. Many of these recommend neurocognitive tests like Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT™) as a management tool that is administered prior to and then serially after suffering a concussion, allowing the clinician to compare baseline to post-injury data. However, comparing the post-injury testing to baseline testing only accurately identifies cognitive changes if both the baseline and post-injury tests are valid. Thus, it is important for the clinician to identify any potential threats to this validity. Caffeine has been shown to improve reaction time, visual information processing and working memory, which are similar to the tasks used during ImPACT™. Thus, it is possible that caffeine ingestion could improve performance during neurocognitive testing and therefore threaten ImPACT™ validity. **Objective:** To examine the effects of acute caffeine ingestion on ImPACT™ performance. **Design:** A randomized and counterbalanced double blind cross over design. **Setting:** ImPACT™ was performed on a desktop computer in a quiet, fully enclosed and illuminated room at normal room temperature. **Participants:** Fifteen healthy males and females (age=19.5 ±1.2 years, height=169.5±7.4 cm, mass=71.2 ±15.3 kg) with no history of physician diagnosed head injury, learning disability or any form of attention deficit disorder volunteered. Potential subjects were excluded if they were prescribed any type of stimulant, anti-depressant or antianxiety medication for regular use. **Interventions:** Subjects were assessed at the same time of day under three randomly ordered conditions, treatment, placebo and control with each separated by a period of one week. During the treatment condition, subjects ingested 6.0 mg*kg⁻¹ body mass of anhydrous caffeine in capsule form with 592-ml of water. The placebo condition consisted of 6.0 mg*kg⁻¹ body mass of dextrose in identical capsule form with water. The control condition consisted of water ingestion only. **Main Outcome Measures:** ImPACT™ composite scores for verbal (Mverb) and visual memory (Mvis), visual motor speed (PS), reaction time (RT), impulse control (IC) and a cognitive efficiency index (CEI) were compared under each of the three conditions and were assessed 60-min after ingestion. **Results:** No significant differences in Mverb (F_{2,28}=3.09, p=.061), Mvis (F_{2,28}=.022, p=.978), PS (F_{2,28}=.245, p=.784), RT (F_{2,28}=1.65, p=.209), IC (F_{2,28}=2.15, p=.135) and the CEI (F_{2,28}=2.26, p=.123) were observed when comparing the control, placebo and caffeine conditions. **Conclusions:** The results suggest that caffeine ingestion 60-min prior to test administration failed to improved neurocognitive performance. Thus, it is not necessary for clinicians to standardize caffeine intake prior to baseline and serial ImPACT™ testing. **Word Count:** 443.