Baseline cognitive test performance and concussion-like symptoms among adolescent athletes with ADHD: examining differences based on medication use.

Cook NE, Huang DS, Silverberg ND, Brooks BL, Maxwell B, Zafonte R, Berkner PD, Iv


Abstract

OBJECTIVE:
Youth with attention deficit hyperactivity disorder (ADHD) perform more poorly on preseason cognitive testing and report more baseline concussion-like symptoms but prior studies have not examined the influence of medication use on test performance or symptom reporting. This study investigated whether medication use is relevant when interpreting baseline ImPACT® results from student athletes with ADHD.

METHOD:
Participants were 39,247 adolescent athletes, ages 13-18 (mean age = 15.5 years, SD = 1.3), who completed baseline cognitive testing with ImPACT®. The sample included slightly more boys (54.4%) than girls. Differences in ImPACT® composite scores and concussion-like symptom reporting (between ADHD/No medication, ADHD/Medication, No ADHD/Medication, and Control groups) were examined with ANOVAs, conducted separately by gender.

RESULTS:
In this large, state-wide dataset, youth with ADHD had greater rates of invalid ImPACT results compared to control subjects (ADHD/No Medication: girls = 10.9%, boys = 10%; ADHD/Medication: girls = 8.1%, boys = 9.1%; Controls: girls = 5.2%, boys = 6.7%). Groups differed across all ImPACT® composites (invalid profiles were removed), in the following order (from worse to better performance): ADHD/No Medication, ADHD/Medication, and Control participants. Pairwise effect sizes indicated that the largest differences were on the Visual Motor Speed composite, with the ADHD/No medication group performing worse than the ADHD/Medication group and the Controls. The ADHD/Medication group did not differ meaningfully from Controls on any composite, for either sex (d = 0 to .19). The ADHD groups did not differ on total symptom scores but both ADHD groups endorsed significantly more symptoms compared to Controls.

CONCLUSIONS:
Contrary to our hypothesis, we found medication use had only a subtle effect on cognitive performance and no significant effect on concussion-like symptom reporting. Student athletes reporting medication use for ADHD performed comparably to student athletes with no ADHD on baseline testing.