



Mid Atlantic Regional Chapter of the American College of Sports Medicine

Annual Scientific Meeting, November 1st – 2nd, 2019
Conference Proceedings

International Journal of Exercise Science, Volume 9, Issue 8



Beetroot Juice and Cerebrovascular Hemodynamics in Young Adults with a History of Concussion: Preliminary Findings

Brandon J. Fascia, Jacob P. DeBlois, Kevin S. Heffernan. Syracuse University, Syracuse, NY.

Concussions have become more prevalent with the recent increase of youth participation in sports with head involvement. Repeated concussions have been associated with decreased cerebral blood flow (CBF) and cognitive function. High levels of dietary nitrates in beetroot juice may favorably improve cerebrovascular blood flow. **PURPOSE:** Examine changes in middle cerebral artery (MCA) hemodynamics and cognitive function after consumption of beetroot juice in young adults with a history of concussions. **METHODS:** Cerebral blood flow and cognitive function were measured in 5 young men (age: 21 ± 1 yrs) with at least two diagnosed concussions in the past 5 years (number of concussions: 3 ± 2) as part of a double blind study design. Participants completed 2 study visits on separate days consuming two, 16.9 fl oz bottles of either beetroot juice (BEET) or purple carrot juice (CAR). One bottle was consumed prior to sleep the night before the visit, and the other bottle was consumed within two hours of their visit. A 48-hour washout period was implemented between study visits, and BEET and CAR were counterbalanced. MCA blood flow (mean velocity, V_m , and pulsatility index, PI) was measured using transcranial Doppler. Cognitive function was determined using an incongruent Stroop test as accuracy and reaction time (RT). **RESULTS:** V_m did not differ following BEET versus CAR (57.3 ± 19.2 vs 53.3 ± 17.7 cm/s, respectively; $p=0.219$, $\eta^2=0.35$). Similarly, PI following BEET (0.92 ± 0.19) did not differ from CAR (0.88 ± 0.04 , $p=0.596$, $\eta^2=0.08$). Accuracy did not differ between the two conditions (BEET: $65.1 \pm 9.6\%$; CAR: $62.6 \pm 10.7\%$, $p=0.719$, $\eta^2=0.04$). Reaction time did not differ between BEET and CAR (1.05 ± 0.08 vs 1.08 ± 0.18 sec, respectively; $p=0.623$, $\eta^2=0.06$). **CONCLUSION:** Our preliminary findings suggest that beetroot juice does not influence CBF or cognitive function in young adults with a history of concussion.