



Lifestyle & Prevention

Orthostatic hypotension in adolescents with concussion

Can orthostatic hypotension be detected in adolescents suspected of sustaining a concussion?

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Orthostatic hypotension (OH) can occur following a concussion. This is mostly due to changes in the autonomic nervous system (ANS) regulation of the brain stem as a result of trauma.

Even though there is a high incidence of concussions among adolescents, currently only limited research exists on OH in this population. Therefore, this study aimed to investigate the prevalence of OH following a concussion injury in adolescents.

OH is classified as a reduction of at least 20mm/ mg with systolic blood pressure or a reduction of 10 mm/ mg of diastolic blood pressure, and is often measured clinically by the 1-Minute Supine to Stand Test.

Participants were either allocated to the concussion group (n=297), or served as controls (n=214). Subjects in the concussion group were aged 12-18, had sustained a concussion within the past 10 days, and were reviewed at one of the participating hospital concussion clinics. Subjects in the control group were healthy age-, gender- and BMI-matched individuals.



Individuals in both groups underwent a 1-Minute Supine to Stand Test upon clinical visit. Apart from this, any additional symptoms such as vertigo, lightheadedness, changes in blood pressure and heart rate were recorded. Participants in the concussion group were tested at their initial visit and after recovery. The control group was assessed during their routine visit for preseason sport screening.

The concussion group had a higher prevalence of dizziness and lightheadedness than the control group, but did not meet the standard criteria of OH regarding aforementioned changes in blood pressure. However, the concussion group did report being less tolerant to transitional movements than the control group during the 1-Minute Supine to Stand Test.

Symptoms of dizziness with transitional movements are thought to be more correlated with deficits with the Vestibular-Ocular Reflex (VOR), rather than solely from the ANS, indicating additional therapy to address the VOR is more commonly needed to support concussion treatment.

Symptoms of lightheadedness on the other hand are more correlated with a cardiovascular response. Therefore, the authors of this study state that the 1-Minute Supine to Stand Test may also be helpful in identifying adolescents who have been concussed based on symptoms, even if they don't fully meet the criteria for OH.

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