ABSTRACT

Background: Many organizations have introduced frameworks to reduce the incidence of football related concussions through proper equipment fitting, coach education, and alteration of tackling technique.

Purpose: The purpose of this study was to examine the effects of training in a vertical, head up tackling style on the number of head accelerations experienced while tackling in a controlled laboratory situation. The authors hypothesized that training in a head up tackling technique would reduce the severity of head acceleration experienced by participants.

Design: Controlled Laboratory Study.

Methods: Twenty-four participants (11.5 ± 0.6 years old, 60.5 ± 2.2 in, 110 ± 18.4 lbs.) with previous playing experience completed a one-day training session on tackling technique utilizing a tackling dummy. A sub-group of these participants completed an additional two days of training with a 48 hour retention test. Head accelerations were analyzed at baseline and end of training. Feedback consisted of verbal feedback utilizing the Qualitative Youth Tackling Scale (QYTS) and video tackling playback.

Results: A significant reduction in the number of peak linear head accelerations over 10 g and peak rotational head accelerations over 1885 deg/s² were found in dummy tackling after training in both the one day and three day training regimens. A significant change in QYTS tackling form score was found between pretest and post-test (p=0.004). Participants with larger steps had a 2.28, 4.42 and 4.14 increased odds ratio of sustaining head accelerations over 10, 15 and 20 g respectively.

Conclusions: Training in a vertical, head up tackling style decreased the number of head accelerations over threshold values sustained while tackling; decreased step length may be the driving factor in the effectiveness of this tackling form.

Level of Evidence: Level 3b

Key Words: Biomechanics, concussion, head injury, prevention