

The Effects of Heading on Neurocognitive Function in Female Collegiate Soccer Players During an Entire Soccer Season

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ABSTRACT

Recently, much debate has occurred regarding the effects of repeated heading by soccer players on their neurocognitive function. **PURPOSE:** To determine the effects of heading on neurocognitive function in female collegiate soccer players during an entire soccer season. **METHODS:** Twenty-four members of the 2012 Southwestern University Women's Soccer team completed the ImPACT test during preseason and postseason, and self-reported the number of headers for the week immediately prior to each testing session. Amount of playing time for each player was determined from records obtained from the Southwestern University Athletics Department. The six composite scores and the cognitive efficiency index from the ImPACT test were measured in each session. Paired *t* tests were used to evaluate neurocognitive performance at each of the testing periods. Multiple regressions were run to compare the independent variables of playing time and number of headers to the seven ImPACT test composite scores from the preseason and postseason testing periods. **RESULTS:** There was an increase in visual motor speed, a decrease in reaction time, and an increase in cognitive efficiency from preseason to postseason ($t_{(23)} = -4.63, p < 0.001$), ($t_{(23)} = 2.17, p = 0.041$), and ($t_{(23)} = -2.45, p = 0.022$), respectively. During preseason, number of headers performed significantly predicted reaction time ($F_{(1,22)} = 5.37, p = 0.03$), and explained approximately 20% of the variance in reaction time ($r^2 = 0.196$). Number of headers performed significantly predicted cognitive efficiency ($F_{(1,22)} = 5.56, p = 0.03$), and explained approximately 20% of the variance in cognitive efficiency ($r^2 = 0.202$). During postseason, number of minutes played significantly predicted visual memory ($F_{(1,22)} = 4.71, p = 0.04$), and explained approximately 18% of the variance in visual memory ($r^2 = 0.176$). **CONCLUSION:** The changes in these neurocognitive variables from preseason to postseason indicated that athletes performed better postseason. The number of headers and the total playing time across one season appear to have had no negative effects on neurocognitive function in these soccer players.