

QUALITY-OF-LIFE DIFFERENCES AMONG MALE AND FEMALE ADOLESCENTS AFTER CONCUSSION: A COMPARISON WITH UNINJURED CONTROLS

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Background: Concussions cause myriad symptoms and may negatively affect quality-of-life (QOL). Adolescents with concussion may be at increased risk for experiencing anxiety and depressive symptoms compared to their uninjured peers. After concussion, females report worse QOL compared to males. However, it is unknown whether concussion status and biological sex interact to affect QOL.

Purpose/Hypothesis: To examine QOL measures among 1) adolescents with concussion and uninjured controls and 2) male and female adolescents in both groups. We hypothesized that 1) the concussion group would self-report worse QOL compared to controls, 2) female participants would self-report worse QOL than male participants, and 3) there would be an interaction effect between concussion status and sex on QOL measures.

Methods: We performed a cross-sectional investigation of 2 groups: adolescents with concussion and uninjured controls. Participants completed a medical history questionnaire and rated QOL using the Patient-Reported Outcomes Measurement Information System (PROMIS) Pediatric Profile 25 questionnaire. The six domains assessed on the PROMIS were physical function/mobility, fatigue, pain interference, anxiety, depressive symptoms, and peer relationships. We used PROMIS T-scores for each domain (standardized scores: mean=50, standard deviation=10). We performed a 2 (group) x 2 (sex) ANOVA to examine differences in T-scores for the six PROMIS domains between groups and sexes. Significant interactions between group and sex were followed-up with pairwise comparisons.

Results: We enrolled and tested 82 participants within 18 days of concussion (age=15.1±1.7 years; 54% female; 8.4±3.9 days post-concussion) and 65 uninjured controls (age=15.5±1.5 years; 60% female). Compared to controls, participants with concussion self-reported significantly higher: physical function/mobility (32.6±6.8 vs 20.7±1.7 points, p<0.001), fatigue (59.3±11.1 vs 46.0±8.0 points, p<0.001), and pain (56.9±8.3 vs 44.0±7.3 points, p<0.001). Compared to boys, girls self-reported significantly higher: anxiety (50.1±10.3 vs 46.0±9.5 points, p=0.02) and depressive symptoms (49.3±10.7 vs 41.9±9.0 points, p<0.001). Peer relationships were similar between groups (p=0.79) and sexes (p=0.58). No significant interactions between group and sex were observed for any PROMIS domain.

Conclusion: Adolescents with concussion had higher self-reported fatigue, pain, and physical function/mobility impairments compared to their uninjured peers, regardless of sex. Independent of concussion status, females self-reported higher anxiety and depressive symptoms compared to male participants. Anxiety and depression may contribute to poor concussion outcomes, specifically persistent post-concussion symptoms. Thus, assessing and addressing self-reported anxiety and depressive symptoms, particularly among female adolescents, may be an important aspect of individualizing concussion evaluations and improving recovery outcomes.