
ORIGINAL RESEARCH

UTILIZATION OF IMPACT TESTING TO MEASURE INJURY RISK IN ALPINE SKI AND SNOWBOARD ATHLETES

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ABSTRACT

Background: While studies that have examined the prevalence of musculoskeletal injuries in alpine skiing and snowboarding exist, there has been no discussion of how neurocognitive deficits may influence such injuries. Recent authors have identified a possible link between Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT) testing results and the prevalence of musculoskeletal injury in athletic populations. However, no study has specifically examined this in the alpine skiing and snowboard athletes who sustain injury and those that do not.

Hypothesis/Purpose: The purpose was to review injury data and ImPACT test results within the local ski/snowboard population to determine if there was a difference in components of ImPACT test scores between injured and non-injured athletes. It was hypothesized that differences would exist in component scores on ImPACT testing between injured and non-injured athletes.

Study design: Retrospective cohort study

Methods: Injury records and baseline ImPACT testing scores for 93 athletes aged 14-17 participating in a local ski and snowboard club during the 2009-2012 seasons were gathered retrospectively. Injuries documented for the lower and upper extremity included ligament sprains, muscle strains, contusions, dislocation/subluxation, fractures and concussions. Athletes who sustained any of these listed injuries were categorized within the injured athlete group. Each component of ImPACT test scores was compared between gender and for injury status within skiing and snowboarding disciplines using a series of two-way analysis of variance tests.

Results: There was no difference between non-injured and injured females as well as non-injured and injured males in reaction time and visual motor speed (VMS), however there was an interaction between gender and injury status on composite reaction time and visual motor speed, or VMS. The composite reaction time for females was 4.7% faster with injury while males without injury had a composite reaction time that was slower by 5.8%. Females had a 4.1% higher mean VMS score with injury while males had a 14.4% higher VMS score without injury.

Conclusion: Future research may consider prospectively examining neurocognitive testing scores and injury prevalence within the disciplines of snowboarding and both alpine and freestyle skiing.

Levels of Evidence: Level 3

Key Words: Musculoskeletal injury, neurocognitive deficits, neurocognitive testing

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