Concussion Symptom Resolution

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NATA RESEARCH & EDUCATION FOUNDATION

GRANT INFORMATION SUMMARY

PRACTICAL SIGNIFICANCE

Self-report concussion symptom scales can provide reliable and valid baseline assessment of a sport-related concussion. However, clinicians should be aware that fatigue state, physical, or orthopaedic ailments may potentially impact the usefulness of the baseline measurements.

STUDY BACKGROUND

No consistent format or administration instructions are provided for the appropriate use of a summative self-report symptom scale for concussions. Also, limited scientific information explaining the psychometric development and validity of such a scale is available. These issues have lead to confusion among sports medicine clinicians and could lead to making incorrect return to play decisions. These issues were addressed by examining responses to two common forms of summative self-report symptoms scales: the Head Injury Scale (HIS) and a symptom severity scale based upon the Post Concussion Symptom Scale (PCSS) and Graded Symptom Checklist (GSC).

OBJECTIVE

Evaluate factorial validity of baseline responses to 9-item Head Injury Scale (HIS) and a severity scale developed from the PCSS and GSC. Investigate influence of pre-existing conditions upon baseline self-report symptoms (SRS) responses to each scale.

DESIGN AND SETTING

A quasi-experimental design employing a pre-test and post-test was employed to compare responses to each scale between concussed and non-concussed groups. Subjects were surveyed in an athletic training room environment.

SUBJECTS

Participants (female n = 260, male n = 805) were college athletes (age =19.81 ± 1.53) from 8 NCAA institutions. The experimental analyses comprised concussed (n = 17) and non-concussed (n=10) college athletes. Two day test-retest reliability was conducted with a sample of healthy college students (n =83, age = 19.92 ± 1.62).

MEASUREMENTS

Baseline measures for two SRS scales and a health questionnaire were obtained. Experimental analysis was performed on baseline and days 1, 2, 3, and 10 post-injury.

RESULTS

Responses to the SRS scales (HIS, severity) were reliable .85, and .84 (respectively), stability reliability r =.85, and r =.86 (respectively)] and factorialy valid according to accepted values found in the CFA literature. No sex effects for baseline responses were observed (P >.01). Previous history of concussion resulted in higher composite scores on both SRS scales (P <.01). Composite scores were also elevated for those reporting daily fatigue, physical illness, and / or orthopedic injury (P <.01). A significant groups by days interaction [F(4, 20) =4.93, P=.006] was found with composite HIS scores. Responses to the severity scale also demonstrated significant groups by day interaction [F (4, 20) =3.93, P=.015]. Statistical differences between groups were observed for both scales on days 1 and 2 post-concussion (P <.05) but no statistically significant differences were demonstrated for either scale on days 3 and 10.

CONCLUSIONS

This study confirmed previous findings by providing evidence for the reliability, factorial and construct validity of the HIS among collegiate athletes. The SRS scales can be sensitive to the effects of concussion and may provide clinicians with additional information from which to base return to play decisions. However, our data suggest that baseline responses to SRS scales can be influenced by a previous history of concussion and factors such as: daily fatigue, physical illness, and orthopedic injury. Thus, clinicians should consider these factors prior to obtaining baselines of self-report symptoms.

Publication and Presentation List:

Piland SG, Ferrara MS. "Baseline Symptomatology." NATA Annual Meeting and Clinical Symposium, Baltimore, MD, 2004.

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Supporting and advancing the athletic training profession through research and education.

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