# Concussion Assessment Tool Use and premature return to play

Jonathan Ernst MD

## Abstract

**Objective:** To determine if local data shows a lower incidence of premature return to play if a standard concussion assessment protocol is used.

**Hypothesis:** The use of standard concussion assessment tools will result in fewer instances of premature return to play.

**Method:** Retrospective chart review using data from Unity Point Peoria area clinics and emergency department from 7/2015 to 7/2106.

**Results:** Lower incidence of premature return to play when a standard concussion protocol was used, however not statistically significant with p value of 0.58

## Introduction

Concussions and related brain injury are commonly discussed topics in the medical community as well as in popular culture. Concussions are among the most common sports injuries requiring medical care. A committee of experts formed the Concussion in Sports Group (CISG) and held an international symposium in 2001. In 2004 their recommendations were revised and the Sport Concussion Assessment Tool (SCAT) was created. [1]The American Medical Society for Sports Medicine released a consensus statement recommending the use of a standard assessment tool such as SCAT, SCAT2, SAC or neuropsychological assessment to guide return to play and learning. [2]The AMSSM recommends complete resolution of symptoms prior to return to play or learning. Studies have suggested that up to 40% of patients return to play or learning prematurely and suffer relapsing symptoms or post concussive syndrome. [3]Symptoms of concussions can be subtle, with up to 50% going undiagnosed. Given this subtlety, it is reasonable to assume that not using a protocol for diagnosis and follow up would result in greater premature return to play, leading to prolonged symptoms and theoretically greater long term morbidity.

## Methods

IRB approval was obtained to carry out the study.

Retrospective chart review of Unity Point Peoria area clinics and Emergency Department from 7/1/2015 to 7/1/2016.

Inclusion criteria: Diagnostic code of concussion, sports or sports activity related concussion, Age 13 and older

Exclusion criteria: Patients sustaining major traumatic brain injury, no sports related activity, Age<13

No personal identifying information was used.

The data was collected by individual chart review. A random number generator was used to choose charts. A simple checklist was used. fifty-seven (57) patients were included in the study. No patients meeting inclusion criteria were excluded. Using excel, the data was compiled and statistically analyzed using chi-square analysis

**32%**

**68%**
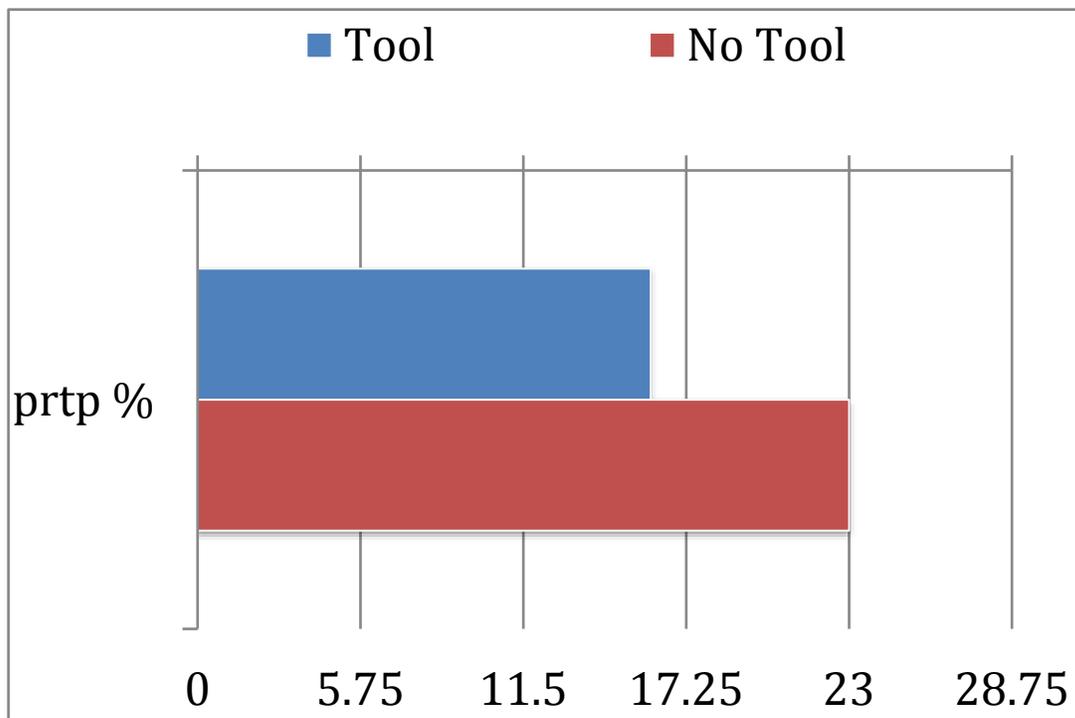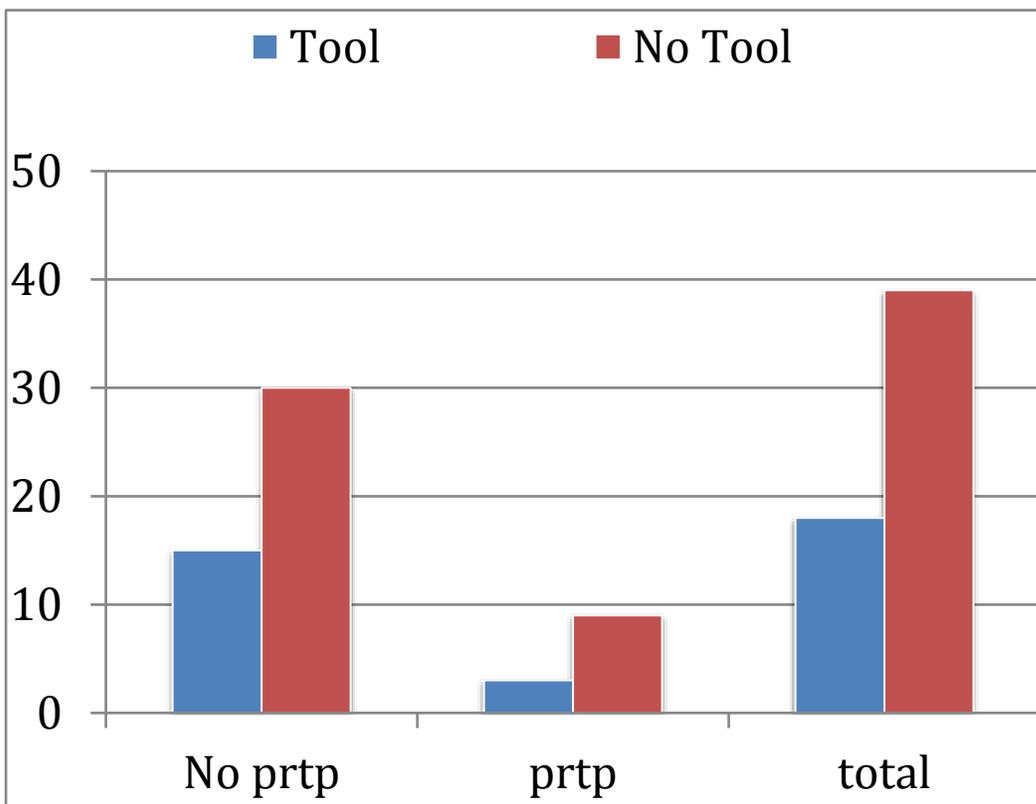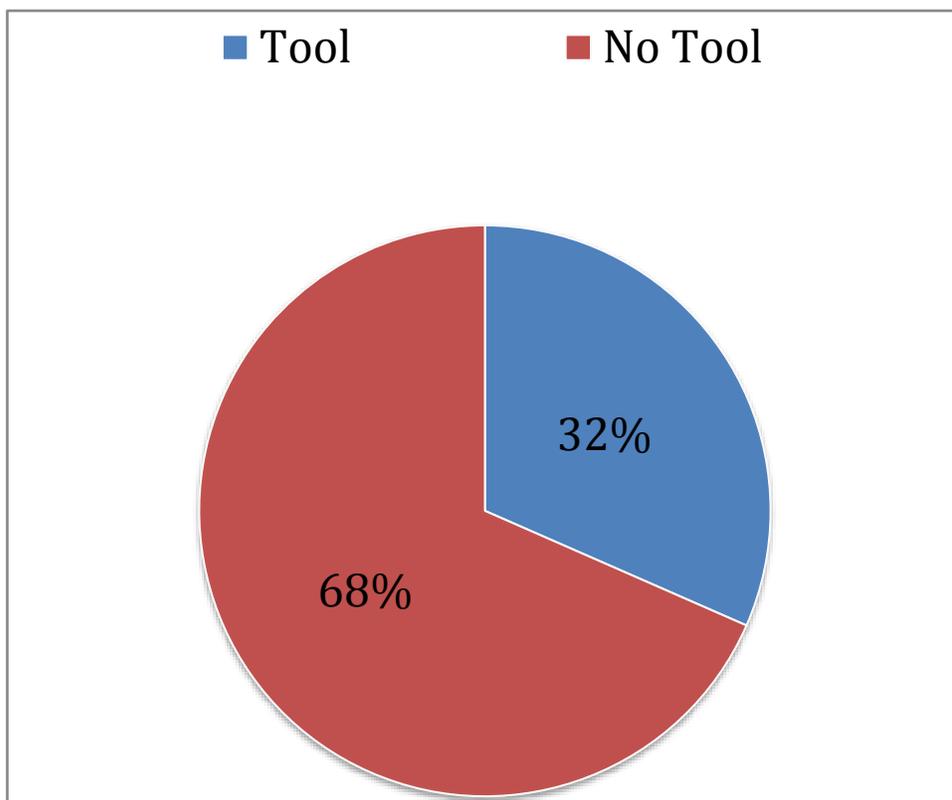
**Results**

Of the 57 charts reviewed 18 used a standard concussion protocol tool and 39 did not. Ages ranged from 13 to 40. Premature return to play occurred 16% of the time when a standard concussion assessment tool was used and 23% of the time when an assessment tool was not used.

The overall rate of premature return to play was 21%, which is significantly lower than previous studies suggesting 40-50%. Chi-square analysis was 0.30 with a p-value of 0.58, the results were therefore not statistically significant. A standard concussion assessment tool was used in 32% of cases.

**Conclusions**
In this retrospective study, premature return to play occurred less when a standard concussion assessment tool was used, however, this was not statistically significant, with a p-value of 0.58. Using a standard concussion assessment tool is a consensus recommendation for sports related concussions and this study does not refute this recommendation. Despite the consensus, a concussion assessment tool was only used 32% of the time.

There are multiple factors that may have affected the results including the sample size and study design and methods. A larger sample size may provide statistically significant results. This chart review included encounters in the Emergency Department and prompt care clinics, in which case follow up may have occurred outside of Unity Point and would therefore not have been reported as premature return to play. This chart review method would also not detect instances where patients simply did not follow up or report symptoms.

This study did not separate levels of athletes, age groups, type of sport, on-site evaluation or specialty of provider. All of these factors may potentially alter results. Providers with specialty training use a concussion assessment tool more frequently, and it would not be apparent if the tool was improving results or if a specialty trained physician is simply better at managing sports related concussions.

Future direction should focus on increasing sample size so as to reach statistical significance and for quality improvement purposes. It may also be beneficial to conduct a study including non-sports related injury, although presumably there would be even less use of a standard assessment. Family physicians are often the first medical professionals to care for patients following a concussion. This limited data reveals a tool was used only 32% of the time. This can serve as a reminder for clinicians to consider using an assessment tool for sports related injuries.

**References**

1. McRory P, Johnson K, Meeuwisse W, Aubry M, Cantu R, Dvorak J, et al. Summary and agreement statement of the 2nd International Conference on Concussion in Sport, Prague 2004. Br J Sports Med 2005;39(4):196-204

2. 2013 Jan;47(1):15-26. doi: 10.1136/bjsports-2012-091941. American Medical Society for Sports Medicine position statement: concussion in sport.

3. Carson J, Lawrence D, Kraft S, Garel A, Snow C, et al. Premature return to play and return to learn after sport-related concussion. Canadian Family Physician June 2014, 60(6) e310-e315

Checklist used to review charts that met inclusion criteria:
- Was use of assessment tool documented?
- Was the patient cleared for return to play ?
- Was  there follow up to the clinic or phone call to the clinic documenting return of symptoms?