

# Is Prior History of Concussion Prospectively Associated with Incidence of Concussion in Middle School Athletes?

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**Purpose:** To determine if prior history of concussion is prospectively associated with incidence of concussion in middle school athletes

## Background:

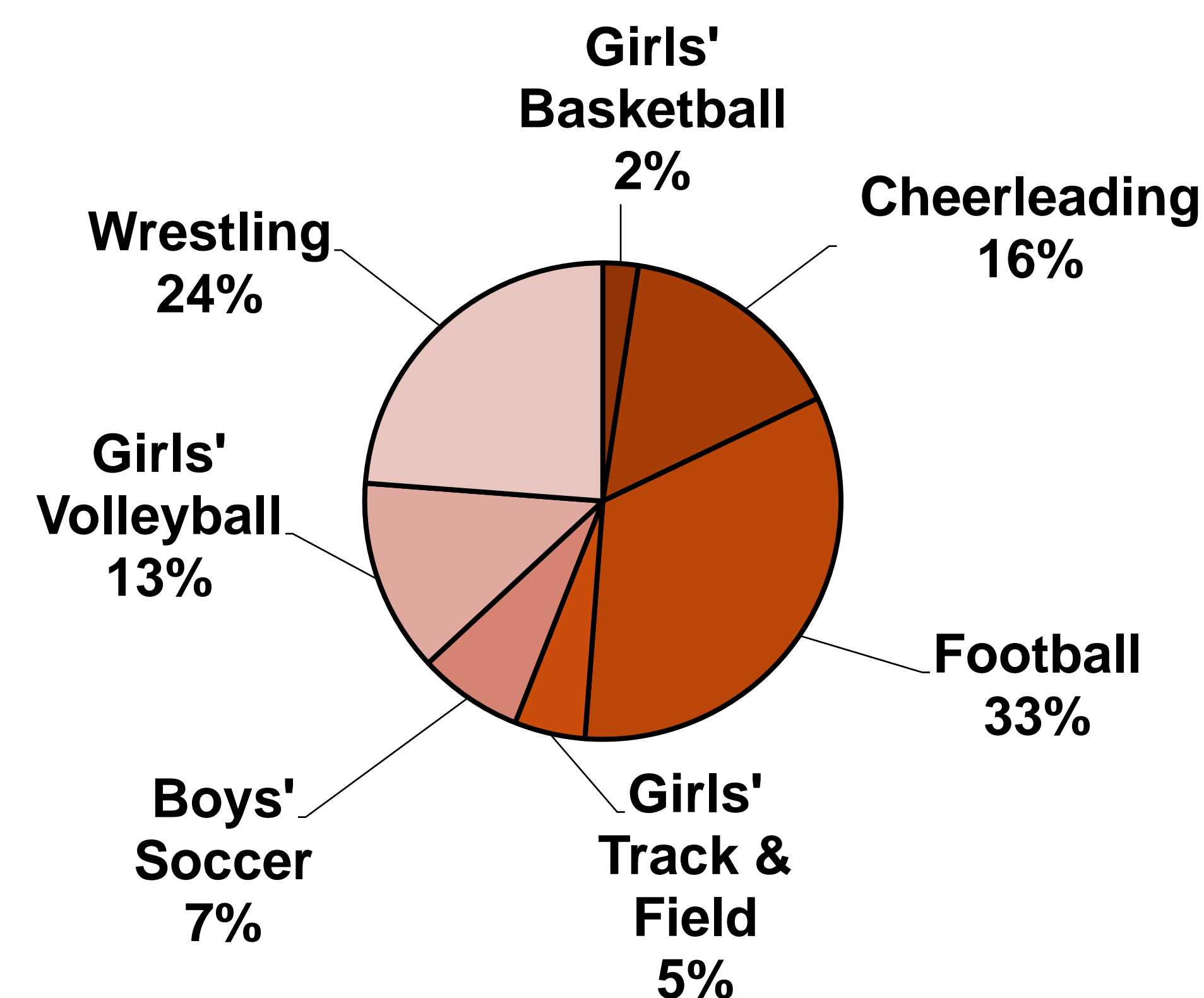
- Concussion risk among children continues to be a concern among parents, stakeholders, researchers, and health care professionals
- Systematic reviews have identified strong evidence that having a history of a previous concussion is a risk factor for sustaining a future concussion
- Most research on this paradigm represents high school and collegiate athletes, few studies uniquely focus upon middle school age student athletes
- Middle school is a time of rapid brain development, and is often a first entry point into team-based sports, which incidentally may expose a child to a concussion
- Identifying those at greater risk of concussion could assist in child and parent education; and facilitate future research on risk-reduction strategies in this population

## Methods:

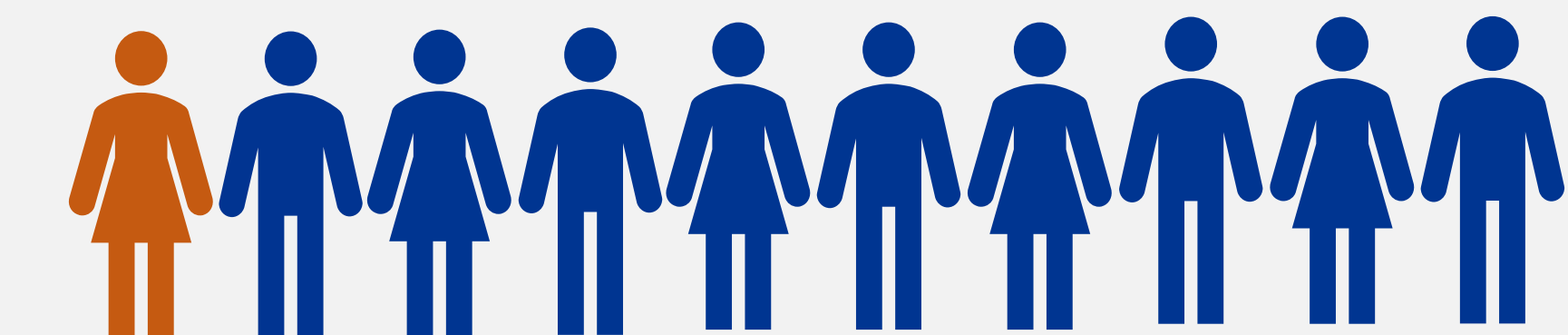
- **Participants:** Data were collected from 1,833 middle school athletes (girls: n=635, 34.6%; boys: n=1,198, 65.4%; age 11.8±0.7); **Figure 1** shows concussions per sport
- **Procedures:** Athletic Trainers provided by the Advancing Health Care Initiatives for Underserved Students (ACHIEVES) project gathered pre-season medical history including concussion history and documented all incidences of concussion
- **Statistical Analyses:** Binary logistic regressions were conducted to determine: **(a)** if history of concussion (yes/no) and **(b)** if the number of prior concussions, were prospectively associated with an incident of concussion over the 1-year follow-up period

## Results & Conclusions:

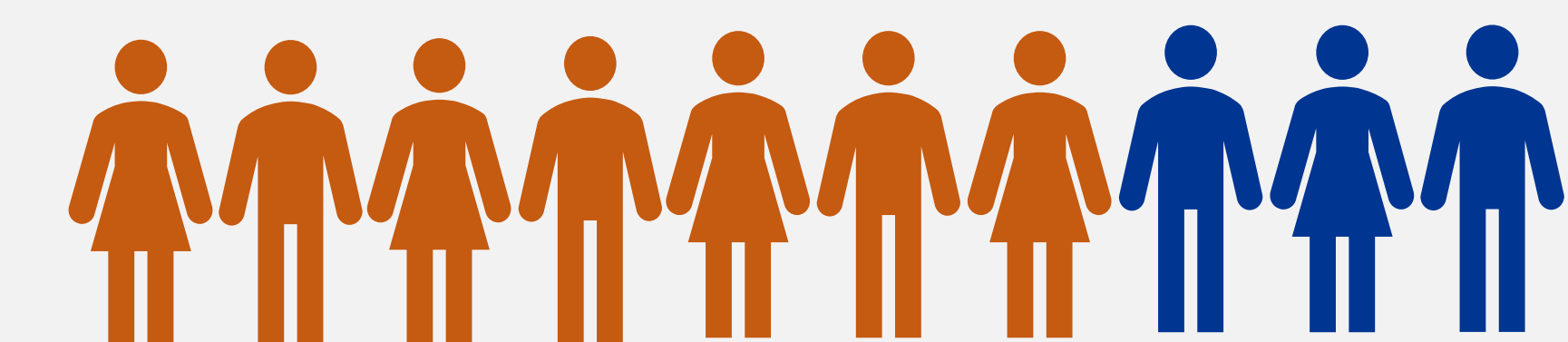
- Prior history of concussion significantly predicted concussion incidence within the 1-year follow-up period among middle school athletes ( $p < 0.05$ ; **OR=7.21, 95% CI: 3.02, 17.29**)
- However, the number of prior concussions did not significantly predict future incidence of concussion ( $p=0.55$ ), suggesting if a child had 2-3 prior concussions, they were no more susceptible of a future concussion than a child with only one prior concussion
- Our OR values are slightly elevated compared to prior research (see **Figure 2**)
- Screening for prior concussion history is a meaningful clinical measure; future research should investigate risk-reduction strategies for children with prior concussion history



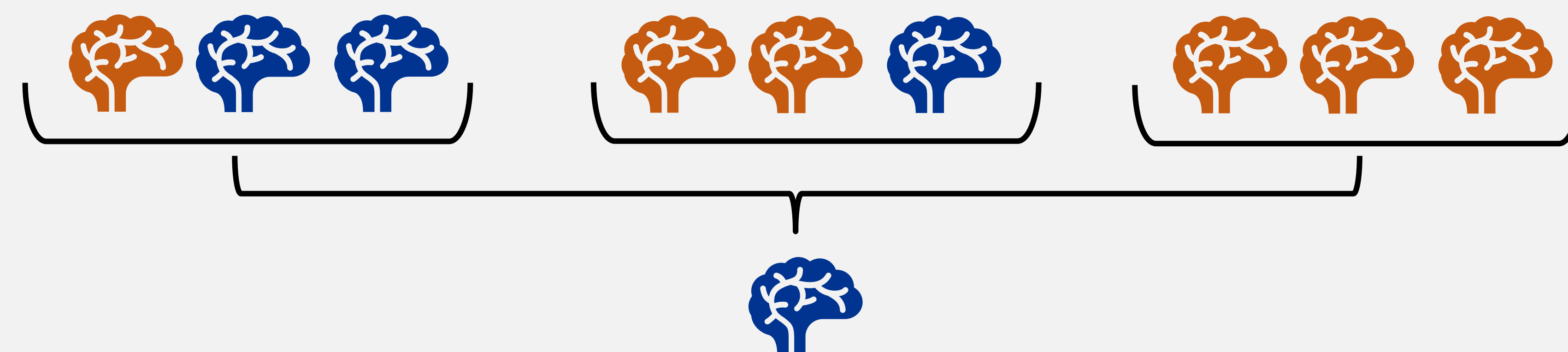
**Figure 1. Proportions of concussion by sport**



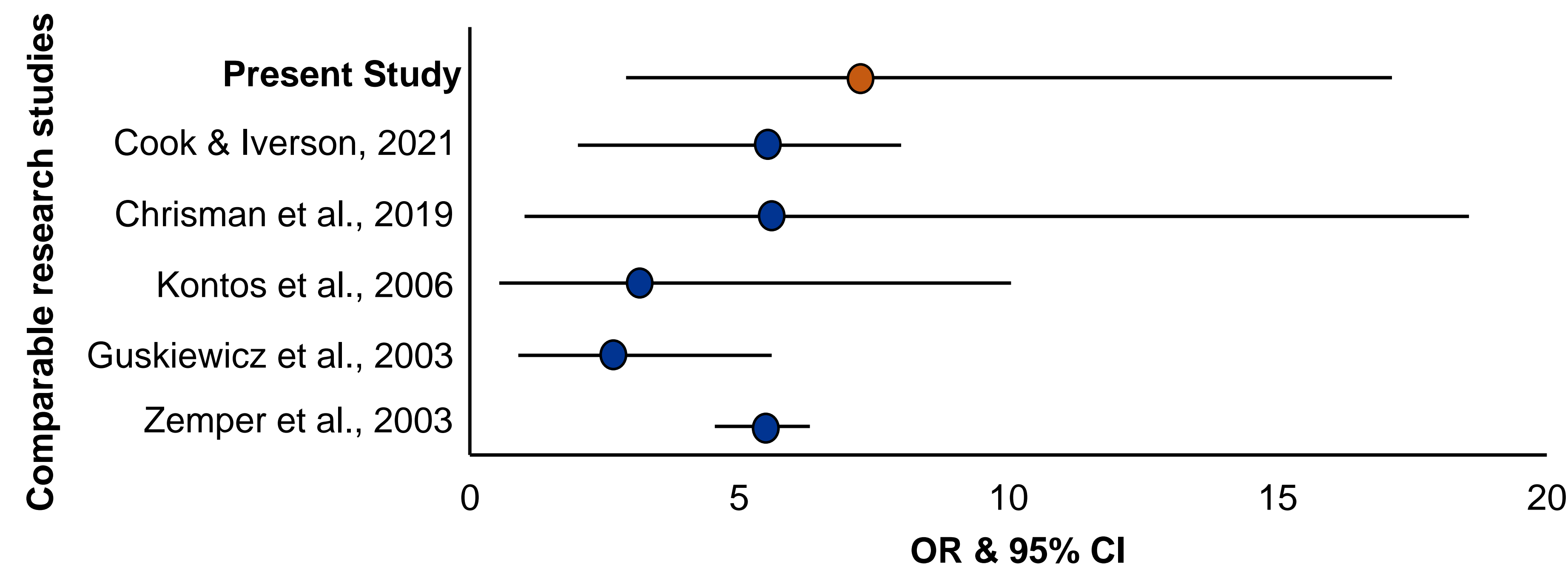
Approximately **1 in 10 children** endorsed having a history of concussion



Children with a history of concussion were **7 times more likely to sustain a concussion** than children without a history of concussion



Prior number of concussions **did not predict future** incidence of concussion



**Figure 2. Odds ratios (OR) and corresponding 95% confidence intervals (95% CI) for the present study in comparison to prior studies with similar designs**