

Late Adolescent Athletes Suffer More Musculoskeletal Injuries in Contact Sports Compared to Other Young Adults: A 10-Year NEISS Analysis

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INTRODUCTION

- **Objectives:** analyze epidemiological patterns of musculoskeletal injuries among young athletes in contact sports
- **Relation to sports medicine:**
 - Which demographics experience disparities and require targeted injury-prevention interventions?

Hypothesis: Disparities exist in the rates, types, distribution, and severity of injuries among young athletes in contact sports.

METHODS

- **Data collection:** National Electronic Injury Surveillance System (NEISS) from 2014 to 2023
- **Injuries included:** musculoskeletal (dislocations, sprains/strains, & fractures)
- **Age Demographic:** late adolescents & young adults
- **Sports included:** basketball, soccer, rugby, and ice hockey
- **Ethical Considerations:** This was an IRB exempt study

Data analyses:
SPSS
Statistics
v.28

- Descriptive stats → demographic variables & injury characteristics
- Weighted national estimates (WNE) → derived from NEISS
- Chi-squared tests → check for relationships between categorical variables
- Univariate logistic regression → hospitalization odds ratios (ORs) and risk factors

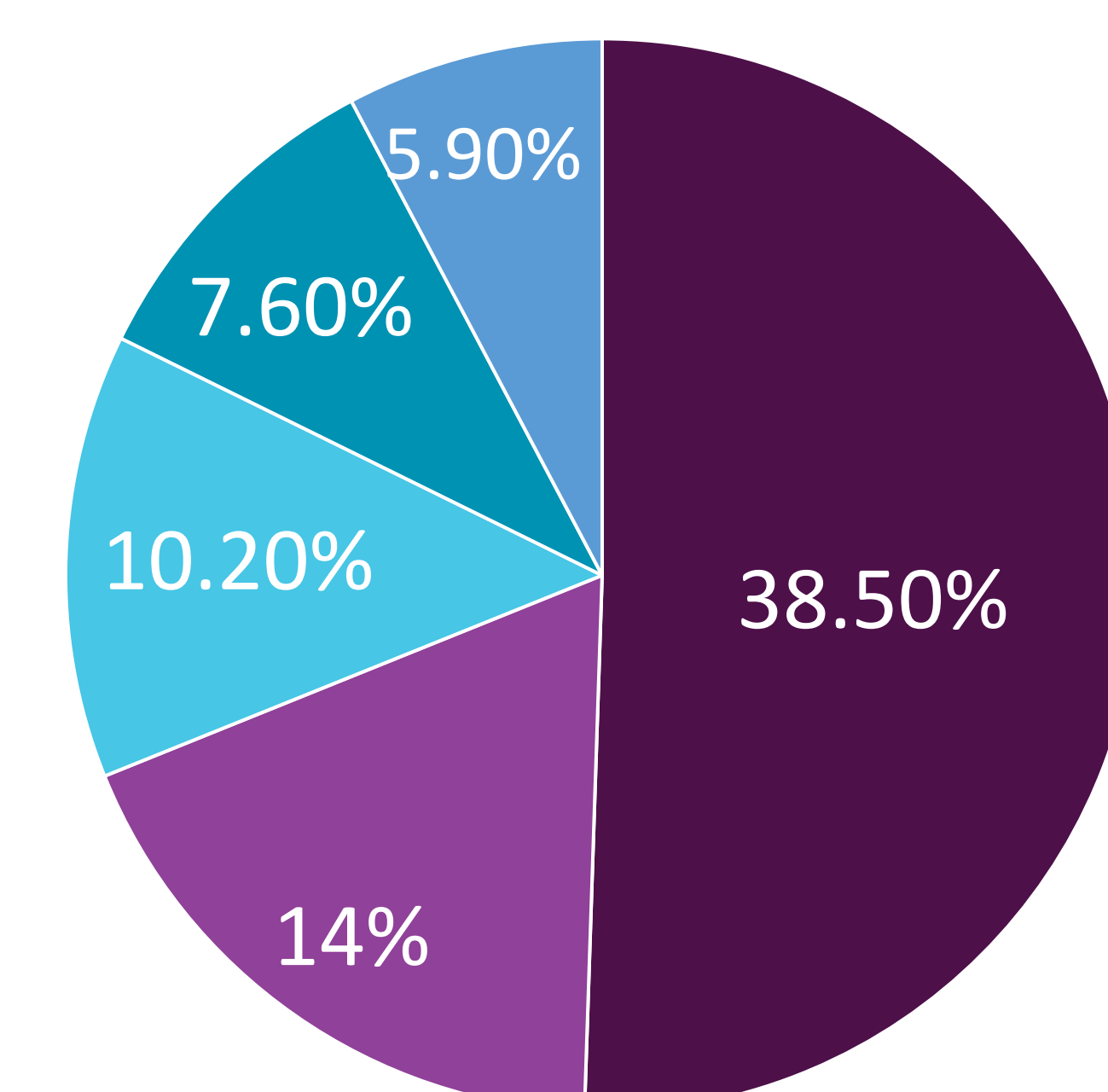
RESULTS

Groups with Highest Odds of Hospitalization

	Odds Ratio (OR)	95% Confidence Interval
Fractures	56.245	[53.126 - 59.547]
Dislocations	20.247	[18.858 - 21.738]
Upper Leg Injuries	19.44	[18.02 - 20.96]
Neck Injuries	7.27	[6.32 - 8.35]
Lower Leg Injuries	4.01	[3.83 - 4.19]
Rugby Injuries	1.777	[1.64 - 1.925]
Ages 21-25	0.844	[0.801 - 0.890]

Table 1: Adjusted Odds Ratios (ORs) and 95% Confidence Intervals (CIs) for hospitalization risk among demographics stratified within the study. Estimated using univariate logistic regression.

Most Common Body Part Injuries



■ Ankle ■ Knee
■ Finger ■ Shoulder
■ Wrist

Figure 1: Displays the most common body parts injured during the 10-year period.

Frequencies by Sport

Basketball – 71.5%
Soccer 25.1%
Rugby – 1.8%
Ice Hockey – 1.7%

Frequencies by Diagnosis

Sprains/Strains – 66.3%
Fractures - 24.9%
Dislocations – 8.8%

Demographic Frequencies		
Sex	Frequency	
Male	1,252,353	81.70%
Female	280,629	18.30%
Total	1,532,982	100%

Age Group	Frequency	
15-18	967,642	63.10%
19-21	315,417	20.60%
22-25	249,923	16.30%
Total	1,532,982	100%

Table 2: Descriptive statistics stratified by sex and age group. Based on weighted national estimate (n=1,532,982).

Upper Extremity Injuries Most Common:

M/F Ice Hockey Players

Male Rugby Players

Lower Extremity Injuries Most Common:

M/F Basketball Players

M/F Soccer Players

Female Rugby Players

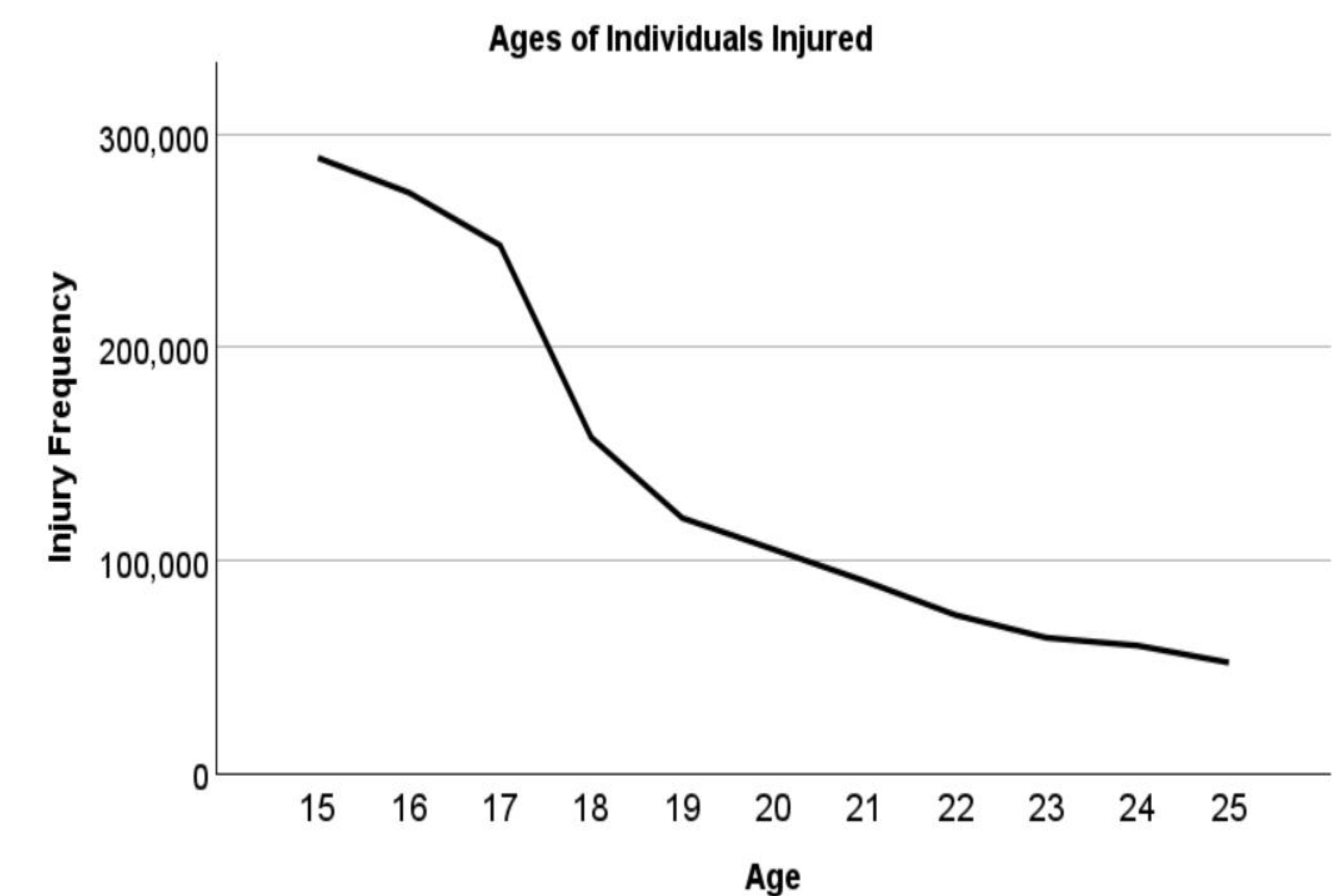


Figure 2: Graph presenting injury frequencies in relation to age. Values are based on weighted national estimate (n=1,532,982).

CONCLUSION

Main Takeaways:

- Targeted prevention strategies needed for adolescents
 - Likely due to puberty, variations in musculoskeletal development, or a decreased risk perception
 - Requires improved accommodation for varying body types & physiologies
- High ORs for rugby and upper extremity injuries
 - Education on injury prevention and risk factors
- Highlights sport-specific body regions that require special attention for preventative measures

Clinical Significance

Our findings offer valuable insight for developing appropriate interventions to enhance athlete safety in contact sports.

Faculty Disclosure

Affiliations

This study was conducted in conjunction with the following:

- University of Pittsburgh
Medical Center (UPMC)
Department of Orthopedic
Surgery – Foot/Ankle Division
- Bethel Musculoskeletal
Research Center

Conflicts of Interest

There are no financial relationships or conflicts of interest to disclose.

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