



NFHS SPORTS MEDICINE YEAR IN REVIEW

National Federation of State
High School Associations



Bob Colgate

NFHS Director of Sports and Sports Medicine

2024 JCSMS

Friday – February 16, 2024



2022-23 NFHS PARTICIPATION NUMBERS

- Participation in high school sports eclipsed 7.8 million in the 2022-23 school year with 12 million participants in high school activity programs.
- A total of 7,857,969 participants competed in high school sports in 2022-23, an increase of nearly 240,000 and up more than three percent from 2021-22 totals.
- The total includes 4,529,789 boys and 3,328,180 girls, according to figures obtained from the 51 NFHS member state associations, which includes the District of Columbia.
- This year's survey also captured Esports participation data for the first time with 20,001 boys and 3,921 girls recorded. Eighteen states reported Esports participation, with Illinois and California leading the way, each with more than 3,000 participants.



2022-23 NFHS SPORTS MEDICINE ADVISORY COMMITTEE (SMAC)

▪ <i>Greg Elkins, MD (Chair)</i>	<i>West Virginia</i>	<i>2025</i>
▪ <i>Robert Zayas, PhD (Sections 1 & 4)</i>	<i>New York</i>	<i>2023</i>
▪ <i>Amy Cassell (Sections 2 & 6)</i>	<i>Oklahoma</i>	<i>2026</i>
▪ <i>Chris Chun, JD (Sections 3 & 7)</i>	<i>Hawaii</i>	<i>2025</i>
▪ <i>Dan Swartos, EdD (Sections 5 & 8)</i>	<i>South Dakota</i>	<i>2025</i>
▪ <i>Karl Weenig, MD (At-Large)</i>	<i>Utah</i>	<i>2026</i>
▪ <i>Alex Diamond, D.O., M.P.H. (At-Large)</i>	<i>Tennessee</i>	<i>2023</i>
▪ <i>Jennifer Koontz, MD (At-Large)</i>	<i>Kansas</i>	<i>2025</i>
▪ <i>Douglas Gregory, MD, FAAP (At-Large)</i>	<i>Virginia</i>	<i>2025</i>
▪ <i>Kody Moffatt, MD (At-Large)</i>	<i>Nebraska</i>	<i>2025</i>
▪ <i>Shelly Jones, ATC (At-Large)</i>	<i>Oregon</i>	<i>2026</i>
▪ <i>Tim Spear (NIAAAA)</i>	<i>Maine</i>	<i>2024</i>
▪ <i>Justin Wilcox (NFHS-Officials Assoc.)</i>	<i>Arizona</i>	<i>2025</i>
▪ <i>Dan O'Connell (NFHS-Coaches Assoc.)</i>	<i>Maine</i>	<i>2023</i>
▪ <i>Lindsey Blom, EdD, CMPC (Mental Health)-Ex-Officio</i>	<i>Indiana</i>	<i>-----</i>
▪ <i>Tim McGuine, PhD, ATC (Researcher)-Ex-Officio</i>	<i>Wisconsin</i>	<i>-----</i>
▪ <i>Christy Collins, PhD (RIO-ISS)-Ex-Officio</i>	<i>Indiana</i>	<i>-----</i>
▪ <i>LaGwyn Durden, ATC (NCAA)-Ex-Officio</i>	<i>Indiana</i>	<i>-----</i>
▪ <i>Jennifer Rheeling, MS, ATC (NATA)-Ex-Officio</i>	<i>District of Columbia</i>	<i>-----</i>





NFHS SMAC IMPACT

- **19,800 High Schools-**
- **12 Million Participants in High School Activity Programs-**
- **7.8 Million Participants in High School Sports-**
- **Other National Sports Governing Bodies-**
- **Other Medical Organizations and Associations-**
- **51 Member State High School Associations-**
- **17 NFHS Rules Committees-**



NFHS RULES COMMITTEES 2023-24



NFHS MEMBER STATE ASSOCIATIONS





STUDENT MENTAL, EMOTIONAL AND PHYSICAL WELLNESS

2023-24 NFHS BOARD OF DIRECTORS - PRIORITIES

The NFHS will provide national guidance through development of educational programs and resources, support for research on wellness issues, collaboration and advocacy efforts, and the creation of opportunities for shared learning.

- Sports Medicine Advisory Committee (SMAC) -The NFHS SMAC will continue to provide guidance regarding rules development, health and safety guidelines/recommendations, working with state health agencies, and the overall role that the NFHS plays- or does not play- in the sports medicine ecosystem
- Enhance collaborative efforts with related organizations- ex. school counselors, school administrators, school-based university programs
- Expand educational resources that address mental, emotional and physical wellness of all involved in education-based programs
- Incorporate focus on mental, emotional and physical wellness into NFHS meetings and programs as appropriate
- Conduct a national Mental and Emotional Wellness campaign.



2023-24

#WESEEYOU

Campaign



WEB ADS



EMAIL SIGNATURE



MINI HANDOUT CARD



PA ANNOUNCEMENT SCRIPT



PRINTABLE FLYER



10 TIPS INFO SHEET

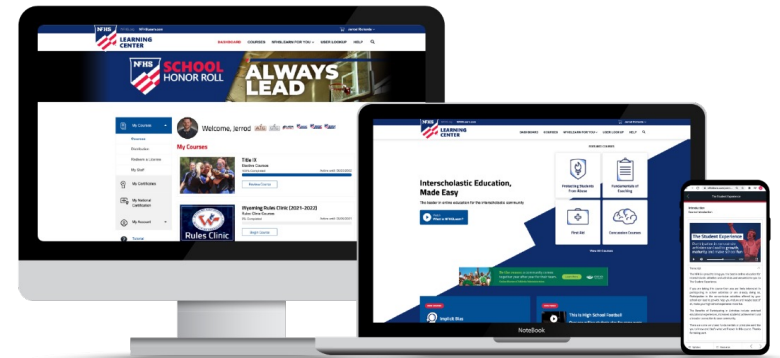


PROGRAM ADS



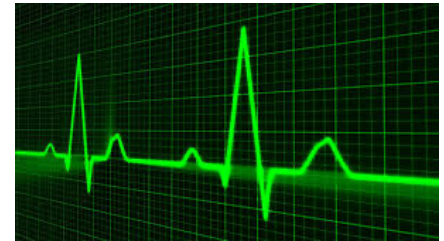
OVER 21 MILLION COURSES DELIVERED!

- Concussion in Sports – 7.2M+
- Heat Illness Prevention – 2.2M+
- Sudden Cardiac Arrest – 2.4M+
- Concussion for Students – 1.2M+
- The Collapsed Student (2020) – 67,550+
- CPR & AED Training (2023) – 9,300+
- Sportsmanship – 1M+
- Fundamentals of Coaching – 928,000+
- First Aid, Health and Safety – 418,000+
- Bullying, Hazing and Inappropriate Behaviors – 425,000+
- Student Mental Health and Suicide Prevention – 250,000+
- Protecting Students from Abuse – 250,000+
- Implicit Bias (2021) – 96,000+

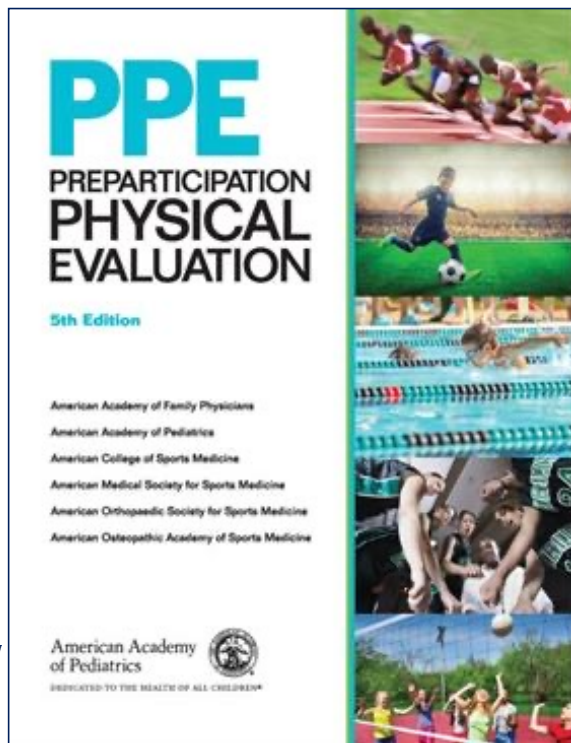


NFHS SMAC TASK FORCE ON SUDDEN CARDIAC ARREST / DEATH

- Eight member task force of national medical and research experts
- Reassess value of Electrocardiogram (ECG) screening
 - Can detect many leading causes of Sudden Cardiac Death (SCD)
- In 2022, a survey was distributed to all of the NFHS member state association SMAC Chairs, to complete to get current status of baseline ECG testing and outcomes by state
- Considering evidence-based guidance (NO mandates) on utility of selective implementation of baseline ECG testing in high school athletes at highest risk of SCD



PREPARTICIPATION PHYSICAL EVALUATION (PPE)



- The NFHS SMAC approved at their April 2023 meeting, a recommendation to the membership to look at adding the PPE's for those who participate in Marching Band, Show Choir and Cheer/Dance.



NFHS SMAC POSITION STATEMENTS



SUGGESTED GUIDELINES FOR MANAGEMENT OF CONCUSSION IN SPORTS

National Federation of State High School Associations (NFHS)
Sports Medicine Advisory Committee (SMAC)

Introduction

A concussion is a type of traumatic brain injury that impairs the function of the brain. It occurs when the brain moves within the skull as a result of a blow to the head or body. What may appear to be only a mild jolt or blow to the head or body can result in a concussion or other serious brain injury.

The understanding of sports-related concussion continues to evolve. We now know that young athletes are particularly vulnerable to the effects of a concussion. Once considered a "ding" to the head, it is now understood that a concussion has the potential to result in a variety of short- or long-term changes in brain function and, rarely, death.

What is a concussion?

A concussion is a traumatic brain injury that interferes with the normal function of the brain. Simply stated – a concussion results from an injury to the brain, and there is no such thing as a minor brain injury! Concussions should never be referred to as a "ding" or a "bell-ringer." Any suspected concussion must be taken very seriously.

An athlete does not need to lose consciousness (be "knocked-out") to suffer a concussion. In fact, less than 5% of concussed athletes suffer a loss of consciousness.

What happens to the brain during a concussion is not completely understood. It is a complex process, primarily affecting the function of the brain. The sudden movement of the brain causes stretching and tearing of brain cells, damaging the cells and creating chemical changes in the brain. Once this injury occurs, the brain is vulnerable to further injury and very sensitive to any increase in stress, such as another head injury, until it fully recovers.

Common sports injuries such as torn ligaments and broken bones are structural injuries that can be seen on x-rays or MRI. A concussion, however, is an injury that interferes with how the brain works and cannot be seen on MRI or CT scans. Therefore, even though the brain is injured, the brain looks normal on these tests.

Recognition and Management

If an athlete exhibits any signs, symptoms, or behaviors that make you suspicious of a concussion, the athlete must be removed from sport and not be allowed to return to sport until they are evaluated and cleared by a health-care professional. Failure to remove the athlete from activity puts them at risk for sustaining another head injury while concussed, which can lead to worsening concussion symptoms, increased risk for further injury, and, sometimes even death.

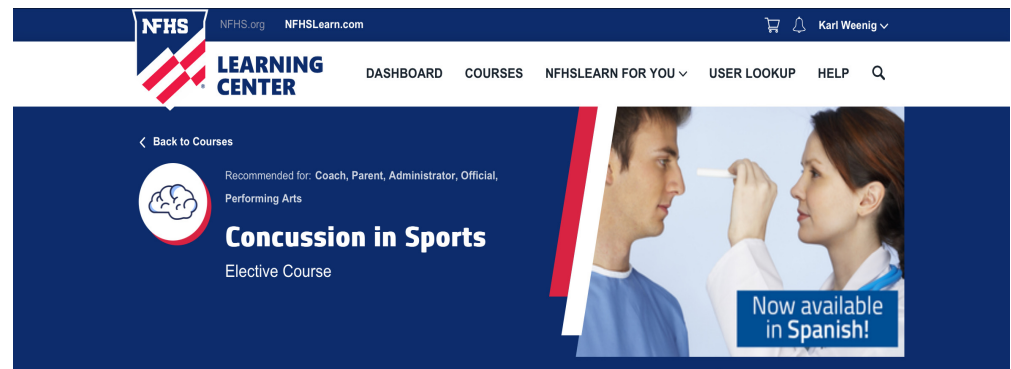
1

The NFHS regularly distributes position statements and guidelines to promote public awareness of certain health and safety-related issues. Such information is neither exhaustive nor necessarily applicable to all circumstances or individuals, and is no substitute for consultation with appropriate health-care professionals. Statutes, codes or environmental conditions may be relevant. NFHS position statements or guidelines should be considered in conjunction with other pertinent materials when taking action or planning care. The NFHS reserves the right to rescind or modify any such document at any time.



CONCUSSION

- State associations adopting recommendations to limit full-contact football practice to two to three practices per week, and only 60-90 minutes in that week
- Schools restricting full-contact on consecutive days and to only one session of two-a-day practices
- Coaches teaching proper mechanics and conditioning
- These measures, along with other protocols, have been effective in reducing the number of concussions
- “When in doubt, sit them out”



The screenshot displays the NFHS Learning Center website interface. At the top, there is a dark blue navigation bar with the NFHS logo, the text 'NFHS.org NFHSLearn.com', and a user profile 'Karl Weenig'. Below this is a secondary navigation bar with links for 'DASHBOARD', 'COURSES', 'NFHSLearn FOR YOU', 'USER LOOKUP', and 'HELP'. The main content area features a 'Concussion in Sports' course card. The card includes a 'Back to Courses' link, a brain icon, and text indicating it is 'Recommended for: Coach, Parent, Administrator, Official, Performing Arts'. The course is labeled as an 'Elective Course'. To the right of the text is a photograph of a male doctor examining a female patient's head. A blue callout box in the bottom right corner of the image states 'Now available in Spanish!'.



AIR QUALITY



Air Quality Index (AQI)	5-3-1 Visibility Index	Required Actions for Outdoor Activities
51 - 100	5-15 Miles	Athletes who are unusually sensitive to air pollution should consider indoor activities only. Athletes with asthma should have rescue inhalers readily available and pretreat before exercise if directed by their healthcare provider. All athletes with respiratory illness, asthma, lung or heart disease should monitor symptoms and reduce/cease activity if symptoms arise. Increase rest periods as needed.
101 - 150	3-5 Miles	Athletes who are unusually sensitive to air pollution should consider indoor activities only. Athletes with asthma should have rescue inhalers readily available and pretreat before exercise if directed by their healthcare provider. All athletes with respiratory illness, asthma, lung or heart disease should monitor symptoms and reduce/cease activity if symptoms arise. Athletes with asthma or other lung diseases, heart conditions or diabetes may need additional rest breaks during practices / contests. Consider rescheduling to a different time and / or an area with a lower AQI. Schools should consider the impact of elevated AQI lasting for multiple days and the impact of prolonged exposure for athletes and staff on multiple practice session days when making decisions. Consider moving practices indoors, if available. Be aware that, depending on a venue's ventilation system, indoor air quality levels can approach outdoor levels.
151 - 200	1-3 Miles	All outdoor activities (practice and competition) shall be canceled or moved to an area with a lower AQI. Move practices indoors, if available. Be aware that, depending on a venue's ventilation system, indoor air quality levels can approach outdoor levels.
>200	1 Mile	All outdoor activities (practice and competition) shall be canceled or moved to an area with a lower AQI. Move practices indoors, if available. Be aware that, depending on a venue's ventilation system, indoor air quality levels can approach outdoor levels.



“Position Statement on Physical Activity, Air Quality, & Wildfires” NFHS SMAC Revised 4/23

<https://www.osaa.org/health-safety>

SPORT SPECIALIZATION

- Intense, high-volume training and participation in a particular sport at the expense of an equal focus on other sports.
- The athlete frequently practices and competes in a school-affiliated sport while also practicing and competing in their “specialized” sport in a club (non-school) setting or while receiving personalized coaching.
- NFHS SMAC recognizes that sport specialization is a growing concern and recommend that coaches and athletic directors actively educate athletes, parents/guardians and coaches that sport specialization:
 - Increases the risk for over training and athlete burn out*
 - Is not necessarily associated with athletic success beyond high school*
 - Is strongly correlated with an increase risk of injury*



EMERGENCY ACTION PLANS (EAP)

- Written plan on how to provide best emergency care
- Collaborative Effort to Design & Implement
 - ATC, Admin, MD, AD, EMS, Risk Management & School District Legal
- Must be practiced regularly to be effective
 - Invite EMS to practice session invaluable perspective
- Venue Specific & Team Specific
 - Function exclusive of ATC
 - Don't forget auditorium for band, theater, music etc. (Performing Arts)
- Include: Heart, Head, Heat, Lightning, Active Shooter, Mental Health



MEDICAL TIMEOUT

--ALL SPORTS--



Pre-contest EAP meeting

- Personnel Introductions
 - ATC, MD, EMS, Officials, AD/Supervisor
- Role Delineation
- Equipment: What & Where
 - AED, Hemorrhage Kit, O₂, Spine board
 - Facemask Removal Tools, Cold Tub
- Protocols:
 - Spinal Immobilization
 - Lightning Plan & Evacuation Location
 - Cool 1st, Transport 2nd



MEDICAL TIMEOUT

REVIEW THIS CHECKLIST BEFORE ANY ATHLETIC EVENT

VENUE ADDRESS: _____

PRE-GAME OPERATIONS AGENDA	HOME TEAM	VISITING TEAM
<input type="checkbox"/> ROLE DELINEATION <hr style="border-top: 1px dashed black;"/> <input type="checkbox"/> EMERGENCY EQUIPMENT/LOCATION <ul style="list-style-type: none"> ▶ AED ▶ FACE MASK REMOVAL TOOL ▶ SPINEBOARD ▶ OXYGEN ▶ HEMORRHAGE CONTROL KIT <hr style="border-top: 1px dashed black;"/> <input type="checkbox"/> SPINAL IMMOBILIZATION PROCEDURE <hr style="border-top: 1px dashed black;"/> <input type="checkbox"/> ENVIRONMENTAL CONCERNS <ul style="list-style-type: none"> ▶ LIGHTNING ▶ HEAT/COLD ▶ COOL FIRST, TRANSPORT SECOND <hr style="border-top: 1px dashed black;"/> <input type="checkbox"/> OTHER CONSIDERATIONS <small>E.G. CONSTRUCTION, AIR TRANSPORT ETC.</small>	PHYSICIAN NAME: _____ CELLPHONE NUMBER: _____ <hr/> ATHLETIC TRAINER NAME: _____ CELLPHONE NUMBER: _____ <hr/> ATHLETIC TRAINER NAME: _____ CELLPHONE NUMBER: _____	PHYSICIAN NAME: _____ CELLPHONE NUMBER: _____ <hr/> ATHLETIC TRAINER NAME: _____ CELLPHONE NUMBER: _____ <hr/> ATHLETIC TRAINER NAME: _____ CELLPHONE NUMBER: _____

HAND SIGNALS

ACLS TO FIELD: _____

SPINAL IMMOBILIZATION: _____

ADDITIONAL SIGNALS: _____

ADDITIONAL CONTACT INFORMATION

POLICE DEPARTMENT PHONE NUMBER: _____

FIRE DEPARTMENT PHONE NUMBER: _____

4

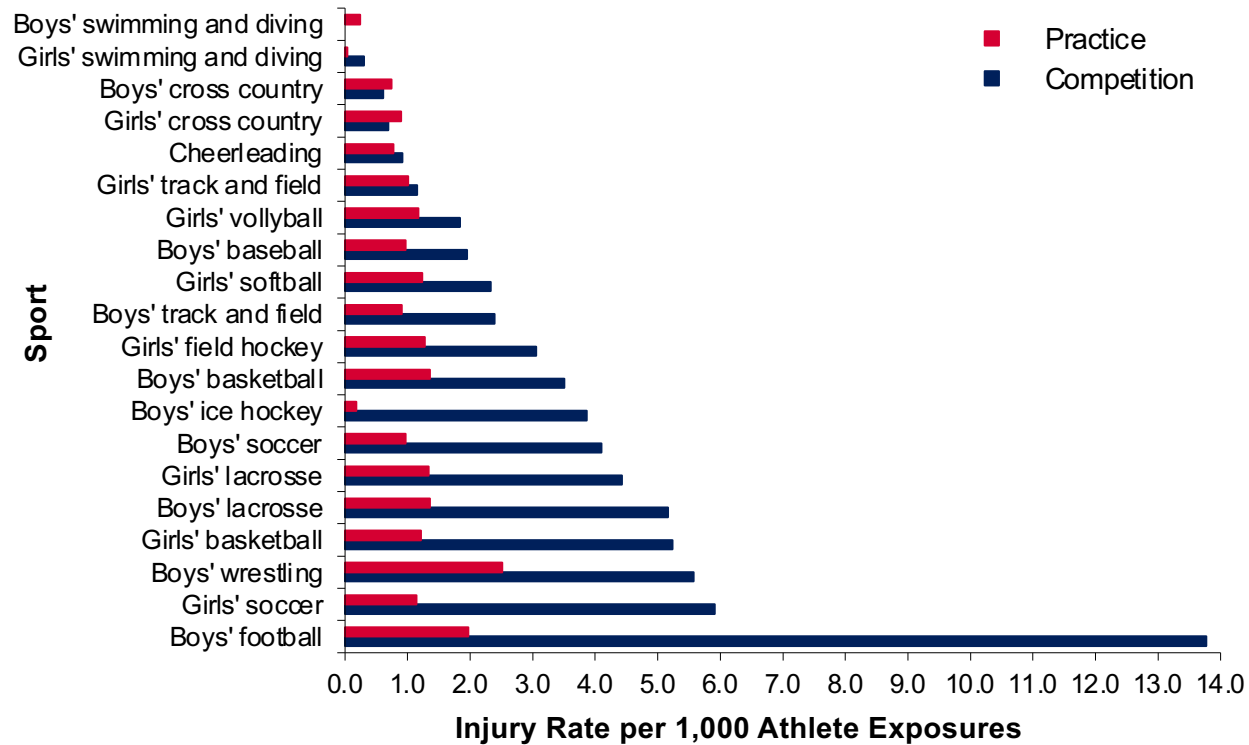
GO4

ATHLETIC TRAINERS ON DEMAND / GO4.IO

**THE NATIONAL HIGH SCHOOL SPORTS-
RELATED INJURY SURVEILLANCE STUDY:
HIGH SCHOOL RIO™**



INJURY RATE BY SPORT AND TYPE OF ACTIVITY: ALL SPORTS^a, 2022/23



^aCheerleading competition includes competition and performance



CHANGING INJURY PATTERNS: % OF ALL INJURIES

Most Common High School Sports Injuries in 9 Original Sports Under Surveillance	2005/06	2015/16	2022/23
Body Sites			
Ankle	20.9%	16.5%	18.1%
Head/Face	12.3%	26.6%	19.7%
Knee	14.7%	14.5%	15.0%
Diagnoses			
Strain/Sprain	50.7%	40.0%	44.6%
Concussion	9.0%	24.0%	16.7%
Fracture	10.2%	9.6%	9.0%

^aBoys' football, soccer, basketball, wrestling, and baseball and girls' soccer, volleyball, basketball, and softball



CONCUSSION RATES PER 10,000 ATHLETE EXPOSURES^a: 2005/06-2022/23

Sport	Competition	Rank	Practice	Rank
Boys' Football	30.4	1	4.0	1
Boys' Ice Hockey	17.0	2	1.4	7
Girls' Soccer	16.7	3	1.5	5
Boys' Lacrosse	12.2	4	1.4	6
Girls' Lacrosse	9.9	5	1.7	4
Girls' Basketball	9.5	6	1.3	10
Boys' Soccer	8.4	7	0.8	13
Boys' Wrestling	8.0	8	2.5	3
Girls' Field Hockey	6.1	9	1.1	11
Boys' Basketball	3.8	10	1.0	12
Girls' Volleyball	3.7	11	1.3	8
Girls' Softball	3.3	12	1.3	9
Girls' Gymnastics	2.0	13	0.6	14
Cheerleading	1.9	14	3.2	2
Boys' Baseball	1.6	15	0.4	15

^aCheerleading competition includes competition and performance



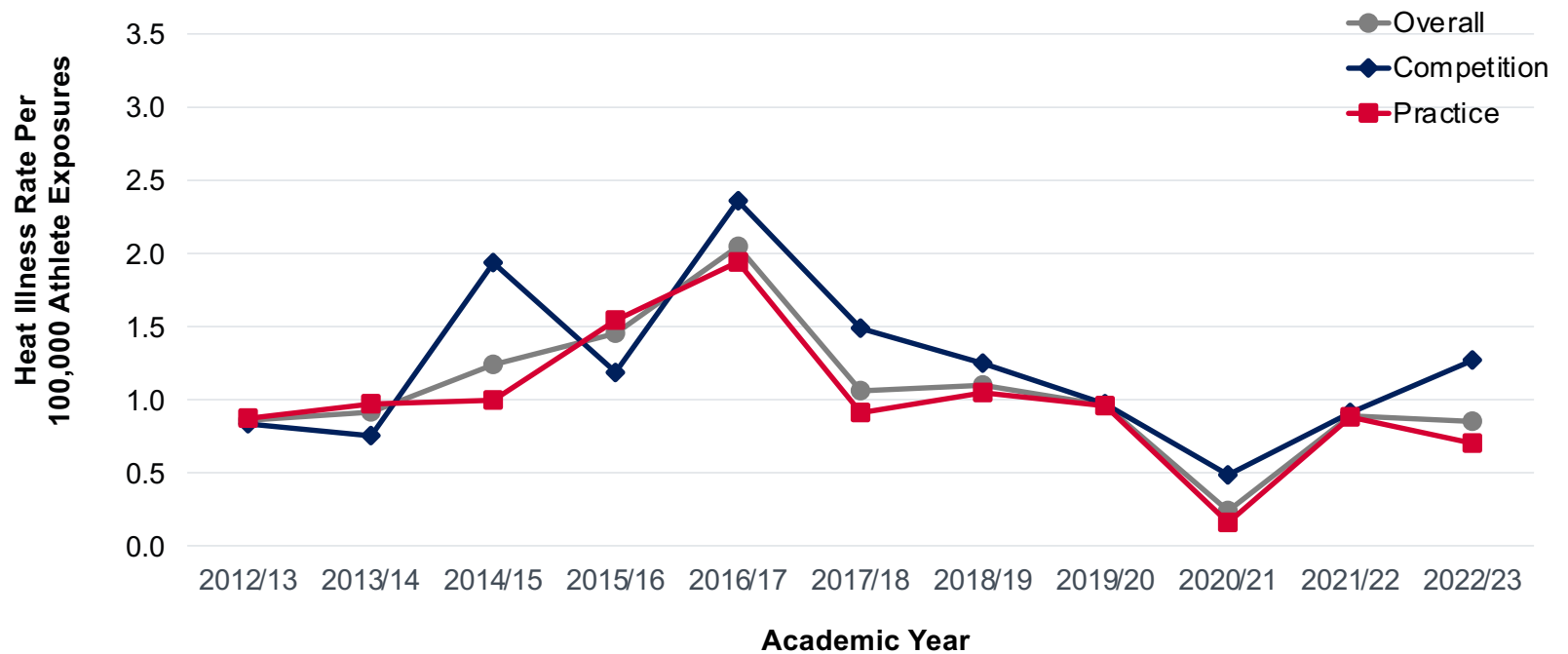



MECHANISMS OF CONCUSSION BY SPORT: 2005/06 – 2022/23

Sport	Player-Player	Player-Surface	Player-Apparatus
Football	85%	10%	1%
Boys' Soccer	60%	13%	25%
Girls' Soccer	42%	17%	39%
Boys' Basketball	67%	28%	4%
Girls' Basketball	55%	33%	9%
Boys' Baseball	34%	6%	60%
Girls' Softball	25%	9%	64%
Boys' Lacrosse	68%	9%	21%
Girls' Lacrosse	20%	9%	70%



HEAT ILLNESS RATES PER 100,000 ATHLETE EXPOSURES: ALL SPORTS, 2012/13 – 2022/23



THANK YOU

National Federation of State High School Associations
PO Box 690 | Indianapolis, IN 46206
Phone: 317-972-6900 | Fax: 317.822.5700
www.nfhs.org | www.nfhslearn.com | www.nfhsnetwork.com

