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The Fall Forecast – Settling the Youth Sport Safety Score: From Gender Differences to Sports Specialization and What Parents, Coaches and Athletes Need to Know

New Research and Guidelines for Preseason Practice and Back to School Sports

ROSEMONT, Ill., July 24, 2018—Leading orthopaedic and sports medicine experts from the [American Academy of Orthopaedic Surgeons \(AAOS\)](#) and [American Orthopaedic Society for Sports Medicine \(AOSSM\)](#) unveiled today new study findings and reinforced important recommendations from the joint [OneSport™ Injury](#) youth sports specialization campaign. The information was shared during a one-hour media webcast with new guidelines for preseason practices and back to school sports. Lead authors of “[Sex Based Differences in Common Sports Injuries](#)” published in the July issue of the [Journal of the American Academy of Orthopaedic Surgeons](#) and “[Socioeconomic Factors for Sports Specialization and Injury in Young Athletes](#)” now in the July issue of [Sports Health: A Multidisciplinary Approach](#) shed light on injury prevention and management. The “**Fall Forecast: Settling the Youth Sports Safety Score**” event took place at AAOS in its Orthopaedic Learning Center (OLC).

To review information shared, please visit: OrthoInfo.org/onesportinjury. Look for a full version of the webcast to be posted by July 25.

“Overuse injuries in children can have a lifetime effect on their game and quality of life,” said event moderator Charles Bush-Joseph, MD, immediate past president of AOSSM, professor at Rush University Medical Center and associate director of the Rush Orthopaedic Sports Medicine Fellowship Program. “As more athletes under the age of 12 focus on just one sport and year-round training, coaches, parents and athletes need to encourage youth to think about participating in a variety of activities to prevent injuries. While sports participation has many benefits, including the development of strong bones and muscles, children who do specialize are often more likely to develop overuse injuries because of their repetitive movements, are stressed and may even consider quitting a sport and losing the benefits,” added Dr. Bush-Joseph.

Statistics show that:

- An estimated 27 million U.S. youths between the ages of 6 and 18 participate in team sports, and 60 million participate in some form of organized athletics.¹
- A case control study of 1,206 seven- to eighteen-year-olds demonstrated that over the course of three years, picking a main sport to focus on was an independent risk factor for injury even after adjustment for age and hours per week in total sports activity.²
- In youth baseball, pitching more than 100 innings per year resulted in a 3.5-fold increase in injury risk that resulted in time lost from competition in the 9- to 14-year-old age group.³
- Similarly, studies have shown that the incidence of elbow pain in youth baseball players is between 20 and 30 percent for 8- to 12-year-olds, approximately 45 percent for 13- to 14-year-olds, and over 50 percent for high school, college, and professional athletes.?
- One retrospective study evaluating women gymnasts demonstrated that there were similar rates of acute and overuse injuries in 96 competitive gymnasts and the majority of injuries were lower extremity soft tissue injuries.?
- By evaluating emergency room data from 1990 to 2014, a study published in the journal [Pediatrics](#) found that the annual injury rate for young soccer players jumped by 111 percent in the 24-year period.

Sprains and strains were most common followed by fractures and soft tissue injuries. More than 70 percent of those injuries were in older children, ages 12 to 17. In addition, this age group was more than three times as likely to be injured than younger players.?

What's New: Sex-Based Differences and Specialization in Youth Sports

Elizabeth Matzkin, MD, AAOS board member-at-large, chief of Women's Sports Medicine and director of the Sports Medicine Fellowship at Brigham and Women's Hospital, assistant professor of Orthopaedic Surgery at Harvard Medical School and **Cordelia Carter, MD**, as of August, director of the NYU-Langone Health Women's Sports Center and program director, Pediatric Sports Medicine at Hassenfeld Children's Hospital and authors of "Sex-Based Differences in Common Sports Injuries," presented results of their review article. They commented that males and females have different risk factors for experiencing sport-related injuries (SRIs) and particularly at the youth level. Their research team looked at stress fracture; anterior cruciate ligament (ACL) tear; shoulder instability; concussion; and femoroacetabular (hip) impingement.

- Females have a higher risk of stress fracture, secondary to a relative energy deficiency in sport compared to their male counterparts.
- One study demonstrated that up to 36 percent of female high school athletes do not consume enough and/or the right type of calories to adequately fuel their athletic activities. This nutritional deficit may be associated with menstrual dysfunction and bone stress injuries in a significant number of young athletes.
- Although the absolute number of ACL injuries per year is higher in male youth athletes, females have a 2 to 8 times increased risk when playing similar sports.
- Females are less likely to return to sports after ACL injury.
- In addition to a well-documented higher rate of ACL tears in female athletes, research has demonstrated a higher incidence of concussion in females participating in sports such as soccer, basketball and lacrosse.

"Anatomic and physiological characteristics such as skeletal structure, muscle mass, ligament flexibility and hormone levels differ between the sexes and may contribute to variations in injury risk," said Dr. Carter. "The best way to avoid or treat a sports-related injury in a male may be different for a female. Understanding the sex-based differences can help orthopaedic surgeons be better equipped to care for patients with these injuries and improve their treatment outcomes."

Neeru Jayanthi, MD, associate professor, Orthopedics and Family Medicine, Emory University School of Medicine, director, Emory Sports Medicine Research and Education, director, Emory's Tennis Medicine Program and lead author of "Socioeconomic Factors for Sports Specialization and Injury in Youth Athletes," presented findings of this first-ever study that looked at socioeconomic status (SES) and risk of injury from specialization. Injured athletes aged 7 to 18 were recruited from 2 hospital-based sports medicine clinics in the Chicago area and compared with uninjured athletes undergoing sports physicals between 2010 and 2013. Nearly 1,200 athletes were evaluated using training and injury surveys and electronic medical records to determine injury type. Young athletes from high income families were greater than twice as likely to be highly specialized in a single sport.

"High socioeconomic status (SES) athletes reported more serious overuse injuries than low SES athletes, potentially due to higher rates of sports specialization, more weekly hours in organized sports, less frequent opportunities for free play, and greater participation in individual sports," said Dr. Jayanthi. "We think it is possible that injury risk happens not just from how much you play, but rather how you spend that time. Unorganized free play may potentially be protective of overuse injury. We believe that this allows an environment where the child can be self-directed." Dr. Jayanthi also added that prior research defined specialization to be intense year-round and more

than 8 months training in a single, main sport at the exclusion of others; and the risk that comes from that level of specialization participation. He also noted prior studies that indicate adolescent females may be at highest risk for overuse injuries and that individual sports such as tennis and dance may be more likely associated with higher incidence.

Public Service Campaign Addresses Specialization and Prevention and Treatment of Injuries

Dr. Matzkin then provided an overview of the joint AAOS and AOSSM outdoor public service campaign that features a female soccer player and a male baseball player with the headline: "[The OneSport Injury: Doctors Can Treat Them. Parents and Coaches Can Prevent Them.](#)"

"We hope this very timely effort will provide great education so that young athletes get the proper rest and recovery they need to participate in sports, reap the benefits of varied activities and stay in the game for life," said Dr. Matzkin.

In her presentation of the PSA today, she provided additional guidelines for young athletes, their parents and coaches:

- Get a preseason wellness check-up
- Ensure adequate time for rest and recovery (during the season and in between different sports)
- Take good care of bones, joints and muscle - this helps to reduce acute or chronic musculoskeletal conditions starting in youth and throughout life
- Properly warm-up and cool-down before and after activities
- Incorporate strength and stretching exercises into training
- Hydrate adequately to maintain health/minimize cramps
- Play different positions or sports
- Don't play while injured or in pain

"Immature bones, insufficient rest after injury, and poor training and conditioning can contribute to overuse injuries, she added. "We know that overuse injuries account for half of all sports injuries in middle school and high school. Although we can treat most youth injuries, they can have consequences later in life so it is vital to reduce or prevent incidence now and avoid the onset of chronic conditions. Equally important is nutrition as it is vital to proper bone health."

The PSA was distributed to more than 400 outdoor media spaces, billboards, shopping malls and bus shelters across the country earlier this year.

"Today's forum has provided us with an excellent opportunity to spotlight important study results, recommend new guidelines and encourage parents, coaches and others to share this information and ensure the safety of our young athletes," concluded Dr. Bush-Joseph. "Promote the public service campaign among your families, friends, teams and schools. Encourage young athletes to build rest and recovery into their daily or weekly games and practices. By doing so, you'll help to promote good health, reduce the possibility of an overuse injury and champion the benefits that come from sports participation with safety and appropriate care being paramount."

Program Partners

The American Academy of Orthopaedic Surgeons

With more than 38,000 members, the [American Academy of Orthopaedic Surgeons](#) (AAOS) is the world's largest medical association of musculoskeletal specialists. The AAOS provides education programs for orthopaedic surgeons and allied health professionals, champions and advances the highest quality musculoskeletal care for patients, and is the authoritative source of information on bone and joint conditions, treatments and related issues.

About American Orthopaedic Society for Sports Medicine

The [American Orthopaedic Society for Sports Medicine](#) (AOSSM) is the premier global organization representing the interests of orthopaedic surgeons and other professionals who provide

comprehensive health services for the care of athletes and active people of all ages and levels. We cultivate evidence-based knowledge, provide extensive educational programming, and promote emerging research that advances the science and practice of sports medicine. AOSSM is also a founding partner of the [STOP Sports Injuries](#) campaign to prevent overuse and traumatic injuries in kids.

References

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