

UW-Madison School of Medicine and Public Health: Study shows sports specialization may lead to more lower extremity injuries

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Madison — High school athletes who specialized in a single sport experienced more lower-extremity injuries than athletes who participated in a variety of sports throughout the year, according to a new study presented yesterday at the annual meeting of the American Orthopaedic Society for Sports Medicine.

The study, conducted by researchers at the University of Wisconsin School of Medicine and Public Health (SMPH), was the first to prospectively document the association between sports specialization and lower-extremity injuries in a large, diverse group of high school athletes. Lower-extremity injuries affect the ankle, knee and upper leg and include ligament sprains, muscle/tendon strains and tendonitis/tenosynovitis. The study was recently published online ahead of print in the *American Journal of Sports Medicine*.

The study demonstrated that athletes who classified themselves as moderately specialized had a 50 percent higher incidence of lower-extremity injuries, and athletes who had a high specialization classification had an 85 percent higher incidence of lower-extremity injuries.

“Sports specialization appears to be an independent risk factor for injury, as opposed to simply being a function of increased sport exposure,” said Tim McGuine,

lead investigator on the study. “Athletic associations, school administrators, coaches and sports-medicine providers need to better educate parents and their athletes on the increased chances of injury risk and provide more opportunities for diversified athletic play.”

McGuine and his colleagues enrolled 1,544 individuals (50 percent female with an average age of 16) into the study during the 2015-2016 school year. Participants completed a questionnaire which identified their sports participation, history of injury and level of specialization (low, moderate, high). They were asked to report all interscholastic and club sports participation during the previous 12 months and any activity that they planned to participate in during the upcoming school year. The questionnaires were also reviewed by an athletic trainer before being placed into the study.

Over the duration of the study, the participants competed in 167,349 athletic exposures. An exposure is defined as any coach-directed competition, practice, or conditioning session. A total of 490 participants (31.7%) reported sustaining a previous loss of practice/playing time due to a lower-extremity injury while 759 (49.2%) participated in their primary sport in a league outside of their high school. During the study, 235 individuals (15 percent) sustained 276 lower- extremity injuries causing them to miss an average of seven days of participation. Injuries occurred most often in the ankle (34 percent), knee (25 percent) and upper leg (13percent) and included ligament sprains (41 percent), muscle/tendon strains (25 percent) and tendonitis/tenosynovitis (20 percent).

Soccer was the sport with the highest percentage of athletes being highly specialized, with 265 subjects reporting that they had competed in more than 60 competitions within the last year in their primary sport. Players whose primary sports were basketball, football and soccer sustained more lower-extremity injuries than their peers who were in baseball, tennis, track, volleyball or wrestling.

The study, which was funded by a grant from the National Federation of State High School Associations, also won the STOP Award, which recognizes the best paper presented on youth sports injuries and/or prevention during the annual AOSSM meeting. Other researchers involved in the study include Dave Bell, assistant professor in the departments of kinesiology and orthopedics and rehabilitation at the University of Wisconsin; and Eric Post, a Ph.D. candidate in the UW Department of Kinesiology.