Competitive soccer linked to increased injuries and menstrual dysfunction in girls

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In the U.S., there are nearly three million youth soccer players, and half of them are female. New research presented today at the 2012 Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS) found that despite reporting appropriate body perception and attitudes toward eating, elite youth soccer athletes (club level or higher) face an increased risk for delayed or irregular menstruation. In addition, female soccer players are more likely to suffer a stress fracture or ligament injury. A separate study found that a consistent 15-minute warm-up substantially decreases knee injury risk.

The Female Triad (Menstrual Dysfunction, Eating Attitudes, Stress Fractures) in Soccer Athletes

The "female athlete triad" – menstrual dysfunction, eating attitudes and stress fractures – puts female athletes at risk for diminished performance and long-term health problems.

To determine the prevalence of the female triad among soccer players, investigators recruited 220 athletes, median age 16.4, from an elite youth soccer club, an NCAA Division I university team, and a women's professional team. The participating athletes completed questionnaires regarding age of menarche (first menstruation), menstrual history, and history of musculoskeletal injuries including stress fractures. The Eating Attitudes Test was used to assess each athlete's body image, and attitudes toward eating.

The average age of menarche was 13 years of age among the participants. Irregular menstruation cycles, or absence of menstruation, were reported by 19 percent of the participants in the 15-17 age group, 18 percent of the college-age players, and 20 percent of the professional athletes. A history of stress fractures was reported in 14 percent of the players, with a majority of the injuries in the ankle and foot.

Only one player scored in the "high risk" range, and 16 in the "potentially high risk range," in terms of body perception and eating attitudes.

"Elite female soccer athletes are at risk for delayed onset of menarche, menstrual dysfunction and stress fractures, which may be due to an imbalance of energy intake and output," said Robert H. Brophy, MD, co-investigator and assistant professor of orthopaedic surgery at Washington University School of Medicine in St. Louis, Mo. "The risk for soccer athletes appears to be lower than for female athletes in aesthetic (gymnastics, dancing, etc.) and endurance sports. More research is needed to identify the underlying causes, and potential remedies, for these findings in elite female soccer athletes, and whether these findings translate to female athletes participating in other team sports."

A Randomized Trial of Anterior Cruciate Ligament Injury Prevention in Adolescent Female Soccer

In another study, investigators studied the effects of a regular, progressive warm-up exercise program on knee injuries and health.

The study involved more than 4,500 female soccer players in Sweden, age 12-17, from 309 elite clubs. The players were randomly assigned to one of two groups: an intervention group instructed to complete a

15-minute muscular warm-up consisting of six progressively more difficult knee and core stability exercises, twice a week throughout the 2009 season, and a non warm-up "control" group. Team coaches documented player participating during the season, and acute knee injuries were examined by the physical therapist and/or physician assigned to each club.

There was a 64 percent decrease in anterior cruciate ligament (ACL) injuries in the intervention group, and an 83 percent reduction among "compliant," fully participating players. In addition, there was a "significant" decrease in the rates of all severe knee injuries.

"We showed a statistically significant reduction – by almost two-thirds – in ACL injuries in (participating) female teenage soccer players in a coach-directed neuromuscular warm-up program," said Markus Waldén, MD, PhD, lead investigator, and an orthopaedic surgeon at Hässeleholm-Kristianstad Hospitals in Hässeleholm, Sweden. "Interestingly, players (who complied) had a reduction in other acute knee injuries as well.

"The program is intended to replace the ordinary warm-up and thus does not steal time from soccer training," said Dr. Waldén.

Provided by American Academy of Orthopaedic Surgeons