

Warm-up Prevents ACL Tears in Girl Athletes

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Take Posttest

Action Points

- Note that this study was published as an abstract and presented at a conference. These data and conclusions should be considered to be preliminary until published in a peer-reviewed journal.
- Note that adolescent girls playing soccer had drastically fewer ACL tears when they had at least one 15-minute warmup session each week.
- Point out that ACL injuries were rare in the trial, affecting 0.5% of participants overall, but that two-thirds occurred in the control group.

SAN FRANCISCO -- Adolescent girls playing soccer in Sweden had drastically fewer anterior cruciate ligament (ACL) tears when they had at least one 15-minute warmup session each week, a researcher said here.



In a randomized trial involving some 4,500 members of girls soccer teams, the group assigned to perform the neuromuscular exercise sessions had 64% fewer ACL tears than the control participants (HR 0.36, 95% CI 0.15 to 0.85), reported Markus Walden, MD, PhD, of Linköping University in Kristianstad, Sweden.

Speaking at the American Academy of Orthopaedic Surgeons annual meeting, Walden added that, when the analysis was restricted to the players who had at least one warmup session each week, the reduction in ACL tears reached 83% (HR 0.17, 95% CI 0.05 to 0.57).

Walden said he and his colleagues believe the study was "the largest sports injury prevention trial in the world." The results essentially confirmed those of several previous, smaller studies, including some randomized trials.

For example, a study reported last November found that Chicago-area high school girls playing a variety of sports had **67% fewer injuries** to their knees and ankles when they engaged in a warmup routine.

Such injuries have been a growing concern as the number of girls playing high-intensity sports such as soccer and basketball has increased. One study published in 2007 found that the injury rate related to soccer among girls per 1,000 population had **risen nearly 50%** since 1990.

In the new study, Walden and colleagues randomly assigned 154 soccer clubs for girls ages 12 to 17 to undertake a specific warmup regimen twice a week, and another 155 to their usual routine.

Clubs that already had a warmup program intended to reduce knee injuries were excluded. Reporting was incomplete from 79 teams, which were also left out of the analysis. Walden reported results for the remaining 230 teams, comprising more than 4,500 players, over the 2009 soccer season.

Walden explained that the program included six exercises intended to boost neuromuscular knee control and core stability, replacing the standard stretching routines typically used for warmup. The exercises featured four progressive difficulty levels. No extra equipment was required.

ACL injuries were rare in the trial, affecting 0.5% of participants overall. But two-thirds of these were in the control group (14 versus 7).

The researchers found that the goal of twice-weekly performance of the routine was hard for many clubs to meet. Only 17% of players had compliance of 93% or better with the twice-weekly schedule. Walden said that travel and other conflicts frequently left no time for the regimen.

Players assigned to the intervention who could not perform the routine at least once weekly showed little difference in ACL injury rates from the control group, he said.

By the same token, however, the program's benefits were concentrated in the 56% of players in the intervention group who could do the warmup at least once weekly.

Because the study was limited to teen girls playing soccer, Walden said, its applicability to males, other age groups, and other sports was uncertain. He noted that relatively few previous analyses had looked at boys specifically.

"Hopefully the effect is seen in males" as well as teen females, he said.

Session co-moderator Ronald Wyatt, MD, of Kaiser Permanente in Walnut Creek, Calif., called the trial "excellent" and said it provided more confirmation of results seen in U.S. studies.

The study had no commercial funding.

Study authors and Wyatt reported they had no relevant financial interests.

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Source reference:

Walden M, et al "A randomized trial of anterior cruciate ligament injury prevention in adolescent female soccer," AAOS Annual Meeting 2012; abstract 95.