Stretching for Prevention of Exercise-Related Injury

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Clinical Question

Does stretching reduce the risk of injury during exercise?

Evidence-Based Answer

Stretching before exercise does not reduce the risk of injury. (Strength of Recommendation [SOR]: B, based on meta-analyses of lower-quality randomized controlled trials [RCTs].) However, it may slightly reduce postexercise muscle soreness. (SOR: B, based on an RCT.)

A 2011 systematic review studied the effect of various interventions—including stretching—over five days to one year on the prevention of lower-limb soft tissue overuse injuries.[1] In six trials (N = 5,130), stretching did not decrease lower-limb soft tissue injuries (relative risk [RR] = 0.85; 95% confidence interval [CI], 0.65 to 1.1).

A 2008 systematic review of four RCTs (N = 3,953) and three controlled clinical trials (CCTs; N > 493) evaluated the effect of a static stretching regimen vs. usual routine on overall injury rates and sprains/strains over 12 weeks to two years.[2] In the four RCTs and two of the CCTs (N > 195), static stretching did not reduce the incidence of overall injury rates. In the third CCT (n = 298), the addition of three static hamstring stretches to the usual stretching routine reduced the incidence of lower-extremity overuse injuries compared with the usual stretching routine alone. All three studies that examined injury type (one RCT and two CCTs; N > 1,969) found significant reductions in sprains and strains with static stretches compared with usual activities.

A 2010 systematic review of seven RCTs (N = 1,919) examined the effect of various interventions in preventing hamstring injuries.[3] One RCT (n = 421) demonstrated that a warm-up protocol that included stretching vs. no intervention did not decrease the incidence of lower-extremity injuries over 16 weeks (RR = 1.2; 95% CI, 0.69 to 2.1).

A 2011 systematic review of 12 RCTs (N = 2,595) examined the effect of pre- and postexercise stretching regimens vs. nonstretching exercise over three days to 12 weeks in preventing delayed-onset muscle soreness following exercise.[4] The studies included 11 laboratory-based small studies (N = 200) and one large field-based study (n = 2,377). The field-based study found that the pre- and postexercise stretching regimens reduced the intensity of the worst weekly average muscle soreness (measured over 12 weeks) by 4 points on a 100-point scale (mean difference = –3.8; 95% CI, –5.2 to –2.4); however, this difference is unlikely to be clinically significant. The risk of bothersome soreness experienced in any week was 25% in the intervention group and 32% in the control group, with an odds ratio of 0.69 (95% CI, 0.59 to 0.82).

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