Infographic running myth: static stretching reduces injury risk in runners

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It is a commonly held belief that static stretching plays an important role in improving running performance and decreasing injury risk.[1] As such static stretching, undertaken as part of a 'warm-up' prior to running, at the end of a run or as part of a strength training programme, is a common practice among runners of all levels. Static stretching involves lengthening a muscle to the point at which a gentle tension is felt and remaining in this position, typically for a minimum of 30 seconds per stretch.[2]

Current research evidence definitively reports that this belief is, in fact, incorrect (figure 1).[3 4]

Running places significantly high loads through the joints and soft tissues of the body. As a result, runners are at a high risk of developing running-related overuse injuries such as patellofemoral joint pain, medial tibial stress syndrome, iliotibial band syndrome and Achilles tendinopathy.[5] Overuse injuries most commonly occur when running loads (ie, frequency, intensity and/or duration) are progressed too rapidly and exceed the capacity of the tissue to adapt (ie, strengthen) to loading. This results in tissue overload and then injury. Other factors including muscle strength deficits, general health issues and injury history can also predispose a runner to injury.[6]

Research shows that stretching either in the short or long term has no impact on reducing the risk of overuse injuries experienced by endurance runners.[3 4] Comparatively, an active warm-up, as described below, has been shown to improve running performance,[7] although the benefit of an active warm-up for reducing injury risk in runners is still unclear.[4]

Static stretching is often recommended to enhance recovery and reduce the impact of delayed onset muscle soreness (DOMS). Endurance runners commonly experience DOMS after particularly fast or strenuous running (ie, running downhill). DOMS results in muscle pain, stiffness and fatigue, commonly in the thigh muscles, and can inhibit a runner's performance for several days.[3] Unfortunately, stretching has not been shown to reduce the intensity or the duration of DOMS following exhaustive exercise.[3]

It is important to point out that regular static stretching after running will not have any detrimental effect on running performance.[7]

Static stretching will improve joint flexibility[8] but these improvements have not been associated with benefits to recovery, performance or running economy in the long term.[3] Runners should therefore consider other strategies that will assist them to prepare, perform and recover well from running, including the addition of a running specific strength-training programme into their training.[9]

A progressive warm-up prior to undertaking harder running efforts, training sessions or a race is recommended to optimise running performance.[7] Performance gains are achieved via increased body

Figure 1 Infographic

temperature, metabolic changes, neural and psychological-related effects.[7]

As an alternative to passive stretching prior to running, a typical active warm-up for a long-distance runner could commence with 5–10 min of walking or easy jogging. If preparing for a fast running effort, training session or race, then incorporate 6–8 dynamic movement drills with particular focus on the lower limbs (ie, walking lunges, leg swings and A skips). Conclude the warm-up by completing three short efforts at goal running pace (ie, 3×100 m).[7]

Runners wishing to incorporate static stretching into their post running routine should do so, with the understanding that neither performance nor injury-prevention benefit will result.[3 4]

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