

# Strengthening Tendons to Meet the Demands of Endurance Running

Endurance running is a physically demanding activity that places significant stress on the body, particularly on the tendons that connect muscles to bones. Tendons play a crucial role in transmitting forces generated by muscle contractions to produce movement, making them essential for runners seeking to improve performance and prevent injuries. Here, I'll explore the unique demands placed on tendons during endurance running and discuss strategies to strengthen and protect them.

## Understanding Tendon Demands in Endurance Running

Endurance running involves repetitive, high-impact movements that subject tendons to repetitive loading and strain. With each foot strike, tendons must absorb and transmit forces generated by the body's weight and momentum, often magnified by factors such as running speed, distance, and terrain. Over time, this repetitive stress can lead to tendon degeneration, inflammation, and injury, commonly referred to as tendinopathy.

The Achilles tendon, patellar tendon, and iliotibial (IT) band are among the most commonly affected tendons in endurance runners. These tendons are particularly susceptible to overuse injuries due to their role in stabilising the ankle, knee, and hip joints during running. Achilles tendinopathy, patellar tendinopathy (also known as jumper's knee), and IT band syndrome are prevalent conditions that can sideline runners and hinder performance if left untreated.

## Strategies to Strengthen Tendons

**Gradual Progression** One of the most effective ways to strengthen tendons and reduce the risk of injury is through gradual progression. Gradually increasing training frequency, volume, and intensity (in that order too) allows tendons to adapt and become more resilient to the demands of running. Avoid sudden spikes in mileage or intensity, as this can overload tendons and increase the risk of injury.

**Strength Training** Incorporating specific strength training exercises that target the muscles surrounding the tendons can help improve tendon strength and resilience. Exercises such as calf raises, eccentric heel drops, squats, lunges, and hip strengthening exercises can help build muscular support around the Achilles, patellar, and IT band tendons, reducing the strain placed on them during running.

**Flexibility and Mobility** Maintaining adequate flexibility and mobility is essential for tendon health and function. Tight muscles and restricted range of motion can increase stress on tendons and contribute to overuse injuries. Incorporate regular stretching, foam rolling, and mobility exercises to improve tissue elasticity and joint mobility, reducing the risk of tendon strain and injury.

**Good Footwear and Running Technique** Wearing appropriate footwear that provides adequate support and cushioning can help reduce the impact forces transmitted to tendons during running. Additionally, focusing on running technique, such as maintaining good posture, landing softly, and avoiding overstriding, can help minimise stress on tendons and promote more efficient running mechanics.

**Rest and Recovery** Adequate rest and recovery are essential for tendon health and repair. Allow sufficient time for rest between training sessions to give tendons time to recover and adapt to the demands of running. Incorporate rest days, active recovery activities, and cross-training modalities such as swimming or cycling to reduce repetitive stress on tendons while maintaining overall fitness.

### **In Summary**

Endurance running places significant demands on tendons, making them susceptible to overuse injuries such as tendinopathy. By understanding the unique demands placed on them during running and implementing strategies to strengthen and protect them, runners can reduce the risk of injury and improve performance. Incorporating gradual progression, strength training, flexibility and mobility exercises, good footwear and running technique, and adequate rest and recovery into training regimens can help runners build resilient tendons and enjoy the benefits of endurance running for years to come.