

## **Achilles Tendon and Paratendon Microcirculation in Midportion and Insertional Tendinopathy in Athletes.**

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**BACKGROUND:** Neovascularisation can be detected qualitatively by Power Doppler in Achilles tendinopathy. Quantitative data regarding tendon microcirculation have not been established and may be substantial. **PURPOSE:** To assess the microcirculation of the Achilles tendon and the paratendon in healthy volunteers as well as in athletes with either midportion or insertional tendinopathy. **STUDY DESIGN:** Cohort study; Level of evidence, 2. **METHODS:** In 66 physically active volunteers, parameters of Achilles tendon and paratendon microcirculation, such as tissue oxygen saturation, relative postcapillary venous filling pressures, and microcirculatory blood flow, were determined at rest at 2-mm and 8-mm tissue depths. Forty-one patients never had Achilles pain (25 men, 27 +/- 8 years), 14 patients had insertional pain (7 men, 29 +/- 8 years), and 11 patients had midportion tendinopathy (7 men, 38 +/- 13 years, not significant). **RESULTS:** Achilles tendon diameter 2 cm and 6 cm proximal to the insertion was increased in symptomatic tendons. Compared with the uninvolved opposite tendon, deep microcirculatory blood flow was significantly elevated at insertional (160 +/- 79 vs 132 +/- 42,  $P < .05$ ) as well as in midportion tendinopathy (150 +/- 74 vs 119 +/- 34,  $P < .05$ ). The microcirculation in the uninvolved opposite tendon and the normal athlete controls were not significantly different from each other (132 +/- 42 insertional asymptomatic vs 119 +/- 34 mid-portion vs 120 +/- 48 healthy tendon). Insertional paratendon deep microcirculatory flow was elevated in all groups, whereas tissue oxygen saturation and relative postcapillary venous filling pressures were not significantly different. **CONCLUSION:** Microcirculatory blood flow is significantly elevated at the point of pain in insertional and midportion tendinopathy. Postcapillary venous filling pressures are increased at both the midportion Achilles tendon and the midportion paratendon, whereas tissue oxygen saturation is not different among the studied groups. We found no evidence of an abnormal microcirculation of the asymptomatic limb in Achilles tendinopathy.

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