

# Comparative Ultrasonographic Evaluation of the Achilles Tendon and Paratenon in Symptomatic and Asymptomatic Subjects: an Imaging Study

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**BACKGROUND** Ultrasonography evaluations are frequently requested in the analyses of many Achilles tendon syndromes, including tendinopathy. Nevertheless, correlation between clinical and ultrasonography findings is often only moderate. Various authors have described inflammatory features of the paratenon that generate an increase in paratenon thickness. In this study, paratenon and tendon thickness in symptomatic and asymptomatic subjects was evaluated by ultrasonography and compared.

**METHODS** Twenty-two symptomatic subjects, with pain in the mid-portion of the Achilles tendon and 22 asymptomatic subjects, were recruited. Thickness of the Achilles tendon, Achilles paratenon and the space between them was measured by ultrasonography and a Victorian Institute of Sport Assessment-Achilles questionnaire (VISA-A) was completed.

**RESULTS** Average value of VISA-A scale in symptomatic subjects: 75.06 (SD 13.4) and in asymptomatic: 100.00 ( $p < 0.001$ ). Mean value of paratenon in asymptomatic subjects: 0.95 mm (SD 0.16) and in symptomatic subjects: 1.27 mm (SD 0.29) representing a statistical significant difference ( $p = 0.0005$ ). Mean value of tendon thickness in asymptomatic subjects: 4.51 mm (SD 0.82) and symptomatic subjects: 6.88 mm (SD 1.18), representing a significant difference in tendon thickness ( $p < 0.0001$ ). Thickness of the space between tendon and paratenon: asymptomatic 0.37 mm (SD 0.10) and symptomatic 0.62 mm (SD 0.16), representing a statistical significant difference ( $p = 0.0001$ ).

**CONCLUSIONS** Achilles symptoms could also be associated with an increase in the paratenon thickness. Thus, in cases of achillodynia, the paratenon thickness should be evaluated using ultrasound; when thickened it may explain some of the painful symptoms associated with the tendinopathy process.

*This clinical trial was performed in accordance with ethical standards on human experimentation and with the Helsinki Declaration of 1975.*