

# **Evaluation of shear stress of the human temporomandibular joint disc.**

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摘要

## **Abstract**

The aim of this study was to determine the shear stress of the human postmortem temporomandibular joint (TMJ) disc. Correlation of shear stress with age or with the region of the disc was determined. Nine discs were removed unilaterally from postmortem humans, ages 36 to 76 years. Discs were sectioned into lateral (eight), central (eight), and medial (eight) specimens. Each specimen was attached by cyanoacrylate adhesive to a servohydraulic test system apparatus within 48 hours of retrieval. Shear properties were measured under quasistatic conditions with a linear increase of displacement until the specimen failed to maintain maximum resistance to the applied force. The shear moduli were analyzed by means of the Wilcoxon's signed ranks test. The results showed that values of shear moduli on peripheral portions (lateral and medial) were significantly higher than on central portions ( $P = 0.0013$ ). The correlation between the shear moduli of TMJ discs and age showed a regression slope for shear moduli of  $-0.326 + 0.031 \times \text{age}$  ( $r = 0.769$ ;  $P < 0.01$ ). Peripheral portions (lateral and medial) have a higher shear moduli and are stiffer than the central portions of discs and shear moduli or stiffness of TMJ discs increase with age.