

Biomechanical Sensing with Fiber Optics to Assess Bone Density and Fracture Risk

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Abstract: *Bone density assessment and fracture risk prediction are crucial components of osteoporosis diagnosis and management. This paper explores the application of fiber optic sensors in the field of biomechanics to evaluate bone density and predict fracture risk. The integration of fiber optics provides a non-invasive, real-time, and highly accurate method for monitoring the mechanical properties of bone tissue. This paper discusses the principles of fiber optic sensing, its advantages, and potential applications in assessing bone health. We also delve into the challenges, recent developments, and future prospects in this emerging field of biomedical research.*

Keywords: Biomechanical sensing, Fiber optic sensors, Bone density.

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