

# Finite Element Analysis of Femur Fracture Fixation Plates

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## ABSTRACT

Biomechanics is the application of mechanical principles on the living organisms and utilizing the principles of physics, simulation and study of biomechanical structures are carried out. Finite Element Method is one of the widely accepted tools for modelling the biomechanical structures. The femur bone is the most proximal bone of the leg in vertebrates capable of walking and jumping. This paper presents the analysis of Femur bone fracture fixation plates using Finite element method. The Femur bone is modelled using Mimics software and analysis is carried out in an ANSYS environment. The fracture fixation plate is modelled using the commercially available Solidworks CAD software. The stress distribution at the fractured site of the femur is obtained when the system is subjected to torsional as well as compressive loadings along with various healing stages. The effects of the use of different biomaterials for the plates and screws on the stress distribution characteristics are also investigated.

**Keywords:** Femur, Fracture, Biomaterials, ANSYS.