

Abstract Submitted  
for the OSF15 Meeting of  
The American Physical Society

**Biomechanical Fracture Analysis on the Human Bone** JINYOUNG LIM, JAE HOON CHOI, HABAN WEON, Choice Research Group — Bone fractures occur from low-energy or high-energy injuries. At the time of the fracture, soft tissue injuries may also occur. Individuals who have an increased risk of developing stress fractures are those who participate in training that is of high-intensity and repetition. Through understanding bone mechanics, the causes of bone injuries can be understood. The purpose of this research is to evaluate stress and fracture conditions in the tibia by using biomechanical analysis. Two procedures are included in this research: the examination of biomechanical properties of bones, and the development of biomechanical and mathematical modeling of bones. By utilizing both of the procedures together with the technique of bone remodeling, the impact conditions that cause bone fractures and the physiological solutions (maximum stress) of the bones can be found. The results can be compared to the empirical results, and the data could help improve the surgical treatment of knee arthroplasty. It is suggested in the simulation for the tibia that a higher level of stress is distributed and exhibited to those proximal tibial sites; compared to the middle portion of the shank, or to the distal tibia-fibula junction.

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Date submitted: 02 Oct 2015

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