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## Fracture prediction on patient-specific tibia model with Osteogenesis Imperfecta under various loading direction (Conference Paper) (Open Access)

Mok, C.J.<sup>a</sup>, Basaruddin, K.S.<sup>a</sup>, Som, M.H.M.<sup>a</sup>, Majid, M.S.A.<sup>a</sup>, Sulaiman, A.R.<sup>b</sup>, Shukrimi, A.<sup>c</sup>

<sup>a</sup>School of Mechatronic Engineering, Universiti Malaysia Perlis (UniMAP), Pauh Putra Campus, Perlis, Arau, 02600, Malaysia

<sup>b</sup>Department of Orthopaedics, School of Medical Science, Universiti Sains Malaysia, Kubang Kerian, Kelantan, 16150, Malaysia

<sup>c</sup>Department of Orthopaedics, Kulliyah of Medicine, International Islamic University Malaysia, Pahang, Kuantan, 25710, Malaysia

### Abstract

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This study aims to predict the fracture of bone with osteogenesis imperfecta (OI) by considering the homogenization properties of real patient. A Type-III of osteotomy in OI femur was used as bone specimen. Nine representative volume element (RVE) models were developed based on  $\mu$ CT-images of bone specimen. Homogenized properties particularly the Young's moduli of the RVEs was obtained based on homogenization theory in Voxelcon software. The obtained homogenized properties were then assigned to the OI patient-specific model that was developed from CT-images of real patient. The fracture of OI bone was predicted based on linear static analysis and finite element method under loadings of activity daily living (ADL). The results found that the fracture might be happen to the patient under jumping load case, whereas the subject is expected to be safe under standing still and walking load case. © Published under licence by IOP Publishing Ltd.

### SciVal Topic Prominence ⓘ

Topic: Osteogenesis Imperfecta | Bone and Bones | Mutation

Prominence percentile: 93.783 ⓘ

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