



دانشگاه صنعتی امیرکبیر
پارس جاده تهران ۱



The Effect of Center of Rotation on Femoroacetabular Impingement

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The Femoroacetabular Impingement (FAI) causes pain and reduction of range of motion. FAI also causes ab-normal contact stress and potential joint damage around hip. We investigated the kinematics of a hip joint when a FAI occurs. In this study we put forward the following hypotheses: Does changing the kinematics of motion affect the contact surface/forces? Does changing the kinematics of motion eliminate the need of cutting the bump? The study uses a finite element (FE) model of the hip joint to analyse the biomechanics of the hip at the im-pingement zone. The model was initially analysed using the original kinematics of the joint. The kinematics was then changed with a stepwise changing the centre of rotation to evaluate its effect on the FAI contact zone. The study demonstrated that the joint motions such as flexion, adduction and internal rotation changed with variation of the gap between the femur and the acetabulum.