

Predicting Knee Osteoarthritis severity based on relationship between knee alignment and radiographic markers via Discriminant Analysis: A cross-sectional study from a Malaysian population

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Abstract

In this cross-sectional study, the introduction outlines the exploration of the relationship between knee alignment and radiographic markers to predict Knee Osteoarthritis (OA) severity in a Malaysian population. The primary objective is to employ Discriminant Analysis, utilizing physiological parameters, to develop an accurate predictive model for OA severity classification. The methodology involves Principal Component Analysis (PCA) to highlight significant variables and subsequent Discriminant Analysis for classification. Findings reveal a robust model achieving 94.81% accuracy in classifying KL grades, validated through training, cross-validation, and testing datasets. The verification dataset, consisting of 200 patients, awaits comprehensive analysis. In conclusion, this study presents a promising approach to predict OA severity, offering potential implications for personalized treatment strategies in the Malaysian population.

Keywords: Knee Osteoarthritis; Discriminant Analysis; Radiographic Markers; Knee Alignment; Principal Component Analysis (PCA); KL Grade; Predictive Model