Comparison of Machine Learning Models for Injury Prediction in Athletes

Publisher: IEEE Cite This PDF

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Abstract:
Running is a favoured exercise for millions, but it carries a risk of musculoskeletal injuries, particularly to the lower extremities. Identifying and predicting potential injuries is crucial for prevention. This study explores the use of machine learning techniques to predict injuries among runners, leveraging data on demographics, running habits, health conditions, and previous injuries. Using models like Random Forest, K-Nearest Neighbours, Decision Trees, and Logistic Regression, the study examines the relevance of various attributes and assesses the predictive power of these models. Remarkably, our model achieved an impressive accuracy of over 99%, setting a new benchmark for predictive precision in injury prevention. Visualizations provide insight into attribute interactions and their influence on injury risk, facilitating the development of targeted prevention strategies.

Published in: 2025 International Conference on Visual Analytics and Data Visualization (ICVADV)

Date of Conference: 04-06 March 2025

DOI: 10.1109/ICVADV63329.2025.10961380

Date Added to IEEE *Xplore*: 22 April 2025

Publisher: IEEE

ISBN Information:

Conference Location: Tirunelveli, India

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