13 ATHLETIC RUNNER INJURY PREDICTION SYSTEM

ABSTRACT

Competitive running, with its rigorous training regimens and intense competition, exposes athletes to a heightened risk of injuries that can profoundly impact performance and long-term careers. This system aims to improve the well-being of competitive runners by reducing the risk of injuries, which is in line with Sustainable Development Goals, ensuring healthy lives and promoting well-being for all.

UNIQUENESS

• Risk Prediction

• Biomechanics with Deep Learning

METHODOLOGY

A dataset of 42,799 data points, with 575 injury cases and 42,224 non-injury instances, was preprocessed and visualized to understand its structure and characteristics. SVM, Bagging, XGBoost, Decision Tree, MLP, RNN, and LSTM were employed for injury prediction due to their effectiveness in handling complex patterns and suitability for athletic runner injury prediction.

SOCIETAL USE

The Athletic Runner Injury Prediction System to SDG-3 Good Health and Well-being by reducing the occurrence of injuries among athletics through early detection and preventive measures. By providing insights into injury risk factors, it enables coaches, trainers and medical professionals to tailor training regimens, implement injury prevention strategies.
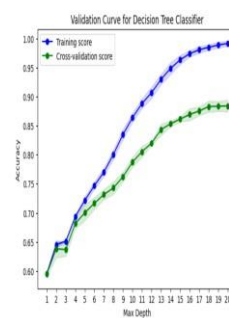
Athletic Runner Injury Prediction

Results & Analysis
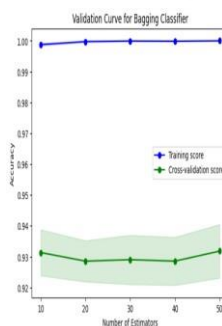
a) Bagging   b) Decision Tree

REFERENCES

[1] Bullock, Garrett S, Just how confident can we be in predicting sports injuries? A systematic review of the methodological conduct and performance of existing musculoskeletal injury prediction models in sport, Sports medicine 52.10 (2022)

[2] Lovdal, Injury prediction in competitive runners with machine learning, International journal of sports physiology and performance 16.10 (2021)

GITHUB LINK

https://github.com/20wh1a1284/Athletic-Runner-Injury-Prediction-System

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