Mavie-lab sports: a mhealth for injury prevention and risk management in sport

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Abstract

Computational advances in smart-phone technology and the developing of expert systems have been an opportunity to devise the **MAVIE-Lab** an innovative Mobile Health Application (mHealth)[1] to primary prevention of *Home, Leisure and Sport Injuries* (HLIs). Here, we present **MAVIE-Lab Sports**, the first module of the application to prevention of sports injuries[2].

MAVIE-Lab has been developed in the framework of the MAVIE project framework. A large web-based cohort launched with objective of prospectively collect data related to HLIs. A total of 26,000 volunteers are already enrolled in this cohort and the ultimate goal is to recruit 100,000 participants in France. The initial intention is implementing MAVIE-Lab for MAVIE volunteers only.

1

MAVIE-Lab Sports contains a decision support system (DSS) to self-management the potential risk of having an injury and to evaluate the adoption of preventive measures. The App allows participants, initially to compare the population risk between different sports. Then, to evaluate their personal injury risk for a range of sports. Finally, to experiment the potential reduction or increase of risk due to behavioral changes or the adoption of protective devices, equipment or environments in the practice sportive.

The MAVIE-Lab algorithms were developed using detailed MAVIE cohort data, health, demographic, training practices information and the occurrence of injuries, there causes, consequences and severity. The model was constructed to predict the injury risk using probabilistic reasoning and graphical modelling through Bayesian Networks[3–5]. This approach combines qualitative and quantitative modelling, allowing the combination of MAVIE data evidences and prior experts information[6,7] about risk and protection factors and causal relations between them[8].

Keywords: eHealth, Injuries, Bayesian, Prediction, Machine Learning.

Sub-theme: 2. Unintentional Injury. 2.9 Sport and recreation.

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