



FULGUR

The FULGUR project has been selected by the Priority Research Programme "Very High Performance Sport". It benefits from a government grant managed by the National Research Agency under the Investments for the Future program bearing the reference ANR-19-STHP-0003.

CONTEXT

The FULGUR project (team : 30 researchers, grant: €1.9 million) benefits from a government grant managed by the French National Research Agency under the Investments for the Future program (reference ANR-19-STHP-0003). This project, led by the Sport, Expertise and Performance Laboratory (EA 7370) of the French Institute of Sport (INSEP), is part of the perspective of the Paris 2024 Olympic and Paralympic Games in collaboration with the French Federations of Athletics, URL of the page: <https://labos-recherche.insep.fr/en/laboratoire-sep/fulgur>

Rugby and Ice Sports, the Universities of Nantes, Côte d'Azur, Savoie Mont Blanc, Jean Monnet Saint-Etienne, Saclay, the Ecole des Mines de Saint-Etienne, the Commissariat à l'Energie Atomique (CEA), the Centre National de Recherche Scientifique (CNRS), Natural Grass and Super Sonic Imagine.

PRESENTATION

At the Olympic Games, maximal speed running is the most frequently performed action by athletes, with the 100m being considered the flagship event. However, achieving such sprinting speeds requires not only highly developed physical abilities but also a robust musculoskeletal system to avoid excessive injury risk. Indeed, lower limb muscle injuries, which are heavily solicited during sprinting, are the leading cause of training or competition interruptions on the international stage. France stands out historically for its excellence in speed sports and is recognized for its research in sports science applied to understanding sprint performance. Within this context, the FULGUR project pursues three main objectives:

- To describe sprint mechanics at the center of mass and joint segment levels, in order to quantify sprint-specific training loads at these scales, under real-world training or even competition conditions (Work Package 1)
- To determine the musculoskeletal profile of each elite athlete with the aim of offering 'tailor-made' training programs to optimize sprint propulsion efficiency (Work Package 2)
- To estimate the injury risk level and suggest individualized prevention strategies based on a multifactorial approach that includes environmental factors (nutrition, sleep) and athlete behavior (Work Package 3)

These objectives will be supported by cross-cutting work packages aimed at improving the analysis of musculoskeletal imaging and sports movement using ultrasound techniques and machine learning.

- Ministry of French Higher Education and Research [website](#)
- [Link](#) to the presentation video of FULGUR project
- [Link](#) to the presentation video, research program on sprint for #Paris2024 (french)

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