SUMMARY

The digital revolution in sports and exercise is already underway, at the confluence of the fast-growing markets of sport and digital technology and connected objects. It leads to the emergence of new professions at the interface of these domains requiring skills in sports science, digital, electronics, and human and social sciences.

The objective of DIGISPORT is to create a unique graduate school of international excellence in interdisciplinary training and research in digital sport sciences. This project aims to offer students in initial and continuing training an opportunity to build a study strategy suited to their professional goals and to the labor market.

DIGISPORT will offer in 2022 an integrated 5-year program (Master, Doctorate): modular, interdisciplinary and international, it will allow the student to build a personalized academic background.

As of now, mutualized courses with our partners have been opened for students to enter.

DIGISPORT offers a comprehensive, hybrid graduate school encompassing the specialties in both sport and digital sciences. It provides excellence in research and teaching by serving both traditional students and industry professionals, as well as offering formal collaborations with research outfits. DIGISPORT helps advance the use and efficacy of digital technologies in sports and exercise, impacting all stakeholders from the users, educators, clinical practitioners, managers, and actors in the socioeconomic world.

The programs offer non-conventional teaching with online delivery, flipped classrooms, research teaching, pedagogy-by-doing and co-working, and rely heavily on
interdisciplinary projects carried out in collaboration with scientific and economic actors to also encourage hybridization of student populations.

**DIGISPORT** aims at strengthening partnerships between academic institutions, industry and society to boost employability and lifelong learning. Moreover, our MSc and PhD programs will propose dedicated courses on entrepreneurship and innovation as well as internships and company-sponsored projects.

The Rennes ecosystem is particularly well suited to host **DIGISPORT** both in research and training. It incorporates world-class research units in the field of sport, computer, data as well as electronics and human and social sciences.

Furthermore, **DIGISPORT** students have unique access to dedicated cutting-edge technological platforms (Immermove, Immersia...) during their academic training.

International students can apply for academic mobility at the Graduate School during their MSc and PhD. Selected **DIGISPORT** students will have access to fellowships to support their international mobility.

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**THE DIGITAL REVOLUTION IN SPORTS AND EXERCISE IS ALREADY UNDERWAY, AT THE CONFLUENCE OF THE FAST-GROWING MARKETS OF SPORT (€80 BILLION WORLDWIDE), DIGITAL TECHNOLOGY AND CONNECTED OBJECTS (€207 BILLION WORLDWIDE). IT LEADS TO THE EMERGENCE OF NEW PROFESSIONS AT THE INTERFACE OF THESE DOMAINS REQUIRING SKILLS IN SPORTS SCIENCE, COMPUTER, ELECTRONICS, AND HUMAN & SOCIAL SCIENCES.**
FIVE FIELDS COVERED BY DIGISPORT

- SPORT SCIENCES
- ELECTRONICS
- COMPUTER SCIENCE
- DATA SCIENCE
- HUMAN & SOCIAL SCIENCES
OUR ACADEMIC & SCIENTIFIC PARTNERS

UNIVERSITIES

University of Rennes 1 (Mathematics & ICT, Life & Health Sciences, Material Sciences, Humanities & Social Sciences)

University of Rennes 2 (Arts, Literature & Communication, Modern Languages, Human Sciences, Social Sciences, Sport Sciences)

GRANDES ÉCOLES

ENS Rennes (Economics-Law-Management, Computer Science, Mathematics, Mechatronics & Sport Sciences)


ENSAI (Statistics & Data Science)

CentraleSupélec (Sciences & Engineering)
RESEARCH ORGANIZATIONS

**CNRS** (French National Center for Scientific Research)

**Inria** (National Institute for Research in Digital Science and Technology)
DIGISPORT brings together 26 research units in the fields of sport, computer, data, electronic, human and social sciences. They share a common scientific goal and cooperate to create a new training curriculum anchored in scientific and economic reality.

1. **RESEARCH-BASED TRAINING**

   **CREATE IN-SITU KNOWLEDGE**

   How to create knowledge outside the laboratories, as close as possible to athletes or patients and on all performance factors (physiological, biomechanical, psychological).

   **REVOLUTIONIZE PRACTISE & REHABILITATION**

   How to use this knowledge to revolutionize the practice of physical activity for both athletes (to improve their performance and management of complex gambling situations, prevent injury, and accelerate rehabilitation).
SCIENTIFIC CHALLENGES

INTERDISCIPLINARITY

CREATE IN-SITU KNOWLEDGE

REVOLUTIONIZE PRACTICE AND REHABILITATION

MOBILE LABORATORY

MULTIMODAL SENSORS

MODELING & ANALYSIS

PERFORMANCE INDICATORS

IMPACT ON PRACTICE & SOCIETY

NEXT GENERATION OF TRAINING TOOLS

HUMAN FACTORS

NEW TRAINING TOOLS

TRAINING METHODOLOGY

HAPTIC

VR/AR

NEURO-FEEDBACK

Sport sciences
Data Science
Computer science
Electronics
Human & social sciences

PERFORMANCE INDICATORS

TRAINING METHODOLOGY

HAPTIC

VR/AR

NEURO-FEEDBACK

Impact on practice & society

Next generation of training tools

Human factors

New training tools

Training methodology

Scientific challenges

Interdisciplinarity

Create in-situ knowledge

Revolutionize practice and rehabilitation

Performance indicators

Neuro-feedback

VR/AR

Haptic

Mobile laboratory

Multimodal sensors

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Multimodal sensors

Modeling & analysis

Human & social sciences

Sport sciences

Data Science

Computer science

Electronics

Scientific challenges

Interdisciplinarity

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Performance indicators

Neuro-feedback

VR/AR

Haptic

Mobile laboratory

Multimodal sensors

Modeling & analysis

Human & social sciences

Sport sciences

Data Science

Computer science

Electronics

Scientific challenges

Interdisciplinarity

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Performance indicators

Neuro-feedback

VR/AR

Haptic

Mobile laboratory

Multimodal sensors

Modeling & analysis

Human & social sciences

Sport sciences

Data Science

Computer science

Electronics

Scientific challenges

Interdisciplinarity

Create in-situ knowledge

Revolutionize practice and rehabilitation

Performance indicators

Neuro-feedback

VR/AR

Haptic

Mobile laboratory

Multimodal sensors

Modeling & analysis

Human & social sciences

Sport sciences

Data Science

Computer science

Electronics

Scientific challenges

Interdisciplinarity

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Modeling & analysis

Human & social sciences

Sport sciences

Data Science

Computer science

Electronics

Scientific challenges

Interdisciplinarity

Create in-situ knowledge

Revolutionize practice and rehabilitation

Performance indicators

Neuro-feedback

VR/AR

Haptic

Mobile laboratory

Multimodal sensors

Modeling & analysis

Human & social sciences

Sport sciences

Data Science

Computer science

Electronics

Scientific challenges

Interdisciplinarity

Create in-situ knowledge

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Performance indicators

Neuro-feedback

VR/AR

Haptic

Mobile laboratory

Multimodal sensors

Modeling & analysis

Human & social sciences

Sport sciences

Data Science

Computer science

Electronics

Scientific challenges

Interdisciplinarity

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Scientific challenges
Sport and exercise performance is eminently complex and multifactorial. While laboratory-based scientific studies are typically associated with increased measurement precision and enhanced quality control, studies involving quantification of field-based measures are increasingly popular in the sport sciences as they increase our understanding of this complexity. Opportunities to continue bridging the gap between practice and research are possible by creating and improving precision systems for the measure and interpretation of performance in the field. Creating such mobile laboratories is necessary to move forward and collect reliable data from realistic situations. This involves addressing a large number of scientific challenges in various topics:

- **Multimodal sensors** (extreme conditions, energy capacity, sustainability, transmission...)

- **Signal processing and modeling** (complex structures, confidence indices, game strategies...)

- **Analysis / Performance indicators** (high-level information, segmentation-recognition-evaluation...)

Predicated on an improved knowledge of data acquired in realistic situations, the next step consists of developing tools to translate this knowledge into understandable and helpful information for users, whether they are athletes hoping to improve their performance or monitor their progress in rehabilitation, or people suffering various acute or chronic pathologies wanting to monitor their health. It is therefore necessary to propose the next generation of innovative training/rehabilitation methodologies and tools.

- **Training methodology** (efficient, understandable & interpretable feedback, adaptive and individualized learning processes, digital coach...)

- **New training tools** (ecological approach, multimodal feedback, transfer of skills to real situations...)

- **Human factors** (pertinence of innovation, assessment of design choices...)

- **Impact on practice and society** (digital social comparison, user communities...)

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**CREATE IN-SITU KNOWLEDGE**

**REVOLUTIONIZE PRACTISE & REHABILITATION**
In September 2022, a new Master’s degree program in Digital Sport Sciences will be created, structured around interdisciplinary academic major and minor fields of study. This Master aims at training students with a strong competence relevant to two disciplines including at least one in the sport sciences field.

The majors will be composed of mandatory and elective courses to deepen the knowledge of each student’s initial field of study (e.g. sport sciences, digital or electronic sciences).

Minors will enable the acquisition of complementary skills in another field (e.g. digital science for sport sciences students and conversely) and will allow students to build a unique profile tailored to their aspirations and competences.
INTERDISCIPLINARITY

DOCTORATE

- Exceptional ecosystem
  - Top laboratories

- PhD students’ laboratory
  - Foster exchanges
  - Self-management by the PhD students
  - Organization of interdisciplinary symposium

One of DIGISPORT’s flagship measure is the creation of an interdisciplinary lab for young researchers. The PhD students’ lab aims to bring together PhD students from the project's research teams and to take advantage of methodological and theoretical exchanges between the different disciplines of the graduate school around a common thematic axis.
VERSATILITY

PROJECT-ORIENTED TRAINING
- Interdisciplinary projects
- Hybridization of students

DEDICATED SPACES
- Cutting-edge experimental platforms
- Coworking spaces

TOWARDS ENTREPRENEURSHIP
- Link with incubators
- Link with socio-economic partners

SYNERGIES WITH BUSINESSES
- Initial and lifelong training offer
CAREER OPPORTUNITIES

SPORT DATA SCIENTIST
RESEARCHER
R&D ENGINEER
SPORT DATA ANALYST
PERFORMANCE MONITORING MANAGER
ADVANCED SIMULATION ENGINEER
COMPUTER SCIENTIST IN E-SPORT
ENGINEER IN HEALTH CENTERS
PERFORMANCE ANALYSIS DIRECTOR
...

Non-exhaustive list
DIGISPORT promotes the enrolment of national and international students through competitive scholarships each year, language courses offered to foreign (French) or native (English) students and courses taught in English.

National and international PhD students are funded by academic PhD contracts - some of which co-supervised internationally - at the rate of competitive fellowships each year. Industrial PhD contracts will benefit from co-supervision between academic and industrial partners.

In addition, outgoing researcher fellowships will be funded to further develop an international network and to increase partnerships in research and training. The researchers will be mobilized to participate in our thematic schools, courses, student mentoring and student project evaluations.
EUR DIGISPORT

DIGITAL SPORT SCIENCES

To request any further information about DIGISPORT, feel free to contact us at: digisport@univ-rennes.fr

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