



# Research Institute for Sports Science and Technology (RISports) 體育科技研究院

## Vision

To be in the forefront of innovative sports solutions and a key research and service partner of Hong Kong and inland China sports industry, sports institute, and public health related government and professional bodies.

## Mission

Our mission is to establish an interdisciplinary research team to strengthen interdisciplinary research and collaboration to foster new scientific and engineering solutions and applications in sports with an aim to establish a new level of sports experience for all and promote a high-quality and healthy lifestyle of all types of population through active engagement in sports and physical activity.

## Director's Message

**"Let's make sports more interesting, more rewarding, and safer for everyone!"**

**Ir Prof. Ming Zhang**

Director of RISports,  
Head (BME) &  
Chair Professor of Biomechanics

## Major goals

To conduct cutting-edge research in the thematic areas of sports science and technology

To transfer scientific and engineering knowledge and applications to sports industry and sports institutes through collaboration with companies and organizations

To nurture future leaders in sports science and technology

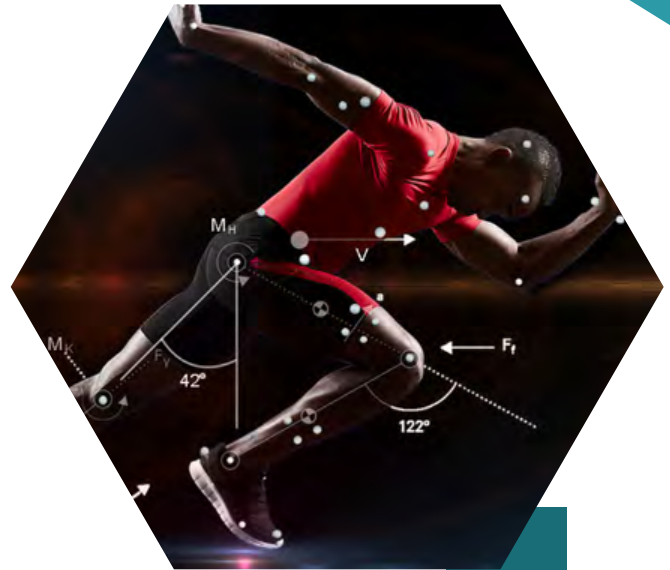


## Sports Biomechanics and Human-Product Interaction

Sports biomechanics reveals the relationship between motion and load on the human body and neuromusculoskeletal system to provide biomechanical fundamentals to benefit elite athletes as well as the general public through performance enhancement, injury prevention and product and equipment optimization.

### Theme Research Directions

- Biomechanical, physiological and computational analyses of the human body and the effects of body support and environment to provide the scientific fundamentals and rationales for target sports performance enhancement, injury prevention, and health promotion
- Evidence-based and customized design of sports footwear, apparel, accessories, and equipment to enhance comfort, athletic performance, and injury prevention for different sports categories
- Development of fatigue and tissue injury risk prediction model and evaluation system to enhance preventive measure of sports injury



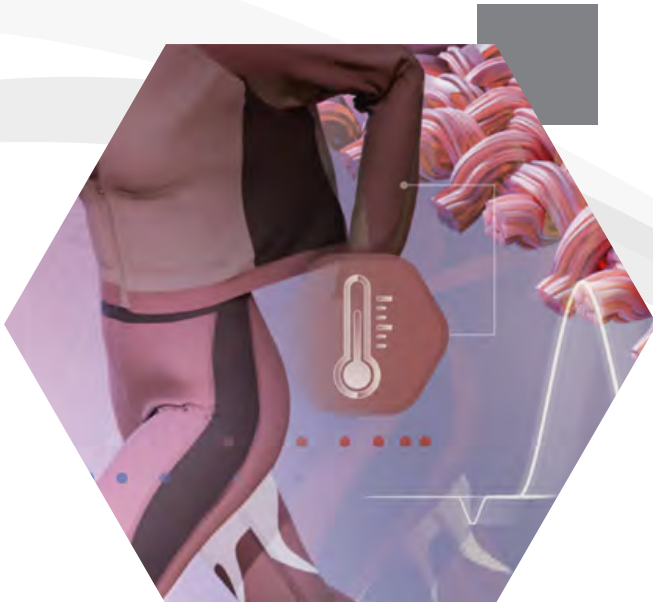
## Research Theme 1

## Sports Product Design, Materials and Manufacturing

Sportswear and equipment nowadays not only serve as basic function of protection, but also enhancement of physical performance. Innovative design technology, smart materials, solid and fluid mechanics analyses by equipment, and advanced manufacturing technology will enable breakthrough in design, fabrication, and evaluation of a variety of sportswear, footwear, protection device, and facilities.

### Theme Research Directions

- Advanced product design and engineering technology for the Innovation, parametric design, and functional optimization of sportswear and equipment
- Advanced material and structural engineering technology and their fabrication process for sportswear and equipment
- Sustainable solutions for sports products and facilities (incl. material, manufacturing, processing, recycling, etc)



## Research Theme 2





## Sports Measurement, Feedback and Instrumentation

Wearable technology has been used in sports monitoring system with sensing and measurement functions. The use of sensor technology and the feedback of the measured information to the athletes are becoming increasingly important both during training and for strategic decision-making during competition. Coaches and trainers are just beginning to see the potential value of these large amounts of acquired data for strategic decision making in team sports, and for the optimization of skills and training intensity of individual athletes.

### Theme Research Directions

- Advanced wearable sensor technology and feedback system for real-time monitoring of physiological, biomechanical and game performance in sports
- Advanced imaging and data analytic technology for sports movement and game analysis to enhance training and coaching feedback and communication, skills and tactics analysis



## Research Theme 3

## Sports Training and Rehabilitation

Sports training and rehabilitation concerns with prevention of injury and the rehabilitation of the injured patients. In cases of fatigue and sports injuries, proper and efficient fatigue management and rehabilitation are critical for the complete recover of body functions. Efficient fatigue management and recovery is essential for athletes to avoid fatigue related injuries and maintain high-level athletic performance during their intense repetitive competitions and training sessions. To explore the internal and external factors leading to fatigue in contact and endurance sports as well as to delineate strategies to minimize and recover from fatigue.

### Theme Research Directions

- Sports-specific target training therapy to enhance competitive performance, injury prevention, recovery and rehabilitation effectiveness for all levels of sports participants
- Smart and interactive exercise and training system as sports training, rehabilitation and therapeutic interventions
- Advanced and customized design of assistive devices for persons with disability and special needs to enhance sports and exercise experience and performance



## Research Theme 4

# RI Sports People

## Director



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Sports Training and Rehabilitation

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