



LABORATOIRE MOTRICITÉ, INTERACTIONS, PERFORMANCE (MIP) - Équipe d'Accueil 4334 *MOVEMENT, INTERACTIONS, PERFORMANCE LABORATORY (MIP) - Research group 4334*

Universities of Nantes and Le Mans

Movement is essential for Human to adapt to his physical, material and social environment. It helps to ensure vital functions (e.g. eating, drinking or communicating). The laboratory's research programme aims to obtain a better understanding of how human movement is produced from the musculo-tendon system, to the individual, right through to the inter-individual level. Through an interdisciplinary approach (life sciences, humanities), this programme aims to respond to major scientific and societal issues in the areas of sports performance, health and education.



45 people including

17 teachers-researchers and doctors of medicine | 5 at Le Mans

12 doctoral students and postdoctoral fellows | 4 at Le Mans

4 administrative and technical staff | 2 at Le Mans



Partnerships

Members of the laboratory actively collaborate with French researchers and laboratories (University Hospital of Nantes, Laboratory of Biomechanics, Paris; INSEP, Paris...), European (University of Bath, England) and International (University of Ottawa and University of New Brunswick, Canada; University of Auckland, New Zealand; University of Queensland, Australia).

The MIP also cooperates with various industrial partners (Direct Energie cycling team, LudHealth, etc.)



Chain of biomechanical analysis of human movement: three-dimensional kinematics by motion capture system; 3D dynamics by force platform; surface electromyography; stabilometry; treadmill with pressure sensors.

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3 research themes

Production and estimation of the force

The work developed in this research theme is intended to quantify the efforts experienced and produced by the musculotendinous system during various motor tasks and to understand how they adapt to training, ageing or illnesses.

The originality of this theme is to be found in the development of non-invasive methods to characterise in vivo the contractile and/or visco-elastic properties of the structures involved in the production and transmission of muscle force.



Motor coordination

The work undertaken in this research theme is aimed at understanding how the nervous system coordinates muscles and segments in order to produce human movement and to determine the relationship between motor coordination strategies and the development or persistence of musculoskeletal and/or cognitive disorders.

The originality of this theme mainly lies in its interdisciplinary approach, i.e. neurophysiology, biomechanics and psychology.



Collective cognition

The work undertaken for this topic addresses the production processes for coordinated collective behaviours and team performance and the mechanisms for collective learning in cooperation situations. The originality of this work resides in its focus on interpersonal adjustments, in their dynamic, situated, and self-organised dimensions. Subjective approaches to collective cognition are supplemented by behavioural approaches which together allow the description of different levels of analysis (e.g. individual, relational, collective).



Research operations

Optimisation of human movement

