Gaël GUILHEM, Lab Head, ECSS Fellow

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French Institute of Sport (INSEP)
Laboratory '**Sport, Expertise, and Performance**' (EA 7370)

RESPONSIBILITIES

Head of the Laboratory Sport, Expertise and Performance (EA 7370)

European College of Sport Science Fellow

Local Congress President of European College of Sport Science Paris 2023

Principal Investigator of FULGUR project (Team: 30 researchers, Grant:1.9 M€) funded by the French Research Agency in the perspective of the Paris 2024 Olympic and Paralympic Games

Co-head of ReFORM IOC Research Centre for Prevention of Injury and Protection of Athlete Health

Member of the Scientific, Medical and Education Board of INSEP

Member of the Scientific Committee of the Doctorate School *Sciences Du Sport, de la Motricité Et du Mouvement Humain* (SSMMH)

Member of the Steering Committee of the Sport Data Hub

Member of the Scientific Board of the French Football Federation

QUALIFICATIONS

Qualified as Full Professor in **Sports Sciences**

Accreditation to Supervise Research in **Biomechanics & Neuromuscular Physiology**

PhD in Sport Sciences, specialty in **Physiology & Biomechanics**, University of Nantes, 2010

MsC in Sport Science – "**Sport Training, Nutrition & Health**", University Paris Descartes, 2006

Bachelor in Biology – "**Integrative Biology & Physiology**", University Pierre & Marie Curie, 2005

RESEARCH AREA

Biomechanics & Neuromuscular Physiology

RESEARCH TOPICS

Neuromuscular adaptations to acute and chronic exercise, Muscle injury, Biomechanical and neuromuscular determinants of sport performance

Keywords

muscle mechanics; ultrafast ultrasound; MRI, elastography; injury; strength training

82 SCIENTIFIC PUBLICATIONS including (from 2020)

1. Macchi R, Hegyi A, Giroux C, Rabita G, Nordez A, Hollville E, Couturier A, Fornasier-Santos C, Slawinski J, Morin JB, Lacourpaille L, **Guilhem G**. Effects of resistance and speed on electromyographic activity of thigh and gluteal muscles in elite athletes throughout resisted sprint running. *Med Sci Sports Exerc*. 2025;57(7):1530-1545. (SCIMAGO IJR: Q1 - ISI-IF: 2.832 - PubMed)
2. Mornas A, Hollville E, Brocherie F, Derouck T, Racinais S, **Guilhem G**. Test-retest reliability of gastrocnemius medialis fascicle force-length relationship. *J Biomech*. 2024;171:112170. (SCIMAGO IJR: Q1 - ISI-IF: 2.832 - PubMed)
3. Edouard P, Dandrieux PE, Junge A, Navarro L, Giroux C, Guex K, Branco P, **Guilhem G**, Hollander K. Is the risk of muscle injuries higher in the finals than in previous rounds of the 100 m, 200 m and 400 m sprints of international athletics championships? *J Sci Med Sport*. 2024;27(5):302-306. (SCIMAGO IJR: Q1 - ISI-IF: 3.0 - PubMed)
4. Mornas A, Brocherie F, Hollville E, Derouck T, Racinais S, **Guilhem G**. Running 40 minutes under temperate or hot environment does not affect operating fascicle length. *Med Sci Sports Exerc*. 2024;56(6):1140-1150. (SCIMAGO IJR: Q1 - ISI-IF: 2.832 - PubMed)
5. Mornas A, Brocherie F, **Guilhem G**, Guillotel A, Le Garrec S, Gouwy R, Gennisson JL, Beuve S, Racinais S. Active heat acclimation does not alter muscle-tendon unit properties. *Med Sci Sports Exerc*. 2023;55(6):1076-1086. (SCIMAGO IJR: Q1 - ISI-IF: 4.1 - PubMed)
6. Mornas A, Racinais S, Brocherie F, Alhammoud M, Hager R, Desmedt Y, **Guilhem G**. Faster early rate of force development in warmer muscle: an in vivo exploration of fascicle dynamics and muscle-tendon mechanical properties. *Am J Physiol Regul Integr Comp Physiol*. 2022;323(1):R123-R132. (SCIMAGO IJR: Q2 - ISI-IF: 3.210 - PubMed)
7. Edouard P, Caumeil B, Verhagen E, **Guilhem G**, Ruffault A. Maximising individualisation of sports injury risk reduction approach to reach success. *Braz J Phys Ther*. 2022;26(3):100394. (SCIMAGO IJR: Q1 - ISI-IF: 3.377 - PubMed)
8. Hollville E, Couturier A, Guilhem G, Rabita G. A novel accelerometry-based metric to improve estimation of whole-body mechanical load. *Sensors*. 2021;21(10). (SCIMAGO IJR: Q2 - ISI-IF: 3.576 - PubMed)
9. Edouard P, Hollander K, Navarro L, Lacourpaille L, Morales-Artacho AJ, Hanon C, Morin JB, Le Garrec S, Branco P, Junge A, **Guilhem G**. Lower limb muscle injury location shift from posterior lower leg to hamstring muscles with increasing discipline-related running velocity in international athletics championships. *J Sci Med Sport*. 2021;24(7):653-659. (SCIMAGO IJR: Q1 - ISI-IF: 4.319 - PubMed)
10. Martens G, Edouard P, Tscholl P, Bieuzen F, Winkler L, Cabri J, Urhausen A, **Guilhem G**, Croisier JL, Thoreux P, Leclerc S, Hannouche D, Kaux JF, Le Garrec S, Seil R. Document, create and translate knowledge: the mission of ReFORM, the Francophone IOC Research Centre for Prevention of Injury and Protection of Athlete Health. *Br J Sports Med*. 2021;55(4):187-188. (SCIMAGO IJR: Q1 - ISI-IF: 13.800 - PubMed)
11. Mornas A, Racinais S, Brocherie F, Alhammoud M, Hager R, Desmedt Y, **Guilhem G**. Hyperthermia reduces electromechanical delay via accelerated electrochemical processes. *J Appl Physiol* (1985). 2021;130(2):290-297. (SCIMAGO IJR: Q2 - ISI-IF: 3.531 - PubMed)
12. Hollville E, Rabita G, Guilhem G, Lecompte J, Nordez A. Effects of Surface properties on gastrocnemius medialis and vastus lateralis fascicle mechanics during maximal countermovement jumping. *Front Physiol*. 2020;11:917. (SCIMAGO IJR: Q1 - ISI-IF: 3.140 – PubMed)
13. Hager R, Poulard T, Nordez A, Dorel S, **Guilhem G**. Influence of joint angle on muscle fascicle dynamics and rate of torque development during isometric explosive contractions. *J Appl Physiol*. 2020. (SCIMAGO IJR: Q2 - ISI-IF: 3.140 – PubMed)
14. Avrillon S, Hug F, **Guilhem G**. Bilateral differences in hamstring coordination in previously injured elite athletes. *J Appl Physiol.* 2020;128(3):688-697. (SCIMAGO IJR: Q1 - ISI-IF: 3.140 - PubMed)
15. Hollville E, Nordez, A, **Guilhem G**, Lecompte J, Rabita G. Surface properties affect the interplay between fascicles and tendinous tissues during landing. *Eur J Appl Physiol*. 2020;120(1):203-217. (SCIMAGO IJR: Q1 - ISI-IF: 3.055 - PubMed)
16. Avrillon S*, Lacourpaille L*, Hug F, Le Sant G, Frey A, Nordez A, **Guilhem G**. Hamstring muscle elasticity differs in specialized high-performance athletes. *Scand J Med Sci Sport*. 2020;30(1):83-91. (SCIMAGO IJR: Q1 - ISI-IF: 3.623 - PubMed)
17. Doguet V, Nosaka K, Guével A, Ishimura K, **Guilhem G**, Jubeau M. Influence of fascicle strain and corticospinal excitability during eccentric contractions on force loss. *Exp Physiol*. 2019;104(10):1532-1543. (SCIMAGO IJR: Q1 - ISI-IF: 2.912 - PubMed)
18. Hollville E, Nordez A, **Guilhem G**, Lecompte J, Rabita G. Interactions between fascicles and tendinous tissues in gastrocnemius medialis and vastus lateralis during drop landing. *Scand J Med Sci Sport*. 2019;29(1):55-70. (SCIMAGO IJR: Q1 - ISI-IF: 3.623 - PubMed)
19. Avrillon S, **Guilhem G**, Barthélémy A, Hug F. Coordination of hamstrings is individual-specific and is related to motor performance. *J Appl Physiol*. 2018;1;125(4):1069-1079. (SCIMAGO IJR: Q1 - ISI-IF: 3.351 - PubMed)

20. Hager R, Dorel S, Nordez A, Rabita G, Couturier A, Hauraix H, Duchateau J, **Guilhem G**. The slack test does not assess maximal shortening velocity of muscle fascicle in human. *J Exp Biol.* 2018;10:221(Pt 15). (SCIMAGO IJR: Q1 - ISI-IF: 3.179 - PubMed)