



Affectation recherche des enseignants-chercheurs – Fiche chercheur 2016

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Thématiques abordées

Axe du laboratoire : Axe 1 - Performance Sportive

Thématique principale : Performance sportive de haut niveau

Thématique secondaire : Santé, prévention des blessures

Mots-clés : Performance sportive, Biomécanique, Sprint, Prévention des blessures, Course à pied

Résumé des travaux (5-10 lignes) :

Mes thématiques s'inscrivent essentiellement dans l'Axe 1 « Déterminants et conséquences physiologiques et/ou psychologiques de la performance sportive de haut niveau ». Elles consistent principalement en une analyse biomécanique de la performance physique et sportive, notamment à travers le développement de méthodes simples utilisables en conditions réelles de pratique. Ces recherches ont pour champ d'applications l'entraînement sportif et la performance, ainsi que la prévention de blessures dans les disciplines impliquant le sprint, les sauts et productions d'efforts puissance maximale, ainsi que la course à pied d'endurance et en particulier le trail et l'ultra-trail. Ces travaux se traduisent par des collaborations suivies avec des athlètes, joueurs de football et de rugby de haut niveau et d'élite, et de nombreuses collaborations nationales et internationales.

Publications depuis 2011

Publications dans des revues à comité de lecture HCERES et/ou ISI

Morin J-B, Samozino P. Interpreting power-force-velocity profiles for individualized and specific training. *International Journal of Sport Physiology and Performance*. In press

Morin J-B, Gimenez P, Edouard P, Arnal P, Jimenez-Reyes P, Samozino P, Brughelli M, Mendiguchia J. Sprint acceleration mechanics : the major role of hamstrings in horizontal force production. *Frontiers in Physiology*. In press

Mendiguchia J, **Morin J-B**, Samozino P. Field monitoring of sprinting power-force-velocity profile before, during and after hamstring injury: 2 case reports. *Journal of Sport Sciences*. In press

Slawinski J, Termoz N, Rabita G, Guilhem G, Dorel S, **Morin J-B**, Samozino P. How 100-m event analyses improve our understanding of world-class men's and women's sprint performance. *Scandinavian Journal of Medicine and Science in Sports*. In press

Petrakos G, **Morin J-B**, Egan B. Resisted sled sprint training to improve sprint performance. A systematic review. *Sports Medicine*. In press

Degache F, **Morin J-B**, Oehen L, Guex K, Giardini G, Schena F, Millet GY, Millet GP. Running mechanics during the World's most challenging mountain ultra-marathon. *International Journal of Sport Physiology and Performance*. In press

Giandolini M, Horvais N, Rossi J, Millet GY, **Morin J-B**, Samozino P. Acute and delayed peripheral and central neuromuscular alterations induced by a short and intense downhill trail run. *Scandinavian Journal of Medicine and Science in Sports*. In press

Girard O, Brocherie F, **Morin J-B**, GP Millet. Neuro-mechanical determinants of repeated treadmill sprints - Usefulness of an 'hypoxic to normoxic recovery' approach. *Frontiers in Physiology*. Sep 23;6:260 (2015)

Girard O, Brocherie F, **Morin J-B**, GP Millet. Intra- and inter-session reliability of running mechanics during treadmill sprints. *International Journal of Sport Physiology and Performance*. In press

Morin J-B, Slawinski J, Dorel S, Saez de villareal E, Couturier A, Samozino P, Brughelli M, Rabita G. Acceleration capability in elite sprinters and ground impulse: push more, brake less? *Journal of Biomechanics*. 48(12):3149-3154 (2015)

Gindre C, Lussiana T, Hébert-Losier K, **Morin J-B**. Reliability and validity of the Myotest® for measuring running stride kinematics. *Journal of Sport Sciences*. in press

Buchheit M, Manouvrier C, Cassirame J, **Morin J-B**. Monitoring locomotor load in soccer: is metabolic power, powerful? *International Journal of Sports Medicine*. 36(14):1149-1155 (2015)

Brughelli M, **Morin J-B**, Mendiguchia J. Asymmetry after hamstring injury in English Premier League : issue resolved, or perhaps not ? *International Journal of Sports Medicine*. 36(7): 603 (2015)

Girard O, Brocherie F, **Morin J-B**, Degache F, Millet GP. Comparison of four sections for analysing running mechanics alterations during repeated treadmill sprints. *Journal of Applied Biomechanics*. 31(3):389-395 (2015)

Samozino P, Rabita G, Dorel S, Slawinski J, Peyrot N, Sàez-de-Villarreal E, **Morin J-B**. A simple method for measuring power, force, velocity properties, and mechanical effectiveness in sprint running. *Scandinavian Journal of Medicine and Science in Sports*. In press

- Rabita G, Dorel S, Slawinski J, Sàez-de-Villarreal E, Couturier A, Samozino P, **Morin J-B**. Sprint mechanics in world-class athletes : a new insight into the limits of human locomotion. *Scandinavian Journal of Medicine and Science in Sports*. 25(5):583-594 (2015)
- Edouard P, **Morin J-B**, Samozino P. No change in maximal lower extremity power output was induced by a decathlon. *Science et Sports*. 30(4): e73–e83 (2015)
- Cross MR, Brughelli M, Brown SR, Samozino P, Gill ND, Cronin JB, **Morin J-B**. Mechanical properties of sprinting in elite rugby union and rugby league. *International Journal of Sport Physiology and Performance*. 10(6):695-702 (2015)
- Mendiguchia J, Martinez-Ruiz E, **Morin J-B**, Samozino P, Alcaraz P, Esparza F, Mendez-Villanueva A. Effects of hamstring-emphasized neuromuscular training on strength and sprinting mechanics in football players. *Scandinavian Journal of Medicine and Science in Sports*. 25(6):e621-629 (2014)
- Pappas P, Paradisis G, Tsolakis C, Smirniotov A, **Morin J-B**. Reliabilities of leg and vertical stiffness during treadmill running. *Sports Biomechanics*. 13(4):391-399 (2014)
- Buchheit M, Samozino P, Glynn J, Simpson BM, Al Haddad H, Mendez-Villanueva A, **Morin J-B**. Mechanical determinants of acceleration and maximal sprinting speed in highly-trained young soccer players. *Journal of Sport Sciences*. 32(20):1906-1913 (2014)
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- de Lacey J, Brughelli M, McGuigan M, Hansen K, Samozino P, **Morin J-B**. The Effects of Tapering on Power-Force-Velocity Profiling and Jump Performance in Professional Rugby League Players. *Journal of Strength and Conditioning Research*. 28(12):3567-3570 (2014)
- Gimenez P, Arnal PJ, Samozino P, Millet GY, **Morin J-B**. Simulation of running on an incline/decline using additional horizontal force on a level treadmill. *Journal of Biomechanics*. 47(10): 2517-2521 (2014)
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- Samozino P, Rejc E, di Prampero PE, Belli A, **Morin J-B**. Force-Velocity properties' contributions to bilateral deficit during ballistic push-off. *Medicine and Science in Sports and Exercise*. 46(1):107-114 (2014)
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- Racic V, **Morin J-B**. Data-driven modelling of vertical dynamic excitation of bridges induced by people running. *Mechanical Systems and Signal Processing*. 43: 153–170 (2013)
- Buchheit M, Mendez-villanueva A, Mayer N, Jullien H, Marles A, Bosquet L, Maille P, **Morin J-B**, Cazorla G, Lambert P. Locomotor performance in highly-trained young soccer players: does body size always matter ? *International Journal of Sports Medicine*. 35(6):494-504 (2013)

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- Degache F, Fourchet F, **Morin J-B**, Guex K, Millet GP, Tomasin K, Millet GY. Changes in running mechanics and spring-mass behaviour induced by a 5-hour hilly running bout. *Journal of Sport Science*. 31(3):299-304 (2013)
- Giandolini M, Arnal PJ, Millet GY, Peyrot N, Samozino P, Dubois B, **Morin J-B**. Impact reduction during running: efficiency of simple acute interventions in recreational runners. *European Journal of Applied Physiology*. 113(3):599-609 (2013)
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- Millet GY, Hoffman MD, **Morin J-B**. Sacrificing economy to improve running performance – a reality in the ultramarathon? *Journal of Applied Physiology*. 113(3):507-509 (2012)
- Morin J-B**, Bourdin M, Edouard P, Peyrot N, Samozino P, Lacour J-R. Mechanical determinants of 100-m sprint running performance. *European Journal of Applied Physiology*. 112(11):3921-3930 (2012)
- Edouard P, Samozino P, Escudier G, Baldini A, **Morin J-B**. Injuries in youth and national combined events championships. *International Journal of Sports Medicine*. 33(10):824-828 (2012)
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- Samozino P, Rejc E, di Prampero PE, Belli A, **Morin J-B**. Optimal force-velocity profile in ballistic movements. *Altius: citius or fortius ? Medicine and Science in Sports and Exercise*, 44(2):313-322 (2012)
- Tomazin K, **Morin J-B**, Strojnik V, Podpecan A, Millet GY. Fatigue after short (100-m), medium (200-m) and long (400-m) treadmill sprints. *European Journal of Applied Physiology*, 112: 1027-1036 (2012)
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- Morin J-B**, Samozino P, Edouard P, Tomazin K. Effect of fatigue on force production and force application technique during repeated sprints. *Journal of Biomechanics*, 44(15): 2719-2723 (2011)
- Morin J-B**, Edouard P, Samozino P. Technical ability of force application as a determinant factor of sprint performance. *Medicine and Science in Sports and Exercise*, 43(9):1680-1688 (2011)
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Morin J-B, Tomazin K, Edouard P, Millet GY. Changes in running mechanics and spring-mass behavior induced by a mountain ultra-marathon. *Journal of Biomechanics*, 44(6): 1104-1107 (2011)

Morin J-B, Sève P. Sprint running performance: comparison between treadmill and field conditions. *European Journal of Applied Physiology*. 111(8):1695-703 (2011)

Morin J-B, Samozino P, Millet GY. Changes in running mechanics during a 24-h treadmill run. *Medicine and Science in Sports and Exercise*, 43(5): 829-836 (2011)

Millet G.Y, Banfi J-C, Kerhervé H, **Morin J-B**, Vincent L, Estrade C, Geysant A, Féasson L. Physiological and biological factors associated with a 24 h treadmill ultramarathon performance. *Scandinavian Journal of Medicine and Science in Sports*, 21: 54-61 (2011)

Ouvrages ou chapitres d'ouvrages

Morin J-B et Samozino P (Editeurs). Biomechanics of training and testing : Innovative concepts and simple field methods. *Springer International Publishing*. Accord signé le 4 nov. 2013, livraison prévue le 7 juin 2016. Auteurs : Morin J-B, Samozino P, diPrampoero PE, Belli A, Dalleau G, Rahmani A, Dorel S, Giandolini M.

Communications scientifiques

Morin J-B, Rabita G, Slawinski J, Samozino P. Symposium thématique: "Sprint mechanics or how force- and power-velocity relationships highlight some aspects of human locomotion". 14^{ème} Congrès de l'Association des Chercheurs en Activités Physiques et Sportives (ACAPS). Nantes, 26-28 octobre 2015.

Edouard P, Samozino P, Slotala R, **Morin J-B**. Relation entre le profil mécanique Force-Vitesse en sprint et la lésion musculaire des ischio-jambiers. 25^o Congrès National de la Société Française de Traumatologie du Sport, 17-19 septembre 2015, Orléans (France). Prix de la Communication Orale.

Girard O, Brocherie F, **Morin J-B**, Racinais S, Périard JD. Does heat stress modify the biomechanical manifestation of fatigue during repeated running sprints? 20th Congress of the European College of Sport Science, Malmö (Suède), 24 -27 juin 2015, Oral.

Giandolini M, Horvais N, Rossi J, Millet GY, Samozino P, **Morin J-B**. Foot strike pattern affects differently the axial and antero-posterior components of shock acceleration during downhill trail running. 33rd Congress of the International Society of Biomechanics in Sports, Poitiers (France), 29 juin -3 juillet 2015, Oral.

Cassirame J, Sanchez H, **Morin J-B**. Elevated track in pole vault, what advantage for run-up determinants of performance? 33rd Congress of the International Society of Biomechanics in Sports, Poitiers (France), 29 juin -3 juillet 2015, Oral.

Morin J-B. The Biomechanics of Sprint Running. « Peak Performance : Research and Innovation in Sport and Life » Congress, Udine, Italie, 11 décembre 2015.

Morin J-B. Keynote: Force-velocity-power profiling in soccer : field methods, performance, injury management. 1st Football Medical Conference, Athletic Club Bilbao, Bilbao, Espagne, 16-18 Avril 2015.

Morin J-B, Willwacher S. Sprint acceleration mechanics. 33rd Congress of the International Society of Biomechanics in Sports, Poitiers (France), 29 juin -3 juillet 2015, Applied session.

Morin J-B. Keynote & Applied Session : Force-velocity-power profiling field methods, performance, injury management. 3rd International Congress on Team Sports, University Pablo de Olavide, Seville, Espagne, 19-20 décembre 2014.

Morin J-B. Keynote : Sprint acceleration performance : New concepts, new methods, new perspectives. 10th Annual Conference of the UK Strength and Conditioning Association (UKSCA), Warwickshire, UK, 20 Juillet 2014.

Morin J-B. Running : new insights into sprint mechanics. World Congress of Biomechanics, Invited Symposium. Boston, MA, 6-11 Juillet 2014.

Morin J-B. Sports biomechanics : Injury Prevention in sprinting and Jumping. I Jornadas Internacionales de Prevencion de Lesiones en el Deporte. UCAM, Murcia, Espagne, 13-15 Mars 2014.

Morin J-B. Keynote: Sprint running mechanics and training : New concepts, new perspectives. Sports Performance Research Institute NZ, Strength and Conditioning Conference, Auckland, Nouvelle-Zelande, 14 Novembre 2013.

Morin J-B. The use of an instrumented treadmill for monitoring running performance an injury prevention. ASPETAR Sports Medicine Hospital, Doha, Qatar, 6 février 2013.

Morin J-B, Edouard P, Samozino P. Symposium thématique. Puissance mécanique, profil force-vitesse et technique d'application de la force en sprint. 13^{ème} Congrès de l'Association des Chercheurs en Activités Physiques et Sportives (ACAPS). Grenoble, 29-31 octobre 2013. Oral.

Morin J-B, Edouard P, Samozino P. Entraînement à l'accélération et au sprint : les enseignements d'un athlète d'élite. 3^{ème} journée Gilles Cometti, Centre d'Expertise de la Performance. Dijon, 12-13 Avril 2013. Oral.

Morin J-B, Bourdin M, Edouard P, Peyrot N, Samozino P. Sprint running mechanics: a case study of a world-class athlete. 17th Congress of the European College of Sport Science, Bruges (Belgium), 4 -7 juillet 2012. Oral.

Samozino P, Edouard P, Gimenez P, **Morin J-B.** Optimal force-velocity profile for explosive performances: theoretical and experimental evidences. 17th Congress of the European College of Sport Science, Bruges (Belgium), 4 -7 juillet 2012. Oral.

Morin J-B, Samozino P, Edouard P. Effectiveness of force application in sprint running: definition of concept and relationship with performance. 36^{ème} Congrès de la Société de Biomécanique. Besançon, 31 août – 2 septembre 2011. Oral.

Morin J-B, Samozino P, Edouard P, Tomazin K. Sprint fatigue affects the technical ability of force application. 58th Annual Meeting of the American College of Sports Medicine. Denver (CO), 31 mai - 4 juin 2011. Oral.

Contrats

- Société Salomon (74). Concepteur et fabricant de matériel sportif.
Direction de thèse de doctorat en convention CIFRE. Marlène Giandolini, 2013 -
Contrat de prestation de service LPE – Salomon 2013, responsable scientifique de l'étude.
- Société Hyperios (74). Concepteur et fabricant de chaussures de running « oversize » Hoka.
Contrat de prestation de service LPE – Hyperios 2012, collaborateur scientifique.
- Société Sigvaris (42). Concepteur et fabricant chaussettes, compression médicale et préventive.
Contrat de prestation de service LPE – Sigvaris 2012, responsable scientifique de l'étude.
- Société Salomon (74). Concepteur et fabricant de matériel sportif.
Contrat de prestation de service LPE – Salomon 2011, collaborateur scientifique.

Actions de diffusion de la culture scientifique

Evaluation physique et prévention des blessures chez le joueur de football. 2^{ème} Journée Scientifique du M.I.P. Université du Maine, Le Mans, 9 Avril 2015.

Biomécanique et performance en sprint : Christophe Lemaitre, l'exception qui change la règle ? 1^{er} Colloque Guy Namurois, Université de Liège, Belgique 22 Février 2014.

Mécanique de l'accélération et intérêt des profils force-vitesse en football. 1^{er} Séminaire Préparation physique et football de haut niveau, Tunis, Tunisie, 9 Décembre 2013.

Biomécanique de l'accélération en sprint. Conférence du S.L.U.C Nancy, Nancy, France, 8 Novembre 2013.

Mechanics and physical training in sprint and power sports : New concepts, new methods, new perspectives. Université de Louvain, Belgique, 25 juin 2013.

Mechanics and physical training in sprint and power sports. Corso di Laurea in Scienze Motorie. Università di Udine, Udine, Italy, 17 avril 2013.

Sprint biomechanics : new insights, new concepts, new applications. 8^{èmes} journées de l'association des entraîneurs catalans d'athlétisme. Barcelone, 24 novembre 2012.

Dynamique de l'appui sportif : du sprint à l'ultra-endurance. 12^{èmes} journées de l'appareillage du pied. UPODEF. Clermont-Ferrand, 21 septembre 2012.

Conférence : Les capacités humaines pour la course de vitesse. Finale des concours « Faites de la Science » et « C .Genial », Université de Saint-Etienne, 18 avril 2013.

Interviews Media :

- *Le progrès*, « Mesurer ses capacités physiques avec la caméra d'un smartphone ». *Octobre 2013*
- *Le Figaro*, « Le record du monde d'Usain BOLT étudié par la Science ». *Juillet 2013*
- *Jogging International*, « Le running du futur ». *Aout 2013*
- *Le progrès*, « Van Rhijn gagne la bataille des fines lames ». *Juillet 2013*
- *Le progrès*, « Lemaitre va de l'avant comme personne ». *Mai 2012*
- *Radio Canada*, « Culture Physique. L'avenir du sprint ». *Aout 2012*
- *Zatopek Magazine*, « Sprinter de naissance, éloge de l'horizontalité ». *Novembre 2011*
- *L'équipe*, « Grand format – reportage, Javier Pastore ». *Octobre 2011*
- *L'essor Loire*, « Pourquoi Lemaitre court-il si vite ? ». *Septembre 2011*
- *Le progrès*, « Lemaitre expliqué par la science ». *Juin 2011*