

François HUG

Date de naissance : 20/07/1978

Professeur (CE) – Univ. Côte d'Azur

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Biographie et thématiques de recherche

J'ai obtenu mon doctorat en sciences du mouvement humain à Aix-Marseille Université (France, 2003). J'ai été Professeur des universités à Nantes Université (France), où j'ai **dirigé un laboratoire de recherche** jusqu'à ma mutation vers l'Université Côte d'Azur (France) en 2021. En plus de deux congés sabbatiques à l'**Université du Queensland** (Australie ; 2011, 2019), j'ai occupé un poste de *Principal Research Fellow* pendant deux ans et demi au sein de la même université (2013-2015). J'ai été **membre junior de l'IUF** de 2017 à 2022. En 2023, j'ai reçu le **prix Christian Oddou** de la Société francophone de Biomécanique, qui récompense un chercheur senior de renommée internationale.

Mes recherches portent sur le contrôle du mouvement sain et pathologique, avec **plus de 200 articles publiés**. Mes articles les plus récents ont été publiés dans des revues à fort impact, notamment : *The Journal of Physiology* (x4), *Journal of Neuroscience* (x2), *eLife* (x2), *Proceedings of the Royal Society B*, et *Journal of Neural Engineering* (x2). Mes travaux se distinguent par la démonstration que chacun possède une signature unique d'activation musculaire, qui, à l'instar de notre visage ou de nos empreintes digitales, permet de nous identifier (résultats mis en avant dans le **New York Times**). J'ai récemment développé un nouveau cadre théorique introduisant le concept de synergie à l'échelle des motoneurones spinaux, présenté dans un article sur invitation dans *The Journal of Physiology*. Cette thématique de recherche m'a récemment permis d'obtenir le **financement de deux projets** par l'Agence Nationale de la Recherche (**ANR**), pour lesquels je suis le porteur principal (Neuromotor [AAPG 2024] et Neurocom [ASTRID 2024], total de 856 k€).

J'ai été élu à deux reprises membre du conseil de l'*International Society of Electrophysiology and Kinesiology* (ISEK; 2022-en cours), où je préside un comité chargé des relations avec d'autres sociétés savantes et de l'organisation des tutoriels (3/ans). Depuis 2018, je suis expert pour le projet *Consensus for Experimental Design in Electromyography* (CEDE), qui est une initiative internationale visant à produire des recommandations sur l'enregistrement, l'analyse et l'interprétation des données électromyographiques (7 articles publiés). Je suis classé **4^{ème} et 22^{ème} au niveau mondial** dans les thématiques « électromyographie » et « muscle squelettique », et **premier** parmi les scientifiques français dans ces deux domaines (expertscape.com, 09/2024). Je figure également dans le **top 2%** des scientifiques les plus cités selon le classement Stanford/Elsevier (Baas et al., 2024 - [lien](#)) et suis classé **3^{ème}** parmi les scientifiques français dans le domaine des sciences du sport.

Formation

2003 Doctorat Sciences du Mouvement Humain – Univ. Aix-Marseille II, France

Postes actuellement occupés

Depuis 2024 **Directeur adjoint** du LAMHESS – Univ. Côte d'Azur, France

Depuis 2021 **Professeur (classe exceptionnelle)** – Univ. Côte d'Azur, France

Depuis 2021 **Responsable** de l'école doctorale « Sciences du Mouvement Humain » (site niçois)

Depuis 2015 **Professeur honoraire** – Univ. of Queensland, Australie

Expérience

2017 – 2021 **Directeur du laboratoire** MIP (> 50 titulaires/doctorants), Univ. Nantes, France

2014 – 2021 Professeur – UFR STAPS, Univ. Nantes, France

2006 – 2014 Maître de conférences – UFR STAPS, Univ. Nantes, France

2005 – 2006 Chercheur – INSEP, France

2004 – 2005 Post-doctorant – Lab. Physiopathologie Respiratoire, Univ. Paris VI, France

Publications

Nb d'articles dans des revues à comité de lecture	202 (58 depuis 2020)
Pourcentage d'articles signés 1er/dernier auteur	22% / 23%
Nombre d'articles sur invitation	7
Nombre d' ouvrages/chapitres d'ouvrage	1/4
H index (Google scholar, Jan 2025)	62
Nombre de citations (Google scholar, Jan 2025)	12137

Mobilités internationales

2024 (3 semaines)	Chercheur invité – Univ. of Queensland, Australie
2023 (6 semaines)	Chercheur invité – Univ. of Queensland, Australie
2019 (1 an)	Chercheur invité – Univ. of Queensland, Australie
2013 – 2015 (3 ans)	Chercheur sénior – Univ. of Queensland, Australie
2013 – 2018 (4 x 1 sem)	Chercheur invité – Hong Kong Polytechnic Univ., Hong Kong
2011 (8 mois)	Chercheur invité – Univ. of Queensland, Australie

Principales collaborations internationales en cours (sélection)

>84 % des publications co-signées avec au moins un collaborateur international depuis 2021

- The University of Queensland, Australia (>50 articles)
- Imperial College London, UK (15 articles)
- Hong Kong Polytechnic Univ, Hong Kong (4 articles)
- Ability Lab Chicago, USA (4 articles)
- CQUniversity Rockhampton, Australia (4 articles)
- Friedrich-Alexander University, Germany (4 articles)
- University of Maribor, Slovenia (2 articles)

Prix et récompenses

2023	Prix "Christian Oddou" – Société de Biomécanique - lien
2022-2024	Prime individuelle (RIPEC 3)
2017-2022	Membre junior de l'Institut Universitaire de France (IUF) , Paris, France
2016-2022	Scientific Excellence Award (PEDR)
2021	Lauréat de l' <i>Equipment Donation Initiative</i> , De Luca Foundation, USA - link
2018	Bourse de collaboration de recherche, Société de Biomécanique (SB)
2018	Finaliste du prix du meilleur article 2017, Journal of Anatomy
2012 & 2014	Certificat d'excellence pour l'expertise, <i>J Biomechanics / J Electromyography Kinesiology</i>
2009 – 2013	Prime d'Excellence Scientifique (PES)
2010	Best Basic Research Award , Conférence de l'ISEK, Aalborg, Danemark
2005	Bourse de post-doctorat, fondation ANTADIR

Encadrements

- **16 doctorant-es** (13 thèses soutenues, 3 en cours), dont 6 doctorants étrangers
- > 30 étudiants de Master
- 3 étudiants 'honours' (Univ. Of Queensland) et 2 étudiants en thèse de spécialité médicale

Conférences invitées (sélection)

>30 conférences sur invitation (21 internationales / 6 nationales), dont :	
2025	Muscle-Tendon Comparative Biomechanics Meeting, Helsinki, Finland
2024	Symposium, ISEK conference, Nagoya, Japan
2024	(Keynote speaker), conférence de la SOFAMEA, Nantes, France
2024	PhaNuSpo Scientific Lecture Series, Vienna, Austria
2023	(Keynote speaker) Prix C. Oddou, Société de Biomécanique, France
2023	OT Bioelettronica days, Torino, Italy
2023	International Autumn School on Movement Science, Berlin, Germany
2021	Motor unit group seminar series, Motor neuron society (en ligne)

Organisation de réunions scientifiques

- 2025 (Suède) – **Co-organisateur** d'un tutoriel sur la décomposition de l'EMG (congrès de l'ISB)
- 2024 (en ligne) – **Organisateur** d'un tutoriel sur la décomposition de l'EMG - [lien](#)
- 2019 (France) - **Organisateur** d'un workshop international l'élastographie en biomécanique
- 2017 (Australie) - **Organisateur** d'un tutoriel sur l'échographie musculo-tendineuse
- 2014 (Italie) - **Organisateur** d'un **symposium** intitulé "*Neuromechanics of muscle coordination*"

Projets financés

>5,9 M€ dont >2,4 M€ comme investigateur principal

Projets financés en cours :

2025-2028 384 476 €	Agence Nationale de la Recherche (24-ASTR-003) – Investigateur Principal <i>Mesure non-invasive du code nerveux du mouvement : vers une nouvelle génération d'interfaces neuronales Homme-machine</i> (NEUROCOM)
2024-2028 472 661 €	Agence Nationale de la Recherche (24-CE17-5805) – Investigateur Principal <i>Les synergies motoneuronales comme nouveau biomarqueur des altérations motrices</i> (NEUROMOTOR)
2024-2026 518 000 €	National Health & Medical Research Council (#2028446) – Collaborateur « Perdre le contact » : Explorer les effets neurophysiologiques des semelles sensorielles bioniques pour la rééducation de l'équilibre
2024-2025 39 000 €	Région Sud (subvention d'équipement) – Investigateur Principal Une approche non-invasive pour décoder l'activité des unités motrices
2024-2025 20 000 €	EUR Healthy, Université Côte d'Azur – Investigateur Principal Une approche non-invasive pour décoder l'activité des unités motrices
2023-2025 75 859 €	IDEX JEDI, Université Côte d'Azur – Investigateur Principal Programme de recherche avancée – un nouveau cadre théorique pour comprendre le contrôle du mouvement sain et pathologique (NEURON)

Activité d'expertise

Depuis 2024	Comité éditorial – Journal of Applied Physiology
Depuis 2022	Éditeur associé – Scandinavian Journal of Medicine & Science in Sport
Depuis 2009	Comité éditorial – Journal of Electromyography and Kinesiology
2012-2017	Éditeur associé – PloS ONE
2012-2017	Éditeur associé – Frontiers in Exercise Physiology
2012-2015	Comité scientifique pour les congrès de l'ACAPS, IcSports et ISEK
Depuis 2004	Expert pour environ 20 articles/an Expert pour des projets nationaux et internationaux, e.g. European Innovation Council, Austrian Sc. Fund, UK asthma, Estonian Sc. Found, RGC Hong Kong, Italian ministry of Health, FNRS-Belgium, RIF-Cyprus

Expertise / Leadership

Depuis 2024 :	Conseiller scientifique (OT Bioelettronica, Italy)
Depuis 2022 :	Membre du conseil de l'International Society for Electrophysiology and Kinesiology (ISEK), élu par les membres de la société
Depuis 2020 :	Expert invité du projet « Consensus for Experimental Design in Electromyography (CEDE) » – 7 articles ont déjà été publiés

Diffusion de la culture scientifique et technique (sélection)

2023	Un article publié dans <i>The Conversation</i> sur les interfaces humain-machine - lien
2022	Un article publié dans <i>Frontiers for Young Minds</i> sur le mouvement - lien
2020	Un podcast sur nos travaux portant sur la signature du mouvement - lien
2019 & 2021	Développement d'un MOOC sur le mouvement humain (>10,000 participants) Disponible sur la chaine YouTube "Le mouvement Humain" - lien
2018	Un article publié dans <i>The conversation</i> sur le mouvement humain - lien

1. Articles in peer-reviewed journals

- Kelp N, Tucker K, **Hug F**, Dick TJ. Effects of altered contractile environment on muscle shape change in the triceps surae. *J Exp Biol*. In press.
- Dick T, Tucker K, **Hug F**, Besomi M, van Dieën JH, Enoka RM, Besier T, Carson RG, Clancy EA, Disselhorst-Klug C, Falla D, Farina D, Gandevia S, Holobar A, Kiernan MC, Lowery M, McGill K, Merletti R, Perreault E, Rothwell JC, Sogaard K, Wrigley T, Hodges PW. Consensus for experimental design in electromyography (CEDE) project: Application of EMG to estimate muscle force. *J Electromyogr Kinesiol*. 14:102910, 2024.
- Rossato J, Avrillon S, Tucker K, Farina D, **Hug F**. The Volitional Control of Individual Motor Units Is Constrained within Low-Dimensional Neural Manifolds by Common Inputs. *J Neurosci*. 21;44(34): e0702242024, 2024 [featured article].
- Avrillon S, **Hug F**, Enoka R, Caillet AH, Farina D. The decoding of extensive samples of motor units in human muscles reveals the rate coding of entire motoneuron pools. *eLife*. In press.
- Popesco T, Bet da Rosa Orssatto L, **Hug F**, Blazeovich AJ, Trajano GS, Place N. Motoneuron persistent inward current contribution to increased torque responses to wide-pulse high-frequency neuromuscular electrical stimulation. *Eur J Appl Physiol*. 2024, in press.
- Avrillon S, **Hug F**, Baker SN, Gibbs C, Farina D. Tutorial on MUedit: An open-source software for identifying and analysing the discharge timing of motor units from electromyographic signals. *J Electromyogr Kinesiol*. 77:102886, 2024.
- Besomi M, Devecchi V, Falla D, McGill K, Kiernan MC, Merletti R, van Dieën JH, Tucker K, Clancy EA, Sogaard K, **Hug F**, Carson RG, Perreault E, Gandevia S, Besier T, Rothwell JC, Enoka RM, Holobar A, Disselhorst-Klug C, Wrigley T, Lowery M, Farina D, Hodges PW. Consensus for experimental design in electromyography (CEDE) project: Checklist for reporting and critically appraising studies using EMG (CEDE-Check). *J Electromyogr Kinesiol*. 76:102874, 2024.
- Crouzier M, Avrillon S, **Hug F**, Cattagni T. Horizontal foot orientation affects the distribution of neural drive between gastrocnemii during plantarflexion, without changing neural excitability. *J Appl Physiol*. 136(4):786-798, 2024.
- Goreau V, **Hug F**, Jannou A, Dernoncourt F, Crouzier M, Cattagni T. Estimates of persistent inward currents in lower limb muscles are not different between inactive, resistance-trained, and endurance-trained young males. *J Neurophysiol*. 1;131(2):166-175, 2024.
- Sarcher A, Carceff L, Moissenet F, **Hug F**, Deschamps T. Consistency of muscle activation signatures across different walking speeds. *Gait & Posture*. 107:155-161, 2023.
- Rossato J, **Hug F**, Tucker K, Lacourpaille L, Farina D, Avrillon S. I-Spin live: An open-source software based on blind-source separation for decoding the activity of spinal alpha motor neurons in real-time. *eLife* 12: RP88670, 2023.
- Levine J, Avrillon S, Farina D, **Hug F**, Pons JL. Two motor neuron synergies, invariant across ankle joint angles, activate the triceps surae during plantarflexion. *J Physiol*. 601(19):4337-4354, 2023.
- Hamard R, Aeles J, Avrillon S, Dick TJM, **Hug F**. A comparison of neural control of the biarticular gastrocnemius muscles between knee flexion and ankle plantar flexion. *J Appl Physiol* 135(2):394-404, 2023.
- Dick TJM, **Hug F**. Advances in imaging for assessing the design and mechanics of skeletal muscle in vivo. *J Biomech*. 155: 111640, 2023. [invited article for the 50th anniversary of the International Society of Biomechanics]
- Kelp NY, Clemente CJ, Tucker K, **Hug F**, Pinel S, Dick TJM. Influence of internal muscle properties on muscle shape change and gearing in the human gastrocnemii. *J Appl Physiol* 134(6): 1520-1529, 2023.

- Tier L, Salomoni SE, **Hug F**, Besomi M, Hodges PW. Adaptability of the load sharing between the longissimus and components of the multifidus muscle during isometric trunk extension in healthy individuals. [Eur J Appl Physiol](#). 2023.
- Del Vecchio A, Marconi Germer C, Kinfe TM, Nuccio S, **Hug F**, Eskofier B, Farina D, Enoka RM. The Forces Generated by Agonist Muscles during Isometric Contractions Arise from Motor Unit Synergies. [J Neurosci](#) 19;43(16): 2860-2873, 2023.
- Martinez-Valdes E, Enoka RM, Holobar A, McGill K, Farina D, Besomi M, **Hug F**, Falla D, Carson RG, Clancy EA, Disselhorst-Klug C, van Dieën JH, Tucker K, Gandevia S, Lowery M, Søgaard K, Besier T, Merletti R, Kiernan MC, Rothwell JC, Perreault E, Hodges PW. Consensus for experimental design in electromyography (CEDE) project: Single motor unit matrix. [J Electromyogr Kinesiol](#) 68:102726, 2023.
- Wen Y, Kim SJ, Avrillon S, Levine JT, **Hug F**, Pons JL. Toward a generalizable deep CNN for neural drive estimation across muscles and participants. [J Neural Eng](#) 20(1), 2023.
- Aeles J, Sarcher A, and **Hug F**. Common input between motor units from the lateral and medial soleus compartments does not differ from that between motor units from each of these compartments. [J Appl Physiol](#) 134(1):105-115, 2023.
- Hug F**, Avrillon S, Ibanez J, and Farina D. Common Synaptic Input, Synergies, and Size Principle: Control of Spinal Motor Neurons for Movement Generation. [J Physiol](#) 601(1): 11-20, 2023.
- Wen Y, Sangjoon K, Avrillon S, Levine J, **Hug F** and Pons J. A deep CNN framework for neural drive estimation from HD-EMG across contraction intensities and joint angles. [IEEE Trans Neural Sys & Rehab Eng](#), 30, 2950, 2022.
- Sachet I, Brochner Nygaard NP, Guilhem G, **Hug F**, and Dorel S. Strength capacity of lower-limb muscles in world-class cyclists: new insights into the limits of sprint cycling performance. [Sports Biomech](#) 1-18, 2023.
- Rossato J, Tucker K, Avrillon S, Lacourpaille L, Holobar A, and **Hug F**. Less common synaptic input between muscles from the same group allows for more flexible coordination strategies during a fatiguing task. [J Neurophysiol](#) 127: 421-433, 2022.
- Maillet J, Rossi J, **Hug F**, Proquez JJ, and Nordez A. Influence of experience on kinematics of upper limbs during sewing gesture. [Appl Ergon](#) 102: 103737, 2022.
- Maillet J, Avrillon S, Nordez A, Rossi J, and **Hug F**. Handedness is associated with less common input to spinal motor neurons innervating different hand muscles. [J Neurophysiol](#) 128(4):778-789, 2022.
- Hug F**, Avrillon S, Sarcher A, Del Vecchio A, and Farina D. Correlation networks of spinal motor neurons that innervate lower limb muscles during a multi-joint isometric task. [J Physiol](#) 601(15): 3201-3219, 2023.
- Hamard R, **Hug F**, Kelp NY, Feigean R, Aeles J, and Dick TJM. Inclusion of image-based in vivo experimental data into the Hill-type muscle model affects the estimation of individual force-sharing strategies during walking. [J Biomech](#) 135: 111033, 2022.
- Goreau V, Pigne R, Bernier N, Nordez A, **Hug F**, and Lacourpaille L. Hamstring muscle activation strategies during eccentric contractions are related to the distribution of muscle damage. [Scand J Med Sci Sports](#) 32: 1335-1345, 2022.
- Gallina A, Disselhorst-Klug C, Farina D, Merletti R, Besomi M, Holobar A, Enoka RM, **Hug F**, Falla D, Søgaard K, McGill K, Clancy EA, Carson RG, van Dieën JH, Gandevia S, Lowery M, Besier T, Kiernan MC, Rothwell JC, Tucker K, and Hodges PW. Consensus for experimental design in electromyography (CEDE) project: High-density surface electromyography matrix. [J Electromyogr Kinesiol](#) 64: 102656, 2022.
- Cheng R, Crouzier M, **Hug F**, Tucker K, Juneau P, McCreedy E, Gandler W, McAuliffe MJ, and Sheehan FT. Automatic quadriceps and patellae segmentation of MRI with cascaded U(2) -Net and SASSNet deep learning model. [Med Phys](#) 49: 443-460, 2022.

- Andrade RJ, Freitas SR, **Hug** F, Coppieters MW, Sierra-Silvestre E, and Nordez A. Spatial variation in mechanical properties along the sciatic and tibial nerves: An ultrasound shear wave elastography study. *J Biomech* 136: 111075, 2022.
- Aeles J, Bolsterlee B, Kelp NY, Dick TJM, and **Hug** F. Regional variation in lateral and medial gastrocnemius muscle fibre lengths obtained from diffusion tensor imaging. *J Anat* 240: 131-144, 2022.
- Xu J, Fu SN, and **Hug** F. Age-related increase in muscle stiffness is muscle length dependent and associated with muscle force in senior females. *BMC Musculoskelet Disord* 22: 829, 2021.
- Wen Y, Avrillon S, Hernandez-Pavon JC, Kim SJ, **Hug** F, and Pons JL. A convolutional neural network to identify motor units from high-density surface electromyography signals in real time. *J Neural Eng* 18: 2021.
- Tier L, Salomoni SE, **Hug** F, Besomi M, and Hodges PW. Shear modulus of multifidus and longissimus muscles measured using shear wave elastography correlates with muscle activity, but depends on image quality. *J Electromyogr Kinesiol* 56: 102505, 2021.
- Pinel S, Kelp NY, Bugeja JM, Bolsterlee B, **Hug** F, and Dick TJM. Quantity versus quality: Age-related differences in muscle volume, intramuscular fat, and mechanical properties in the triceps surae. *Exp Gerontol* 156: 111594, 2021.
- McManus L, Lowery M, Merletti R, Sogaard K, Besomi M, Clancy EA, van Dieen JH, **Hug** F, Wrigley T, Besier T, Carson RG, Disselhorst-Klug C, Enoka RM, Falla D, Farina D, Gandevia S, Holobar A, Kiernan MC, McGill K, Perreault E, Rothwell JC, Tucker K, and Hodges PW. Consensus for experimental design in electromyography (CEDE) project: Terminology matrix. *J Electromyogr Kinesiol* 59: 102565, 2021.
- Kelp NY, Gore A, Clemente CJ, Tucker K, **Hug** F, and Dick TJM. Muscle architecture and shape changes in the gastrocnemii of active younger and older adults. *J Biomech* 129: 110823, 2021.
- Hug** F, Del Vecchio A, Avrillon S, Farina D, and Tucker K. Muscles from the same muscle group do not necessarily share common drive: evidence from the human triceps surae. *J Appl Physiol* (1985) 130: 342-354, 2021.
- Hug** F, Avrillon S, Del Vecchio A, Casolo A, Ibanez J, Nuccio S, Rossato J, Holobar A, and Farina D. Analysis of motor unit spike trains estimated from high-density surface electromyography is highly reliable across operators. *J Electromyogr Kinesiol* 58: 102548, 2021.
- Hodges PW, Butler J, Tucker K, MacDonell CW, Poortvliet P, Schabrun S, **Hug** F, and Garland SJ. Non-uniform Effects of Nociceptive Stimulation to Motoneurons during Experimental Muscle Pain. *Neuroscience* 463: 45-56, 2021.
- Hamard R, Aeles J, Kelp NY, Feigean R, **Hug** F, and Dick TJM. Does different activation between the medial and the lateral gastrocnemius during walking translate into different fascicle behavior? *J Exp Biol* 224: 2021.
- Germer CM, Farina D, Elias LA, Nuccio S, **Hug** F, and Del Vecchio A. Surface EMG cross talk quantified at the motor unit population level for muscles of the hand, thigh, and calf. *J Appl Physiol* (1985) 131: 808-820, 2021.
- Boyer A, **Hug** F, Avrillon S, and Lacourpaille L. Individual differences in the distribution of activation among the hamstring muscle heads during stiff-leg Deadlift and Nordic hamstring exercises. *J Sports Sci* 39: 1830-1837, 2021.
- Besomi M, Salomoni SE, **Hug** F, Tier L, Vicenzino B, and Hodges PW. Exploration of shear wave elastography measures of the iliotibial band during different tasks in pain-free runners. *Phys Ther Sport* 50: 121-129, 2021.
- Besomi M, Nava GTA, van den Hoorn W, **Hug** F, Vicenzino B, and Hodges PW. Influence of transducer orientation on shear wave velocity measurements of the iliotibial band. *J Biomech* 120: 110346, 2021.

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- Aeles J, Horst F, Lapuschkin S, Lacourpaille L, and **Hug F**. Revealing the unique features of each individual's muscle activation signatures. [J R Soc Interface](#) 18: 20200770, 2021.
- Vaidya T, Thomas-Ollivier V, **Hug F**, Bernady A, Le Blanc C, de Bisschop C, and Chambellan A. Translation and Cultural Adaptation of PROactive Instruments for COPD in French and Influence of Weather and Pollution on Its Difficulty Score. [Int J Chron Obstruct Pulmon Dis](#) 15: 471-478, 2020.
- Lindemann I, Coombes BK, Tucker K, **Hug F**, and Dick TJM. Age-related differences in gastrocnemii muscles and Achilles tendon mechanical properties in vivo. [J Biomech](#) 112: 110067, 2020.
- Goo M, Johnston LM, **Hug F**, and Tucker K. Systematic Review of Instrumented Measures of Skeletal Muscle Mechanical Properties: Evidence for the Application of Shear Wave Elastography with Children. [Ultrasound Med Biol](#) 46: 1831-1840, 2020.
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- Avrillon S, **Hug F**, and Guilhem G. Bilateral differences in hamstring coordination in previously injured elite athletes. [J Appl Physiol](#) (1985) 128: 688-697, 2020.
- Andrade RJ, Freitas SR, **Hug F**, Le Sant G, Lacourpaille L, Gross R, Quillard JB, McNair PJ, and Nordez A. Chronic effects of muscle and nerve-directed stretching on tissue mechanics. [J Appl Physiol](#) (1985) 129: 1011-1023, 2020.
- Xu J, Fu SN, Zhou D, Huang C, and **Hug F**. Relationship between pre-exercise muscle stiffness and muscle damage induced by eccentric exercise. [Eur J Sport Sci](#) 19: 508-516, 2019.
- Xie Y, Thomas L, **Hug F**, Johnston V, and Coombes BK. Quantifying cervical and axioscapular muscle stiffness using shear wave elastography. [J Electromyogr Kinesiol](#) 48: 94-102, 2019.
- Thibault S, **Hug F**, and Deschamps T. Performance fatigability does not impact the inhibitory control. [Neurosci Res](#) 146: 48-53, 2019.
- Sarcher A, Perrouin-Verbe B, Touchais S, Gadbled G, Gahier M, Brochard S, **Hug F**, and Gross R. Reorganization of muscle synergies in 2 individuals with C5 and C6 tetraplegia after biceps-triceps and posterior deltoid-triceps tendon transfers. [Ann Phys Rehabil Med](#) 62: 128-131, 2019.
- Morel B, **Hug F**, Nordez A, Pournot H, Besson T, Mathevon L, and Lapole T. Reduced Active Muscle Stiffness after Intermittent Submaximal Isometric Contractions. [Med Sci Sports Exerc](#) 51: 2603-2609, 2019.
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- Le Sant G, Gross R, **Hug F**, and Nordez A. Influence of low muscle activation levels on the ankle torque and muscle shear modulus during plantar flexor stretching. [J Biomech](#) 93: 111-117, 2019.
- Hug F**, Vogel C, Tucker K, Dorel S, Deschamps T, Le Carpentier E, and Lacourpaille L. Individuals have unique muscle activation signatures as revealed during gait and pedaling. [J Appl Physiol](#) (1985) 127: 1165-1174, 2019.

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