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Lecturer in Exercise Physiology and Metabolism

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About

Dr Breen's expertise centres on understanding how nutrition and exercise modulate muscle metabolism in healthy (i.e. athletes) and vulnerbale (i.e. elderly, obese) populations.

Feedback and office hours

Dr Breen's office hours are 2-4pm on Tuesdays. Dr Breen is located in the School of Sport, Exercise and Rehabilitation Sciences.

Qualifications

- BSc (hons) Sport and Exercise Sciences (Manchester Metropolitan University)
- MSc Exercise Physiology (Manchester Metropolitan University)
- PhD Exercise Metabolism and Nutrition (University of Birmingham)

Biography

Dr Breen received a BSc(hons) in Sport and Exercise Physiology from Manchester Metropolitan University in 2006 and subsequently an MSc in Exercise Physiology in 2007 from the same institute. from 2007-2010, Dr Breen undertook a PhD in Exercise Nutrition and Metabolism in The School of Sport, Exercise and Rehabilitation Sciences at The University of Birmingham. After PhD completion, Dr Breen worked in The Department of Kinesiology at McMaster University, Canada, as a Post-Doctoral Research Fellow in the field of ageing musculoskeletal metabolism. Dr Breen re-joined The School of Sport, Exercise and Rehabilitation Sciences as an academic in January 2013 to establish a world-leading research group studying musculoskeletal metabolism in health and disease.

Dr Breen is a regular speaker at international conferences and a peer reviewer for highly respected scientific journals in his research field. In 2011, Dr Breen was awarded a Young Investigator of the Year award by the European College for Sports Sciences for research investigating the influence of protein nutrition and endurance exercise on skeletal muscle metabolism.

Teaching

Dr Breen teaches on the following modules as part of the BSc Sport and Exercise Sciences degree.

1. Molecular of Adaptation to Training (available to 3rd year students).
2. Sports Nutrition (available to 2nd year students)

In addition, Dr Breen is module lead for "Nutrition and Metabolism", part of the MSc in Sport and Exercise Sciences

Postgraduate supervision

Currently Dr Breen supervises 1 PhD, 2 MRes and 2 MSc candidates in The School of Sport, Exercise and Rehabilitation Sciences. Dr Breen welcomes applications from potential post-graduate researchers in the research areas outlined above.

Research

Dr Breen's research interests centre on the influence of exercise and nutrition on musculoskeletal metabolism. Dr Breen has received extensive training in the use of analytical techniques to study muscle protein metabolism in a variety of subject populations at the whole-body and molecular level. More specifically, Dr Breen is interested in the molecular and metabolic interactive effects of exercise and nutrient provision in human skeletal muscle. Dr Breen is interested in how these paradigms can be applied in:

1. Athletic populations - to help optimize adaptations to different modes of training.
2. Ageing - to maintain/restore muscle mass and physical function with in the elderly.
3. Obesity - to assist in weight management and offset complications associated with metabolic disease.

Other activities

Dr Breen is a certified strength and conditioning coach with the National Strength and Conditioning Association and has a keen interest in the practical application of exercise metabolism and nutrition research.

Publications

- T. A. Churchward-Venne, **L. Breen**, D. M. Di Donato, A. J. Hector, C. J Mitchell, D. R. Moore, T. Stellingwerff, D. Breuille, E. A. Offord, S. K Baker, S. M. Phillips. Leucine supplementation of a low-protein mixed macronutrient beverage enhances myofibrillar protein synthesis in young men: a double blind, randomized trial. *Am J Clin Nutr*. 2013; doi: 10.3945/ajcn.113.068775.
- O. C. Witard, S. R. Jackman, **L. Breen**. K. Smith, A. Selby, K. D. Tipton. Myofibrillar muscle protein synthesis rates subsequent to a meal in response to increasing doses of whey protein at rest and following resistance exercise. *Am J Clin Nutr*. 2013; doi; 10.3945/ajcn.112.055517.
- T. A. Churchward-Venne, **L. Breen,** S. M. Phillips. Alterations in human muscle protein metabolism with aging: Protein and exercise as countermeasures to offset sarcopenia. *Biofactors*. 2013; doi: 10.1002/biof.1138.
- **L. Breen**., K. A. Stokes., T. A. Churchward-Venne., D. R. Moore, S. K. Baker, K. Smith, P. J. Atherton., S. M. Phillips. Two weeks of reduced activity decreases leg lean mass and induces 'anabolic resistance of myofibrillar protein synthesis in healthy elderly. *J Clin Endocrinol & Metab*. 2013; 98(6):2604-12.
- D. J. Wilkinson., T. Hossain., D. S. Hill., B. E. Phillips., H. Crossland., J. Williams., P. Loughna., T. A. Churchward-Venne., **L. Breen**., S. M. Phillips., T. Etheridge., J. A. Rathmacher., K. Smith., N. S. Szewczyk., and P. J. Atherton. Effects of Leucine and its metabolite, β-hydroxy-β-methylbutyrate (HMB) on human skeletal muscle protein metabolism. *J Physiol*. 2013; 591(Pt 11):2911-23.
- **L. Breen,** S. M. Phillips. Interactions between exercise and nutrition to prevent muscle waste during ageing. *Br J Clin Pharmacol*. 2013; 75(3): 708-15.
- M. J. Robinson., Burd, N. A., **L. Breen**., T. Rerecich., Y. Yang., A. J. Hector., S. K. Baker., and S. M. Phillips. Dose-dependent responses of myofibrillar protein synthesis with beef ingestion are enhanced with resistance exercise in middle-aged men. *Appl Physiol Nutr & Metab*. 2013; 38(2).
- Y. Yang., T. Churchward-Venne., N. A. Burd., **L. Breen**., M. A. Tarnopolsky., and S. M. Phillips. Myofibrillar protein synthesis following ingestion of soy protein isolate at rest and after resistance exercise in elderly men. *Nutr & Metab*. 2012; 9(57).
- C. J. Mitchell., T. A. Churchward-Venne., D. W. D. West., N. A. Burd., **L. Breen**., S. K. Baker., and S. M. Phillips. Resistance exercise load does not determine training-mediated hypertrophic gains in young men. *J Appl Physiol*. 2012; doi:10.1152/japplphysiol.00307.2012.
- **L. Breen** and T. Churchward-Venne. Invited Perspective - Leucine: The muscles anabolic 'trigger', but what more? *J Physiol*. 2012; 590(pt. 9). 2065-2066.
- **L. Breen** and S. M. Phillips. Nutrition Supplement Series: A to Z of nutritional supplements: dietary supplements, sports nutrition foods and ergogenic aids for health and performance. *British Journal of Sports Medicine*. 2012; 46(6). 454-456.
- **L. Breen** and S. M. Phillips. Nutrient interaction for optimal protein anabolism in resistance exercise. *Curr Op Clin Nutr Metab Care*. 2012; 15(3), 226-232.
- Y. Yang., **L. Breen**., N. A. Burd., A. Josse., A. J. Hector., T. Churchward-Venne., M. A. Tarnopolsky and S. M. Phillips. Dose-response of myofibrillar protein synthesis and whole-body protein turnover to protein ingestion with and without resistance exercise in older adults. *Brit J Nutr*. 2012; 1-9.
- M. M. Farnfield., **L. Breen**., K. A. Carey., A. Garnham and D. Cameron-Smith. Activation of mTOR signalling in young and old human skeletal muscle in response to combined resistance exercise and whey protein ingestion. *Appl Physiol Nutr & Metab*. 2012; 37: 21-30.
- **L. Breen** and S. M. Phillips. Skeletal muscle protein metabolism in the elderly and interventions to counteract 'anabolic resistance'. *Nutr & Metab*. 2011; 8(68).
- **L. Breen**., A. Philp., O. C. Witard., S. R. Jackman., A. Selby., K. Smith., M. J. Rennie., K. Baar and K. D. Tipton. The influence of carbohydrate-protein co-ingestion following endurance exercise on myofibrillar and mitochondrial protein synthesis. *J Physiol*. 2011; 589(16), 4011-4025.
- N. A. Burd., D. W. D. West., D. M. Camera and **L. Breen**. The no-growth 'growth-factor': no role for early IGF-1 signalling in 'bulking' up muscles. *J Physiol*. 2011; 589(11), 2667-8.
- **L. Breen**., A. Philp., C. S. Shaw., A. E. Jeukendrup., K. Baar and K. D. Tipton. Beneficial effects of resistance exercise on glycemic control are not further improved by protein ingestion. *PLoS ONE*. 2011; 6(6), e20613. doi:10.1371/journal.pone.0020613.
- **L. Breen**., K. D. Tipton and A. E. Jeukendrup. No effect of carbohydrate-protein on cycling performance and indices of recovery. *Med Sci Sports Ex*. 2010; 42(6), 1140-48.
- G. N. L. Onambélé-Pearson., **L. Breen** and C. E. Stewart. Influences of carbohydrate plus amino acid supplementation on differing exercise intensity adaptations in older persons: skeletal muscle and endocrine responses. *Age*. 2010; 32(2), 125-38.
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- K. E. Burgess., S. J. Pearson., **L. Breen** and G. N. L. Onambélé. Tendon mechanical properties in elderly populations: effect of gender. *Journal of Orthopedic Research*. 2009; 27(6), 820-5.
- **L. Breen**, G. N. L. Onambélé-Pearson, C. E. Stewart. Functional benefits of combined resistance training with nutritional interventions in older adults: A review. *Geriatrics & Gerontology International*. 2007; 7, 326-40.