



RESEARCH 4 YOU (R4U)

The University of Nottingham
Centre of Metabolism, Ageing & Physiology
(COMAP)
Research Community

Research Bulletin

Edition 3

May 2024



Foreword

Welcome to the Research Community for the Centre of Metabolism, Ageing and Physiology (COMAP).

COMAP is a University of Nottingham research group based at the Royal Derby Hospital, with a volunteer research community known as R4U (Research For You).

As the name suggests, COMAP is interested in better understanding what happens to the human body with ageing and age-associated disease, and how some of these changes may be delayed or modified with interventions.

If you are reading this newsletter you have signed up to join R4U. R4U is crucial to the work that COMAP do, and as an R4U member we will keep you updated on that work that we are doing and ask for help with research design and promotion – this is known as Patient and Public Involvement, or PPI for short.

We will also use this newsletter to let you know of any opportunities to take part in research as a volunteer, and of any public events we are aware of that we think you might be interested in.

Please let us know if you have any comments or suggestions on how this could be improved.

Finally, if you no longer wish be part of this group, Please send an email entitled 'unsubscribe me' to MS-COMAP-Research@exmail.nottingham.ac.uk



Meet the Team

COMAP is comprised of 8 academics (5 scientists and 3 doctors), plus a number of post-PhD research fellows, technicians and PhD students. In each edition of this newsletter, we will introduce you to two or three of the team.

Dr Mathew Piasecki is an Associate Professor of Neuromuscular Physiology. His research aims to understand how we control our muscles via signals sent from the brain, down motor nerves to make muscles move. This involves measuring electrical activity of muscles and nerves and trying to understand how all this changes as we get older. Looking at ways to minimise these changes with advancing age is also a key focus of his research. Mathew also supervises a number of COMAP PhD students.



Mr Josh Wall is a 2nd year PhD student in COMAP as well as a trainee surgeon at the Royal Derby Hospital. Josh's PhD is based on exploring the effects of high-intensity interval training (HIIT) with or without resistance exercise training (RET) in patients waiting for colorectal cancer surgery. It is hoped that combined HIIT and RET will improve the fitness of these patients before their surgery, helping them return to their normal activities as quickly as possible. This study is known as EPiC - Exercise Prehabilitation in Colorectal Cancer.



Events



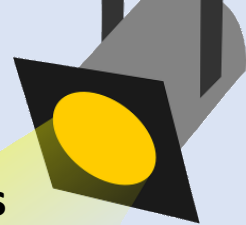
ABOVE: Mr Tim Mitchell (President of Royal College of Surgeons) with (left-to-right): Miss Susie Hamid (COMAP PhD student and surgical trainee), Mr Jon Lund (Consultant Colorectal Surgeon and COMAP Clinical Academic), Miss Charlie Barta, Mr Josh Wall and Miss Melanie Paul (all COMAP PhD students and surgical trainees).

Back in January this year we were visited by Professor Tim Mitchell who is the current President of the Royal College of Surgeons. After a tour of the Royal Derby Hospital, Professor Mitchell and his colleagues also enjoyed a tour of our research labs, concluding with a go on some of our functional testing kit, housed in our large Exercise Suite.

Professor Mitchell tested his motor control skills on our "Derby Chair", a purpose-built testing chair, Designed to assess both physical strength and motor control .



Spotlight on Findings



Having been in Derby for a little over 20 years, COMAP has published a lot of exciting research. Recognising that scientific manuscripts aren't always the easiest to digest, each edition of this newsletter will provide a non-specialist overview of work from COMAP (old and new), including a take-home message.

Training-induced improvements in knee extensor force accuracy are associated with reduced vastus lateralis motor unit firing variability.

Isabel A Ely, Eleanor J Jones, Thomas B Inns, Siobhra Dooley, Sarah B Millier, Daniel W Stashuk, Philip J Atherton, Bethan E Phillips, Mathew Piasecki

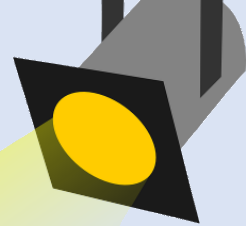
Public Summary: Most work looking at the ability of exercise interventions to improve muscle function focuses on strength as the main outcome. However, we now know that the ability of an individual to control how much force their muscles are exerting is likely an important factor in falls prevention and other aspects of muscle function, especially in older adults. The mCON paper above suggests that when young people undergo specific training to improve the accuracy of their knee extensor force (that's the strength of the muscles that straighten your knee), they improve not only their force accuracy but also experience a decrease in the variability of nerve-to-muscle communication. Although this study did not demonstrate improvements in strength or balance after the specific force accuracy training, this may be due to it being performed in young individuals who likely have close to optimal muscle function. As muscle function declines with advancing age, we are now replicating this study in older adults, and have also added a de-training period to see how long any favourable adaptations last for. If proven effective in older adults, this type of training may offer a lower-intensity alternative to traditional resistance (weight-based) exercise training, which is not always tolerable for older adult/patient cohorts.

The scientific abstract publication can be found at:

[COMAP mCON Article](#)



Spotlight on Health



THE IMPORTANCE OF MUSCLE MASS

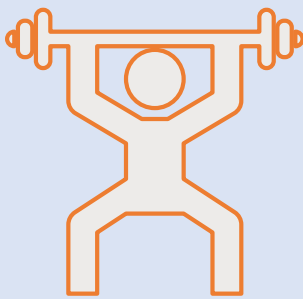
Many of our research projects are sponsored by industry, whereby we are helping them to find out, in a rigorous scientific way, if their products really do offer the benefits that they hope.

One of the companies that we work with on a regular basis is the USA-based company, Abbott Nutrition.

Abbott Nutrition also have an education arm to the business, and a number of COMAP academics have supported Abbott Nutrition in their aim to promote the importance of muscle mass maintenance in to older age.

Please click on the link below to watch a short YouTube video presentation from Abbott Nutrition:

https://www.youtube.com/watch?v=pDSX_jaDCDM




Call for Help



All research relies on a public voice to make sure our research is relevant to the needs of the people we are hoping to help, that the information we provide is understandable for a non-specialist audience, and that we are spreading the message of our research to the right people in the right way.

In each edition of this newsletter, we will let you know what activities we need help with, including any studies that are looking for research volunteers.

 **Exercise for older adults**

Want to help research on the impact of exercise in older people?
Interested of exercise on brain and body health?

- Participate in exercise training **3 days a week for 4 weeks.**
- **Blood samples** will be taken and you will be asked to answer some questions.
- We will pay an **inconvenience allowance** for participants who complete the study

You will need to attend the Royal Derby Hospital for one day each week for 4 weeks

Researchers at the Royal Derby Hospital are looking for:

- healthy volunteers aged **65-80** years.

If you would like more information please contact me at:
Email: hatice.ekici@nottingham.ac.uk **Tel:** 01332 724676

Volunteers needed for a study looking to explore the effects of upper limb 'motor control training' on muscle and brain function in older adults

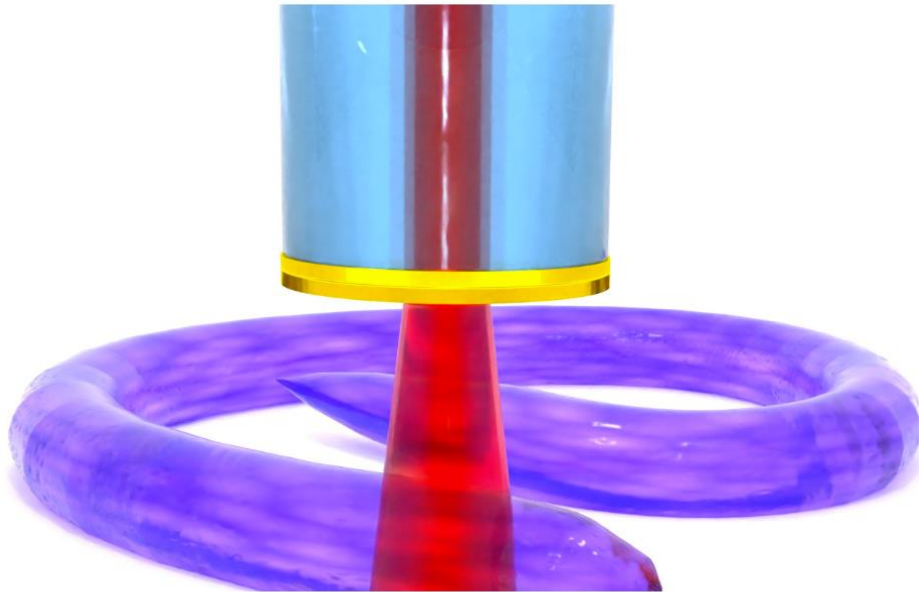
For more information please contact:

hatice.ekici@nottingham.ac.uk



Finally, some other University news...

We thought from time to time you might also like to hear about other ways our University is making a difference.



World-first microscopic probe could revolutionise early cancer diagnosis

Monday, 15 April 2024

Researchers at the University of Nottingham have created an endoscopic device that can 3D image the stiffness of individual biological cells and complex organisms, a discovery that could help doctors discover and treat cancer earlier.

In its early stages, cancer cells are, far softer than normal cells. This allows them to squeeze through tight gaps and rapidly spread throughout the body, known as metastasis. During this process, collections of cells modify their surrounding environment to create stiff tumours that protect them from outside threats.

For more information visit: [Cancer cells link](#)

