

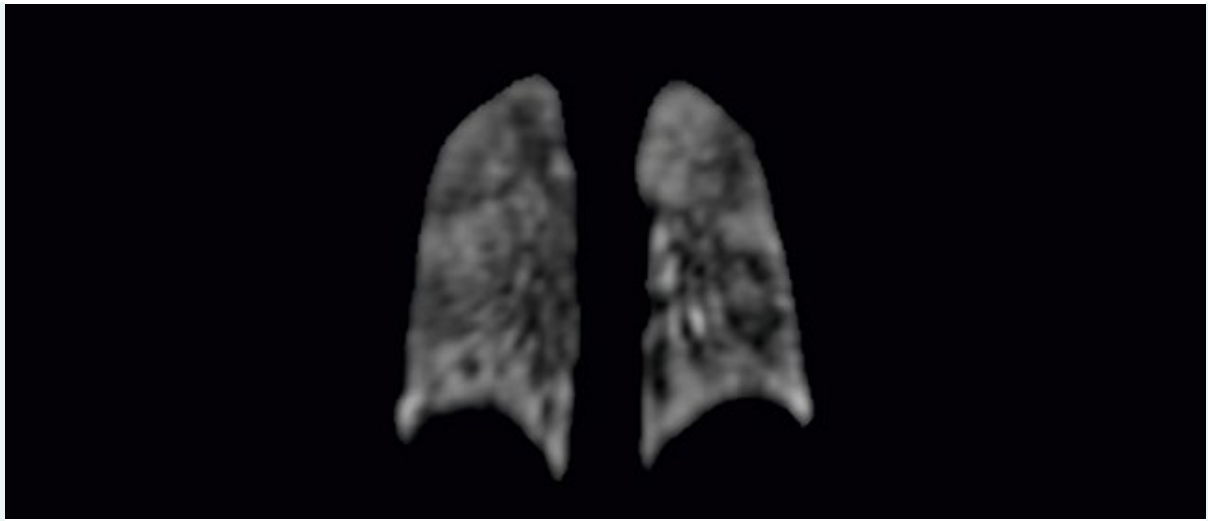
Insigneo Newsletter



Welcome to our monthly Insigneo newsletter!

Our monthly e-newsletter keeps you up to date with events, funding, success stories and information. We hope you will find it useful! If you would like to add information and/or events to this newsletter please email: news@insigneo.org (the newsletter will be issued during the 2nd week of the month, excluding January and August). Please ensure that you submit news and events with a minimum of one week's notice.

Hidden damage to lungs from Covid-19 revealed in new study from University of Sheffield



A revolutionary technique pioneered at the University of Sheffield has identified weakened lung function in Covid-19 patients not visible on a standard MRI or CT scan.

A new clinical study at Oxford University using novel lung MRI technology developed in Sheffield is the first in Europe to use hyperpolarised xenon gas with MRI scanning to identify the impact on lung function as patients recover from coronavirus.

[Read more](#)

Sano is nominated for the Crystal Brussels Sprouts Award



Congratulations to our [Sano](#) project which has been nominated for the 9th edition of the Crystal Brussels Sprouts Award 2020 in the category of non-profit entities.

Crystal Brussels has been awarded since 2001 for successes in the EU Research and Innovation Framework Programs. It is a distinction valued among scientists and entrepreneurs for their innovation and contribution to the development of Polish science and economy. This year's Crystal Brussels sprouts will sum up the entire Horizon 2020 Framework Program (2014-2020) – the largest framework program in the history of the European Union, which is to strengthen scientific excellence and increase the economic competitiveness of the Member States.

[Read more](#)

Mobilise-D continued monitoring patients' mobility despite the lockdown



Monitoring patients' mobility during the COVID-19 pandemic could easily have been impossible due to lockdown and restrictions such as social distancing. However, this wasn't the case for our Mobilise-D project's technical validation study (TVS) where 120 participants with chronic obstructive pulmonary disease, Parkinson's disease, multiple sclerosis, congestive heart failure or hip fracture, along with healthy older adults, will be enrolled. Mobilise-D test sites in Newcastle and at the University of Sheffield's Insigneo Institute for *in silico* Medicine found ways to work around the distancing restrictions to keep the study open, and the technical validation study testing continued despite the second lockdown in the UK.

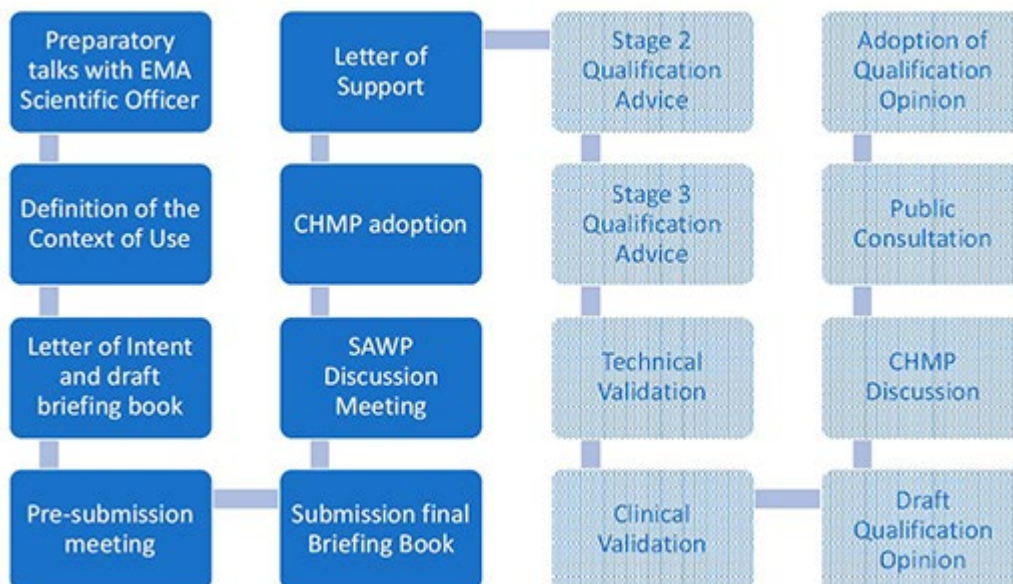
[Read more](#)

Mobilise-D receive letter of support from European Medicines Agency (EMA)

On 4 October 2019, our Mobilise-D project asked the European Medicines Agency (EMA) for qualification advice for Digital Mobility Outcomes (DMOs). The EMA have published their letter of support that publicly endorses their initial stage in the wider objective of the Mobilise-D Consortium to pursue the qualification of Digital Mobility Outcomes (DMOs) as monitoring biomarkers of mobility performance in regulatory drug trials. Mobilise-D now have support to continue their work towards regulatory approval of DMOs as biomarkers.

[Read more](#)

Toward a regulatory qualification of real-world mobility performance biomarkers in parkinson's patients using digital mobility outcomes



Researchers from our Mobilise-D project have had a paper published in Sensors journal on 'Toward a regulatory qualification of real-world mobility performance biomarkers in parkinson's patients using digital mobility outcomes'.

Today's smartwatches and activity bracelets, like FitBit, Apple, and Samsung, have motion sensors that can measure your daily activity. These technologies can tell you how much or little active you are, for example by counting your daily number of steps, heart rate or track your movements with GPS. In both basic and clinical research, similar technologies are used to measure different features of mobility in a real-world setting. What if we could use these technologies to evaluate how a new treatment or medicine affects patients with diseases that have a negative impact on their mobility? That would be amazing, right?

[Read more](#)

Angels of the North

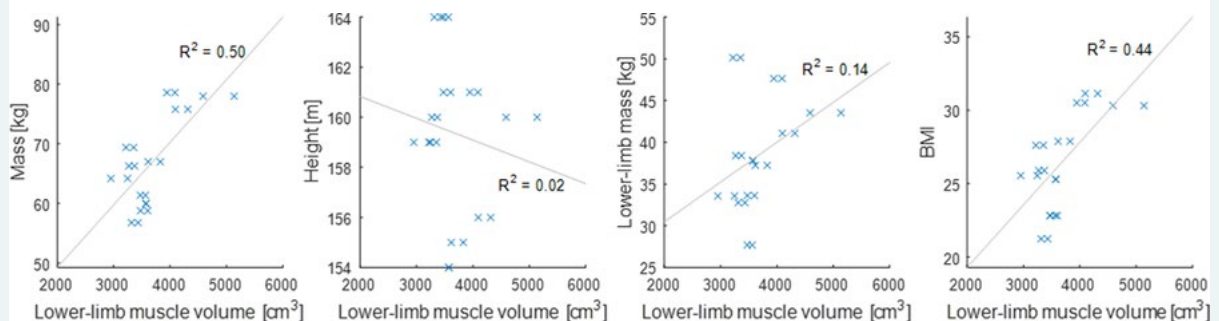


MultiSim's Director, Claudia Mazzà has been collaborating with dancer and choreographer Freddie Garland, Tenfoot Dance Company, in her continuing project 'Women's Movement 100: Angels of the North' to create a filmed performance about women's suffrage, emancipation and health for Festival of the Mind.

Data captured at Insigneo's Motion Capture and Virtual Reality Laboratory from some of the dancers involved in the Women's Movement 100 can be seen as delicate, abstracted moving dots and tracing lines superimposed over portions of the film, reflecting the movements used by the dancers in the film.

[Read more](#)

MRI-based anatomical characterisation of lower-limb muscles in older women



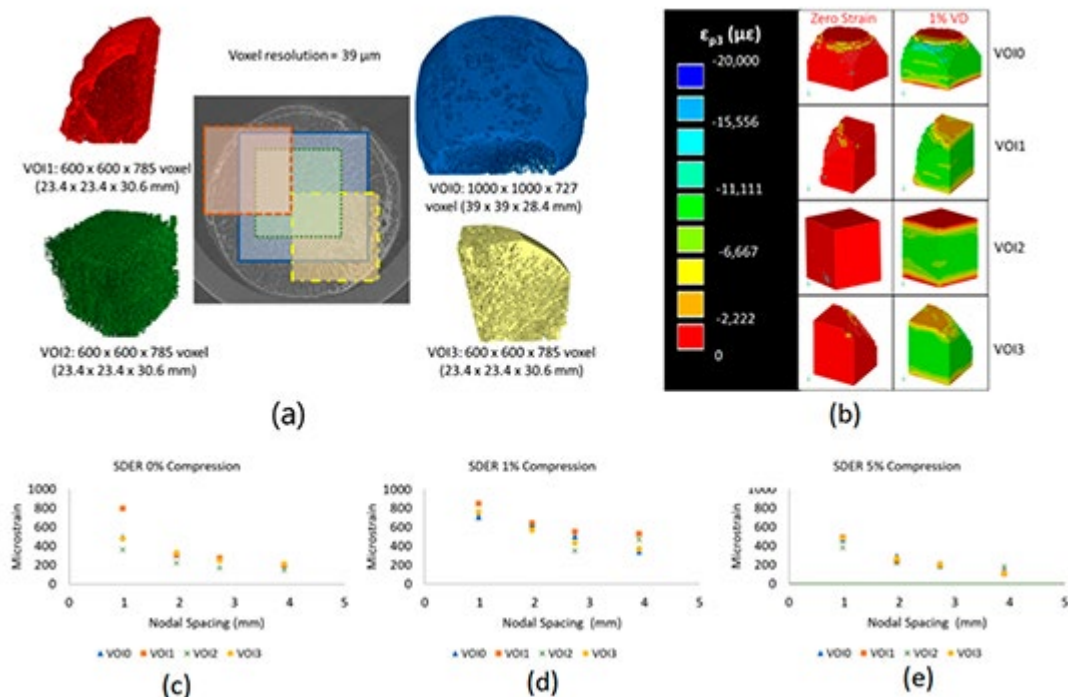
Researchers from our MultiSim project have published a paper in the journal PLoS ONE on 'MRI-based anatomical characterisation of lower-limb muscles in older

women’.

The ability of muscles to produce force depends, among others, on their anatomical features and it is altered by ageing-associated weakening. This MRI-based study quantified for the first time anatomical asymmetry of lower-limb muscles in older women by characterising muscle volume, length, and physiological cross-sectional area (PCSA) and their variability, between body sides and between individuals. Results suggest that symmetry should not be assumed in older women and heavily question the validity of a generic-scaled approach when modelling the musculoskeletal system in older populations. The unique dataset of muscle segmentation made available with this paper could support the development of alternative population-based scaling approaches, together with that of automatic tools for muscle segmentation.

[Read more](#)

Heterogeneous strain distribution in the subchondral bone of osteoarthritic femoral heads measured with digital volume correlation



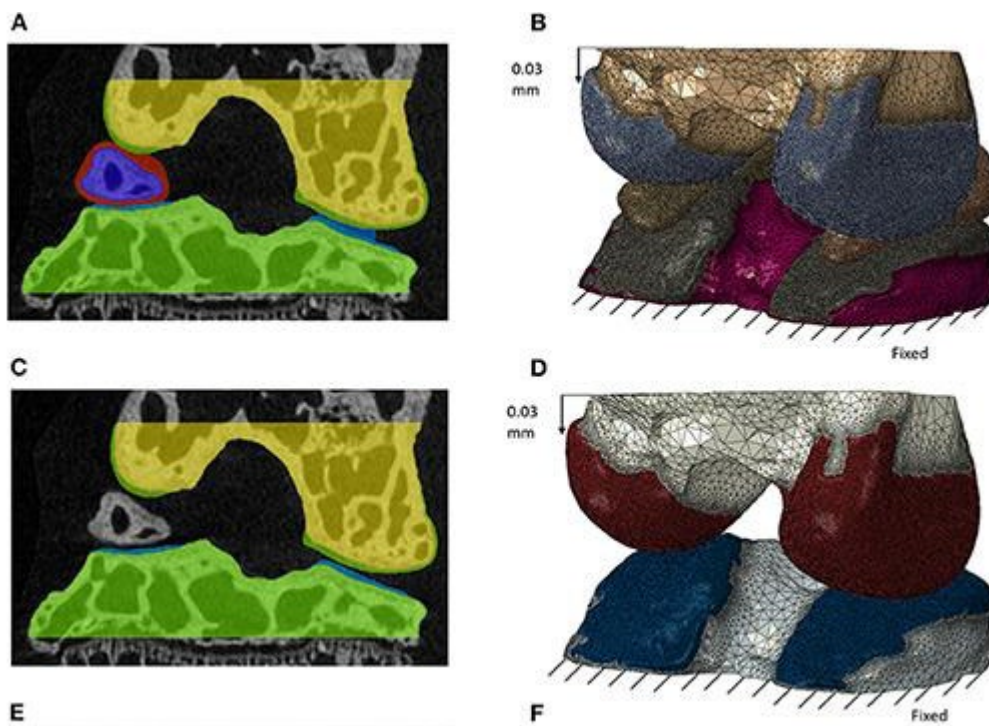
Researchers from our MultiSim project have published a paper in the journal Materials on ‘Heterogeneous strain distribution in the subchondral bone of osteoarthritic femoral heads measured with digital volume correlation’.

Osteoarthritis affects the properties of the joints, changing its shape and mechanical response, and inducing pain to the patient. We still do not know how the complex structure of osteoarthritic bone deforms under load, due to the challenging experimental approaches required to evaluate the internal deformation in bone

specimens. The goal of this study was to develop a method based on Digital Volume Correlation to elucidate whether the local deformation in osteoarthritic femoral heads are related to the degeneration of the subchondral bone due to the disease. Whole femoral heads extracted from osteoarthritic patients during standard total joint replacement surgeries were mechanically tested within a high resolution micro-computed tomography scanner.

[Read more](#)

Development of subject specific finite element models of the mouse knee joint for preclinical applications



Researchers from our [MultiSim](#) project have published a paper in the journal *Frontiers Bioengineering and Biotechnology*, on 'Development of subject specific finite element models of the mouse knee joint for preclinical applications'.

[Read more](#)

BioMedEng21 conference

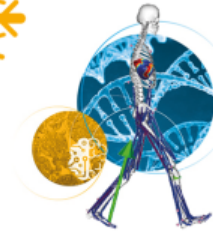


BioMedEng21

The UK's largest gathering of Biomedical Engineers,
Medical Engineers and Bioengineers



Season's Greetings!



INSIGNEO
Institute for *in silico* Medicine

Sheffield Teaching Hospitals **NHS**
NHS Foundation Trust

Season's Greetings from Prof Gwen Reilly and the BioMedEng21 Local Organising Committee. Don't forget, abstract submissions open in February!

[Read more](#)

Mapping the use of computer models & simulations in clinics



The VPHi has launched the 1st survey specifically designed for clinicians to map their level of knowledge and use of computer models & simulations.

Over the last decade, the VPHi has seen incredible advances in the research leading to the realisation of their vision. At the last VPH conference, they witnessed an increase in the use of computer models & simulations to improve effectively clinical care. Successful experiences have been reported in scientific publications and presentations, but the spread of computer models & simulations is not always reflected in a timely and accurate manner in the literature.

Hence, they would like to take a snapshot of the current status of *in silico* medicine and get insights on applications, level of acceptance and current barrier. The results of this survey will be openly shared with all the community. Please get involved by sharing the survey with your clinical colleagues!

Filling the survey should not take longer than 10 minutes.

[Complete the survey](#)

Guest Lectures, Conferences & Seminars

Insigneo Events

22 January 2021

Insigneo Seminar - Aurelié Carlier (University of Maastricht)

19 February 2021

Insigneo Seminar - Base-pair resolution analysis of the effect of supercoiling on DNA structure and flexibility

Other Events

14 December 2020

Sano Seminar: Irena Roterman-Konieczna – Communication in living organism

16 December 2020

Research IT Forum - machine/deep learning

13 January 2021

RSE LunchBytes #4: Data Visualisation

6 - 7 September 2021

BioMedEng21 - Save the date!

For a full list of upcoming events visit: <http://insigneo.org/events/>

Vacancies

MRC DiMeN DTP PhD studentships

iCASE 8: Magnetic resonance imaging of lung fibrosis in interstitial lung disease – physics or engineering PhD project (Sheffield: Prof Jim Wild and iCASE partner: Galapagos Pharmaceuticals)

Closing date: 14/01/21

Standard 15: Finding new drugs to target heart attack and stroke (Sheffield: Prof Paul Evans)

Closing date: 14/01/21

There is an applicant webinar session taking place 06/01/21 at 10am, full details available here: <https://www.dimen.org.uk/how-to-apply/current-opportunities>

Publications

Research output affiliated to Insigneo in Scopus (please ensure papers are affiliated to the Insigneo Institute by including the words "Insigneo Institute for *in silico* Medicine"):

Investigating the nutritional advice and support given to colorectal cancer survivors in the UK: is it fit for purpose and does it address their needs (Journal of Human Nutrition and Dietetics) S. L. Matsell, M. A. Sánchez-García, V. Halliday, E. A. Williams, B. M. Corfe

Modeling intracranial aneurysm stability and growth: an integrative mechanobiological framework for clinical cases (Biomechanics and Modeling in Mechanobiology) F. S. Teixeira, E. Neufeld, N. Kuster, P. N. Watton

Finite element modelling of hybrid stabilization systems for the human lumbar spine E. Demir, P. Eltes, A.P.G. Castro, D. Lacroix, İ.Toktaş

Endothelial dysfunction in COVID-19: a position paper of the ESC Working Group for Atherosclerosis and Vascular Biology, and the ESC Council of Basic Cardiovascular Science (Cardiovascular research) P. C. Evans, G. E. Rainger, J. C. Mason, T. J. Guzik, E. Osto, Z. Stamataki, D. Neil, I. E. Hofer, M. Fragiadaki, J. Waltenberger, C. Weber, M.-L. Bochaton-Piallat, M. Bäck

An objective methodology for the selection of a device for continuous mobility assessment (Sensors (Switzerland)) T. Bonci, A. Keogh, S. Del Din, K. Scott, C. Mazzà

Tactile innervation densities across the whole body (Journal of Neurophysiology) G. Corniani and H. P. Saal

Insigneo Institute
for *in silico* Medicine
F Floor- Room F19
The Pam Liverside Building
Sir Frederick Mappin Building
The University of Sheffield
Mappin Street
Sheffield, S1 3JD

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