

Breast Health News

Meet the team

We continue to build a multi-disciplinary network of academics and professionals to progress our research. This year we welcomed Dr Tim Exell (Biomechanist), Dr Jenny Smith (Exercise Psychologist) and Brogan Horler (Technician/Researcher) who will be using their experience and expertise to contribute to a wide range of projects within the group. Additionally Alison Walker, an experienced presenter and reporter, has recently been appointed as a visiting researcher and will be working closely with Amanda Brasher and other members of the group to assist with the development and implementation of a breast education project for adolescent girls.

We would also like to congratulate existing group member Amy Sanchez who successfully defended her PhD thesis in July 2015 and now holds a Post-Doctoral position as a Senior Researcher within the Research Group in Breast Health. Congratulations Amy!

Research Group in Breast Health: From left to right Emma Burnett, Dr Alex Milligan, Brogan Horler**, Dr Amy Sanchez (nee Loveridge)*, Dr Chris Mills, Dr Nicola Brown, Dr Jenny Burbage (nee White), Professor Joanna Scurr, Amanda Brasher. Not shown in photo: Dr Joseph O'Halloran, Dr Tim Exell**, Alison Walker** and Dr Jenny Smith**
*Completed PhD in 2015 **New team member



Our achievements since 2006

- Published 39 scientific peer-reviewed papers
- Delivered over 200 presentations to national and international audiences
- Tested over 900 women in our laboratory
- Tested the performance of over 600 bras
- Completed over 20 commercial projects

Welcome to the fourth edition of the Research Group in Breast Health newsletter from the University of Portsmouth. The group, led by Professor Joanna Scurr, is internationally renowned for conducting pioneering fundamental and applied research into this important aspect of women's health.

Professor Joanna Scurr's inaugural lecture



On the 25 November 2015, Professor Joanna Scurr gave her Professorial Inaugural Lecture titled *AlgeBRA: Integrating Science and Breast Health*. Following a keen interest in human movement science Professor Scurr's research in breast health began with the development of the first method for monitoring the biomechanics of the breast in three dimensions. This method provided industry with the first procedure to monitor and establish the function of breast support products. This advancement enabled research on factors that may influence the

biomechanics of the breast such as ageing, surgery, pregnancy and obesity, and factors influenced by the biomechanics of the breast such as breast pain, tissue strain, and body image.

The Research Group host the most successful workshop to date



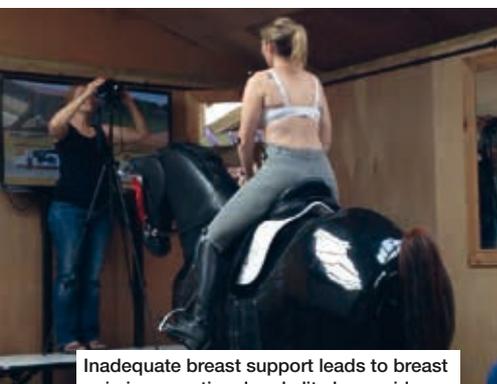
The Research Group in Breast Health held their fourth workshop on 'The Science of Breasts and Bras' on the 4 September 2015 and it was the most successful workshop to date. The workshop was well attended by

delegates from around the globe who gave very positive feedback. The dates for the 2016 workshops will be released in the New Year.

The Research Group in Breast Health is in a unique position to be able to offer these exciting workshops and there is currently no other workshop available on the market that is able to provide up-to-date and relevant information on the science behind breasts and bras. Please visit www.port.ac.uk/sportscience and click on 'research' for more details on upcoming workshop opportunities, or email Dr Jenny Burbage (jenny.burbage@port.ac.uk) for information on bespoke workshops.

Breasts deter women from horse riding

Dr Jenny Burbage and Lorna Cameron (Course tutor in Equine Studies at Sparsholt College) have investigated breast health issues in female horse riders via an online survey.



Inadequate breast support leads to breast pain in recreational and elite horse riders

The study, presented by Dr Burbage at the 11th International Equitational Science Conference in Vancouver, found that 25 per cent of horse riders reported that their breasts were a barrier to horse riding. Forty-seven per cent of the riders surveyed were of regional, national or international level and just over half were larger breasted (\geq D Cup). Forty per cent of participants

experienced breast pain whilst horse riding and level of breast pain increased with bra size. Interestingly, only a quarter of riders always wore a sports bra whilst horse riding. This initial study provides justification to explore the effect of breast pain and other breast health/bra issues on the horse-rider interaction.

Developments lead to more accurate breast motion data



Development of improved marker locations to track body movement

The Research Group in Breast Health is continually revising and updating the key methods used to collect and process accurate and reliable breast motion data using innovative hardware and software techniques. One key difficulty we experience when collecting breast motion data is separating the motion of the breast from the motion of the body. This is particularly challenging due to the non-rigid nature of the underlying rib cage combined with the additional motion of the skin during exercise.

Dr Chris Mills has worked extensively to develop and improve our data collection techniques and has published several methodological developments this year, including a new torso marker set which improves the quality of our dynamic breast data and in turn the information we can feed back to our collaborators.

The Research Group in Breast Health expand their research capabilities

This year our world-class research facilities have continued to expand with the addition of a new electromagnetic sensor system. This system allows us to investigate breast movement by applying the sensors directly to the breast underneath clothing, enabling us to quantify breast movement inside a bra. We currently have multiple sensors, but we intend to expand our sensor's capabilities to collect the most detailed and accurate breast movement data possible.

Dr Nicola Brown becomes Breast Health Awareness Promoter

Earlier this year Dr Nicola Brown attended an accredited Breast Health Promotion course run by Breast Cancer Care. After successful completion of the course, and submission of a comprehensive portfolio of work, Nicola has delivered several breast health workshops to a variety of groups covering topics such as how to be breast aware, signs and symptoms of breast cancer, risk factors for breast cancer, and breast screening. Detecting and treating breast cancer is key to surviving breast cancer and it is essential that women are informed in a non-alarmist way about the disease and how to identify it as early as possible in order to improve long-term prognosis. If you would like to discuss a breast health workshop please contact Nicola.brown@stmarys.ac.uk for information.

Do you have the right bra for your sport?



Effective sports bras that minimise breast displacement are crucial to reduce breast discomfort during exercise. However, the type of exercise undertaken may influence how the breast moves which means that the bra a woman puts on to go for a run might not be as effective when running around a netball court or hockey pitch.

In a study of sixteen 32D participants, we found that sports bras used during jumping activities require greater vertical breast support, whereas sports bras for running require a more equal distribution of breast support in all directions (vertical, side to side, forwards and backwards). Compared to running and jumping activities, sports bras for agility movements and cutting manoeuvres required the greatest support to reduce side to side movement of the breast. These results suggest that specific design recommendations are required for sports bras to optimise their function.

How do our breasts size up?

Dr Nicola Brown is currently on a sabbatical from her post as a Senior Lecturer at St Mary's University to conduct a study at the University of Portsmouth investigating the reliability and validity of automatic breast measurements extracted from our body scanner.



Dr Nicola Brown

Each scan takes only six seconds to complete and could provide us with an extensive database of breast measurements including breast volume obtained from a wide range of women. These data could inform the development of improved bra fit and more complex biomechanical assessment of the breast.

Breast education – can you help?

The Research Group in Breast Health are passionate about raising knowledge and awareness of breast health. A key starting point for this is improving breast education for schoolgirls, as currently there is no compulsory breast education in UK schools.

We are undertaking a long-term project to investigate schoolgirl's knowledge of breasts, develop breast education resources, and implement and evaluate these resources in schools. This will enable us to roll out a breast education package more widely across schools in the UK and potentially farther afield.



Breast education is an important topic for young girls

Our research in this area has already begun by establishing the need for such a resource, and the appropriate content. We are now ready to begin developing the resources themselves. With this in mind we will be considering potential partners to support this initiative either financially or value in kind. This project has the potential to improve girls' lives and we have received positive feedback from both students and teachers on a pilot educational workshop we delivered earlier this year. If this is something that you are interested in discussing further, please contact breastresearch@port.ac.uk.

Making an impact

To contribute to our objectives of broadening understanding and raising awareness in this important aspect of women's health the team from the Research Group in Breast Health regularly attend events and publish findings.

Recent events

March 2015: Emma Burnett: 'The validity and reliability of a breast pain diary for women with cyclic breast pain' at the Pain Science in Motion Conference Brussels, Belgium.

March 2015: Dr Alex Milligan: 'Is your product performing as well as she is?' at Interfillière in Hong Kong.

April 2015: Emma Burnett: 'An investigation of bra preferences and concerns for women with larger breasts and breast pain' at the British Pain Society Annual Scientific Meeting, Glasgow, Scotland.

June 2015: Professor Joanna Scurr and Dr Nicola Brown: 'Is breast bounce an issue for female athletes?' at the Female Athlete Conference in Wellesley, Massachusetts, USA.

July 2015: Dr Alex Milligan: 'Mode-ality bras: supporting all her activities' at Mode City in Paris, France.

July 2015: Dr Alex Milligan: 'Measurement of breast motion across the breast surface leads to better recommendations for breast support' at the 33rd Conference of the International Society of Biomechanics in Sport in Poitiers, France.

July 2015: Dr Jenny Burbage: 'The effects of a double breast mastectomy on upper body position during simulated horseback riding: a case study' at the 33rd Conference of the International Society of Biomechanics in Poitiers, France.

July 2015: Dr Chris Mills: 'Trunk reference frames and the calculation of trunk and breast kinematics in human movement analysis' at the 25th Congress of the International Society of Biomechanics in Glasgow, Scotland.

August 2015: Dr Jenny Burbage: 'An investigation into breast health issues in female horse-riders' at the 11th International Equitational Science Conference, Vancouver, Canada.

Selected publications since Dec 2014

Brown, N. and Scurr, J. (2016). 'Breasts are getting bigger'. Where is the evidence? *Journal of Anthropological Sciences*, 94, 1-8.

Brown, N., Burnett, E. and Scurr, J. (2016 – In press). Is breast pain greater in active females compared to the general population in the UK. *The Breast Journal*.

Milligan, A., Mills, C., Corbett, J., and Scurr, J. (2015). The influence of breast support on torso, pelvis, and upper arm kinematics during a five-kilometre treadmill run. *Human Movement Science*. 42, 246-260.

Mills, C., Loveridge, A., Milligan, A., and Scurr, J. (2015 – In press). Trunk marker sets and subsequent calculation of trunk and breast kinematics during treadmill running. *Textile Research Journal*.

White, J., Mills, C., Ball, N., and Scurr, J. (2015). The effect of breast support and breast pain on upper-extremity kinematics during running: Implications for females with larger breasts. *Journal of Sports Sciences*. 33(19), 2043-2050.

For a full list of publications please email breastresearch@port.ac.uk.

How we can help you

Workshops

We offer one-day breast science workshops that can be tailored to meet your objectives, covering topics such as breast biomechanics, bra support requirements, bra fit, breast movement, and the importance of breast support. For more information, please email Dr Jenny Burbage at jenny.burbage@port.ac.uk.

Product testing

Due to the huge demand for our product testing, we are now able to offer off-the-shelf bra testing packages at highly competitive rates, offering clients very quick results. For more information, please email Professor Joanna Scurr at joanna.scurr@port.ac.uk.

Research projects

Are you involved in the design, manufacture, retail or marketing of bras or sports bras, or breast healthcare? Would you like to improve your service or products? If so, please contact us using the details below to discuss how we could help.

How you can help us

Recruitment

We are always looking for women to take part in our research. If you would like to be involved, please contact us using the details below.

Find out more

For more information including videos and news, visit our website.

T: 023 9284 5161

E: breastresearch@port.ac.uk

W: www.port.ac.uk/breastresearch

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