



UNIVERSITY OF
PORTSMOUTH

BREAST HEALTH NEWS

Research Group in Breast Health
January 2018 - Issue Six

WELCOME

TO THE SIXTH EDITION OF
THE RESEARCH GROUP IN
BREAST HEALTH NEWSLETTER
FROM THE UNIVERSITY OF
PORTSMOUTH.

The group, led by Professor Joanna Wakefield-Scurr, is internationally renowned for conducting pioneering fundamental and applied research into this important aspect of women's health.



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MEET THE TEAM

As we continue to expand our research group, within the last 12 months we have welcomed an additional team member to the Research Group in Breast Health.

Sophie Rej has recently joined the group as a PhD researcher, after completing her MSc in Sport and Exercise Biomechanics at the University of Chichester. Sophie's PhD will focus on evaluating how clothing can affect biomechanical and psychosocial factors for pregnant and postpartum women who exercise.



Sophie Rej

IN CELEBRATION OF THE LIFE OF DR ALEX MILLIGAN

It is with great sadness that I write this piece in celebration of the life of one of our researchers, Dr Alex Milligan, who passed away in February 2017. Alex joined the University of Portsmouth in 2005 as an undergraduate in sport and exercise science, and went on to an MSc in Sports Performance.



Dr Alex Milligan

Alex represented the University at conferences, won awards, developed an impressive publication record and generated income. Alex taught and inspired others to become passionate about science. But for me, the quality I admired most in Alex was her integrity. Integrity is the foundation of science, from

Alex was a conscientious scientist who was not prepared to compromise. This set her up well to continue her studies into a PhD with the Research Group in Breast Health, followed by a position as a Senior Research Associate. Alex was a fantastic team player, and this was evident in her prolific sporting and professional career.

transparency in participant recruitment, data collection and analysis, to how we present findings. We all know that statistics can be manipulated – data removed, positive findings presented ahead/instead of negative findings – but scientific integrity should underpin everything we do as scientists.

Alex was one of the most honest, meticulous, conscientious scientists I have ever had the pleasure of working with. She would triple-check everything and was not, under any circumstances, prepared to lower her scientific standards or compromise. I learnt a lot from her. There is no right or wrong answer in science, there is only evidence. Her approach enabled and inspired the systematic, logical progression of knowledge in breast biomechanics. Alex was an honest, open, warm, considerate and beautiful person, and science is a poorer place without her.

Our primary bra testing research laboratory within the Department has been renamed the Dr. Alex Milligan Lab in Alex's honour, and an annual contribution award has been established in her memory; she will never be forgotten.

Professor Joanna Wakefield-Scurr

DELIVERING BREAST EDUCATION IN SCHOOLS

BREAST DEVELOPMENT IS THE FIRST VISIBLE SIGN OF PUBERTY, AND CAN BE EMBARRASSING AND CONFUSING FOR GIRLS, NEGATIVELY IMPACTING THEIR BODY IMAGE, SELF-ESTEEM AND SPORTS PARTICIPATION.



Atefeh Omrani (PhD researcher with the Research Group in Breast Health) presenting breast education for schoolgirls at the Gender, Physical Education and Active Lifestyles Conference, Leeds Beckett University.

We surveyed over 2,000 schoolgirls who reported multiple breast concerns, with 87 per cent telling us they wanted to learn more about breasts. However, there is currently no breast education in schools. We are passionate about raising awareness and knowledge of breast health and have developed a 50-minute breast education workshop to teach schoolgirls (aged 11 to 14 years) about breast health, bra fit and the benefits of proper breast support.

We will be launching our workshop early next year and we are currently looking for schools to participate to evaluate its effectiveness. If this is something you are interested in participating in, or would like to discuss further, please contact Atefeh Omrani at 157483@live.stmarys.ac.uk.

ADVANCING OUR KNOWLEDGE WITH 3D SCANNING

As part of our most recent breast science workshop, delegates were given a demonstration of our new Artec Eva 3D scanner. The RGBH chose this scanner as it excels when scanning the human body, comes with streamlined data processing pipelines within its software and is easy to use.



A participant undergoing a 3D scan.

The group have combined the Artec Eva with a turntable and a programmable slider to enable a quick and accurate 3D scan of the torso, while maintaining a non-invasive and comfortable environment for our research volunteers. This new addition to our laboratory has been put to use immediately in a number of our research projects, and is also being used during educational and outreach events.

BRA FIT ANALYSIS PROJECT FITS OVER 900 BRAS!

This year a funded research project conducted by Melissa Jones and Dr Jenny Burbage recruited women of sizes ranging from 30 to 42 underband and AA to G cup to investigate variations in bra fit across different bra brands. Each woman was fitted in 14 bras of varying brands and styles and a best fit size identified for each.

Eighty-six per cent of participants being fitted correctly in at least two different sizes, depending on brand and/or style. This shows the amount of variation in fit not only between brands, but even between bras of the same brand! These results highlight the importance of understanding good bra fit and being able to identify a best fit size, so please ensure you follow our five-step approach to finding the best bra fit:

Best fit method

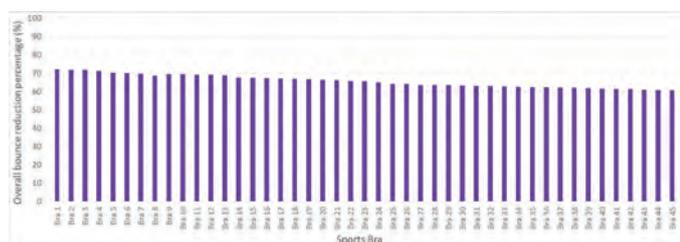
- 1. THE UNDERBAND:** This should fit firmly, but should not be too tight or uncomfortable and should be level all the way around the ribs. The underband is where most of the support comes from.
- 2. THE CUPS:** The breast should be enclosed within the cups. There should be no bulging or gaping at the top or sides. If the material is puckering then the cup is probably too big.
- 3. UNDERWIRES:** The underwire should follow the natural crease of the breast. It should not rest on the breast tissue at any point.
- 4. CENTRE FRONT:** For most bras, the front of the bra between the breasts should sit flat against the body and not gape at any point. If the front of the bra is lifting away the cup may be too small.
- 5. THE STRAPS:** The shoulder straps should be adjusted to provide comfortable breast support without being too tight. The main support should come from the underband not from the straps.

RELAUNCHING OUR BRA TESTING PACKAGES

THE RGBH ARE RELAUNCHING THEIR WORLD-RENOWNED BRA TESTING PACKAGES. STILL NAMED THE BRONZE, SILVER AND GOLD PACKAGES, BUT NOW OFFERING A SELECTION OF ADDITIONAL BENEFITS ALONGSIDE THE BIOMECHANICAL TESTING PROVIDED.

PERFORMANCE RANKING

The RGBH have now tested the performance of hundreds of sports bras and are able to rank all the bras tested by the amount of breast movement (bounce) they control. Many of the major industry players in the bra market have utilised our ranking system to understand how their bras perform against the rest of the market, and this ranking system is now included as standard in our testing packages.



Sports bra performance ranking scale

VISUALISATION OF BRA PERFORMANCE

As part of each package, cutting-edge high-speed (slow-motion) video clips are provided showing each of the products tested during running. This provides a fantastic visual representation to support the data received from the biomechanical testing.

MARKETING OF PRODUCTS TESTED BY US

The packages will now include use of the RGBH testing stamp (coming soon). This can support companies with their marketing by showing when a bra has been tested within our specialist bra testing laboratories.

PROMOTIONAL VIDEO

By purchasing a bra testing package with the RGBH, companies will have access to our bra testing services video which provides detailed information on how products are tested in our breast biomechanics laboratories. This can be used internally by companies to enable clear translation of the bra testing results provided, and to showcase the research contributing to the development of their products.



Prescription of a well-fitting bra

PRESCRIBING BRAS TO REDUCE BREAST PAIN

Breast pain affects approximately 52 per cent of women in the UK (Scurr et al, 2014). As part of her PhD studies into breast pain, Emma Sharland has been working with the Breast Services Department at the Queen Alexandra (QA) Hospital in Portsmouth. Patients at QA who present with breast pain are recommended, as part of their treatment, to wear a well-fitting bra that has been professionally fitted. Emma has developed and piloted an intervention at the hospital to prescribe bras to women with breast pain.

The prescription involved patients with breast pain attending the University of Portsmouth's specialist laboratory to test a selection of bras during a number of daily activities. Bras were assessed for comfort, support, fit and aesthetics. Data were analysed and one bra was prescribed to the patient.

The patient then wore the bras for eight weeks. Breast pain and quality of life was assessed across the eight weeks and compared to levels of breast pain and quality of life at the beginning of the study. Results will be presented as part of Emma's thesis in 2018.

SKIN STRAIN ACROSS THE BREAST - WHAT EFFECT DOES GRAVITY HAVE?

Our research indicates that women can experience up to 75 per cent skin strain by gravity alone when bare-breasted, and this may potentially lead to damage of the breast skin.

In a group of women, with a breast size of 32B to 34DD, the neutral breast position was identified as the mid-point of the breast position in water and soybean oil, and was the position at which there were no forces acting on the breast in any direction. This position was utilised to identify skin strain levels across the breast in a gravity loaded position (where the women were standing bare-breasted) and identified that in smaller breasted women greater skin strain occurred on the outer regions of

the breast, whilst in larger breasted women greater skin strain occurred along the inner regions of the breast.

Overall the greatest breast skin strain identified was 75 per cent (bra size 34DD), located in the upper outer region of the breast, in a longitudinal direction. These findings have provided important preliminary results which identify that potential breast skin damage could occur by gravity alone when bare-breasted.

Reference: Sanchez, A., Mills, C., Haake, S., Norris, M. & Scurr, J. (2017) Quantification of gravity-induced skin strain across the breast surface. *Clinical Biomechanics*, 50, 47–55.

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, OR PRESENT AT EVENTS AND PUBLISH RESEARCH FINDINGS.

FUTURE EVENTS

June 2018: Dr Nicola Brown and Dr Jenny Burbage are presenting at the Women in Sport and Exercise Conference 2018 on 'Breast biomechanics and breast health' to be held at Staffordshire University, Stoke on Trent.

RECENT EVENTS AND ANNOUNCEMENTS

December 2017: Professor Joanna Wakefield-Scurr was named on the Lingerie Insight Power List 2018 as an Industry Influencer.

November 2017: Dr Jenny Burbage presented a talk entitled 'Breast support implications for an elite female rower: a multi-disciplinary case study' at the BASES Annual Conference at the East Midlands Conference Centre, Nottingham.

October 2017: Dr Michelle Norris, Brogan Horler, Dr Tim Blackmore and Melissa Jones attended the MATLAB Expo 2017, Silverstone, Northamptonshire.

September 2017: Atefeh Omrani presented a talk entitled 'Support for sport: Breast health education for schoolgirls' at the Gender, Physical Education and Active Lifestyles Conference, Leeds Beckett University.

March 2017: The Research Group in Breast Health hosted the BASES Biomechanics Interest Group (BIG) meeting with over 150 attendees.

March 2017: Amanda Brasher was named on the Lingerie Insight Power List 2017 as an Industry Influencer.

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 offer off-the-shelf bra testing packages at highly competitive rates, offering clients very quick results. For more information, please email Professor Joanna Wakefield-Scurr at

joanna.wakefield-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 or alternatively read through our current ongoing projects at goo.gl/QnwNXk

SELECTED PUBLICATIONS SINCE JANUARY 2017

Brown, N., Smith, J, Brasher, A., Omrani, A. & Wakefield-Scurr, J. (2017) Breast cancer education for schoolgirls: An exploratory study. European Journal of Cancer Prevention, [Epub ahead of print].

Sanchez, A., Mills, C., Haake, S., Norris, M. & Scurr, J. (2017) Quantification of gravity-induced skin strain across the breast surface. Clinical Biomechanics, 50, 47–55.

Brown, N., Smith, J, Brasher, A., Risius, D.J., Marczyk, A. & Wakefield-Scurr, J. (2017) Breast education for schoolgirls; why, what, when and how? The Breast Journal, [Epub ahead of print].

Sharland, E., Burbage, J. & Wakefield-Scurr, J. (2017) The appropriateness of an improved diary for the assessment of premenstrual mastalgia. Indian Journal of Surgery, 1–4.

Sanchez, A., Mills, C. & Scurr, J. (2017) Estimating breast mass – density: A retrospective analysis of radiological data. The Breast Journal, 23(2), 121 – 248.

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

FIND OUT MORE

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

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