

# Breast Health News

January 2014  
Issue two

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

Breast pain can impact upon women's performance, health and wellbeing. With up to 60 per cent of British women suffering from breast pain, it is more widespread than many realise. Appropriate breast support may be an effective treatment for breast pain and breast sag. Therefore, we formed in 2005 with the aim of improving women's quality of life by:

- broadening the understanding of the breast
- informing breast support design
- raising awareness of an important issue for women

## Meet the team

**Back row:** Dr Chris Mills, Dr Joanna Scurr, Dr Jenny White\*, Dr Debbie Risius\*, Dr Nikki Brown, Bessie Ayres

**Front row:** Dr Alex Milligan\*, Wendy Hedger

**Not shown in photo:** Amanda Brasher, Amy Loveridge, Emma Burnett (PhD student)\*\*, Sophia Chantziara (MRes student)\*\*, Gemma White (work placement student)\*\*

\* Completed PhDs in 2013

\*\* New team members



Research Group in Breast Health

## Science of breasts and bras – exciting new workshop for all

Our successful workshop, which has previously only been offered on a tailor-made basis to global organisations, is now being opened up to all.

Since the workshops were so well received by industry, 2014 will see the launch of 'The Science Behind Breasts and Bras', a one-day workshop available to everyone. This workshop will expand your understanding of breast anatomy, breast movement and the assessment of appropriate breast support. You will learn about breast anatomy, the problems with breasts and the science behind how the breast moves. It also presents the latest cutting-edge research in breast biomechanics, breast support and bra fit. This is a fantastic opportunity to learn from the world leaders in this area.

The Research Group in Breast Health is in a unique position to offer this exciting workshop, where information on breasts and bras gained from years of research experience can be shared. There is currently no other workshop available on the market able to provide up-to-date and relevant information on the science behind breasts and bras.

To register your interest, email Dr Jenny White at [jenny.white@port.ac.uk](mailto:jenny.white@port.ac.uk).



Dr Nikki Brown explaining the effect of body composition on breasts

## First scientific bra test house in the UK

The Research Group in Breast Health has developed the first scientific bra test house in the UK. For years we have been investigating the performance of bras, both for scientific research purposes and in collaboration with brands around the world, and demand for this type of product testing has grown hugely.

The University of Portsmouth has supported this initiative with a huge investment in facilities and resources for this test house. New laboratory facilities and an increase in our equipment capabilities mean that we are able to offer off-the-shelf bra testing quickly and at highly competitive rates.

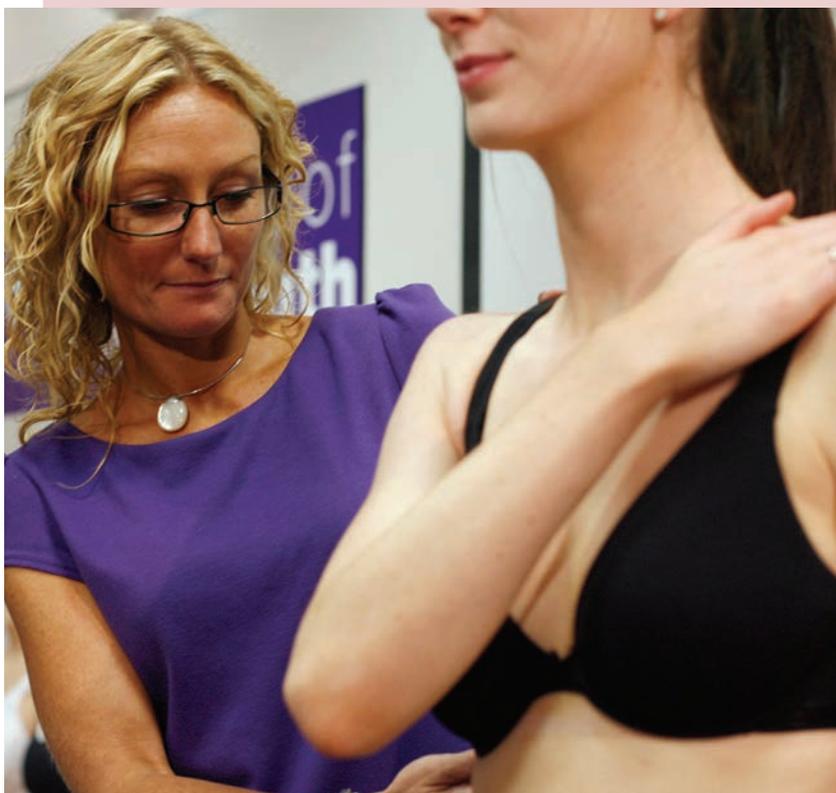
For more information, please email Dr Joanna Scurr at [joanna.scurr@port.ac.uk](mailto:joanna.scurr@port.ac.uk).



Bounce reduction being assessed in our laboratory

## Breast pain affects one third of female marathon runners

Out of the 1,285 female runners who took part in research conducted by the Research Group in Breast Health (RGBH) at the 2012 London Marathon, 32 per cent experienced breast pain. The RGBH attended to assess the prevalence of breast pain among active young women there.



One third of female runners experienced breast pain in the 2012 London Marathon

Results showed that women who experienced breast pain had larger breasts, higher body mass index (BMI) and no children. Although breast pain was prevalent among larger-breasted women, 24 per cent of women with small breasts (A cup and smaller) also experienced breast pain. Exercise was the most frequently reported factor contributing to breast pain, with vigorous exercise being particularly aggravating. Over half of breast pain sufferers described it as discomforting and 17 per cent reported changing their exercise behaviour due to breast pain.

Despite these findings, the majority of women (44 per cent) did nothing to overcome their pain. A well-fitting sports bra has been shown in previous research to be more effective than pharmaceutical intervention in the treatment of breast pain, highlighting the need for further research and educational initiatives to allow women to exercise in comfort.

Brown, N., White, J. L., Brasher, A. and Scurr, J. C. (2013). The experience of breast pain (mastalgia) in female runners of the 2012 London Marathon and its effect on exercise behaviour. *British Journal of Sports Medicine*.

## Key findings from our research on appropriate breast support

For full scientific publications, please visit [www.port.ac.uk/breastresearch](http://www.port.ac.uk/breastresearch).

### 2007

- Sports bras are equally effective across breast sizes (53 per cent movement reduction for A cup and 55 per cent for G cup).
- Encapsulation sports bras are more effective at reducing breast movement.

### 2008

- Breast movement is out of sync with the body during running.
- Running surface (ground or treadmill) has no effect on breast movement.

### 2009

- A figure-of-eight movement pattern for the breast is identified during running.
- Women exert larger sideways forces on the ground when running with poor breast support.

### 2010

- The breast is better able to resist deformation and is quicker to return to its natural position when wearing a sports bra compared to an everyday bra.
- Breast discomfort does not differ between sizes during jumping and agility activities.



Sports bras have been shown to reduce breast movement, force, acceleration, strain and breast pain during exercise

### 2011

- Wearing a bra reduces the strain at the nipple by lifting the breast.
- Unsupported breast movement increases from 4cm during walking to 15cm during running.
- During running, the breast moves beyond its static limits by 2cm downwards, 1cm sideways and 2cm backwards.

### 2012

- For a woman of average height and underband size, a 20 per cent reduction in body mass would be required to achieve a one cup size reduction in breast mass.
- The traditional method of bra fitting overestimates band size and underestimates cup size, becoming less accurate with increasing band size.

### 2013

- A polyester sports bra demonstrates greater thermal comfort and enables better cooling than a composite sports bra.
- From marathon runners surveyed, 32 per cent experience breast pain, with 17 per cent reporting that breast pain affects their exercise behaviour.
- Methods used to overcome breast pain include pain medication and firm breast support.

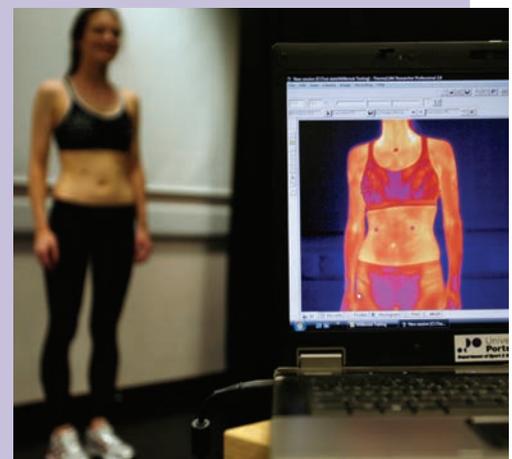
## Beat the heat – could bra choice affect performance?

Sports bras have been shown to reduce breast movement and breast pain during exercise, but could this extra layer of clothing compromise the body's cooling ability during exercise?

We tested C-cup women to investigate the effect of different sports bras (polyester and composite) on skin temperature following 20 minutes of exercise in a thermal neutral environment. During exercise, airflow over the skin and evaporation of sweat cause decreases in skin temperature allowing the body to keep cool. Wearing clothing, particularly tight-fitting garments, hinders the skin's ability to lose heat.

Results of this study showed a drop in temperature at all skin sites (breast and abdomen) following exercise, although the drop in temperature was reduced on the breast skin while wearing a bra. The polyester bra produced a larger skin temperature drop and greater thermal comfort than the composite bra (nylon, polyester and elastane). This interesting finding reveals the need for manufacturers to consider the cooling effect of different materials in the production of sports bras.

Ayres, B., White, J. L., Hedger, W. and Scurr, J. C. (2013). Female upper body and breast skin temperature and thermal comfort following exercise. *Ergonomics*, (May), 37–41.



Polyester bra performs best in thermal study

# Making an impact

The team in the Research Group in Breast Health regularly attends events and publishes findings to achieve its aims and make an impact on women's breast health.

## Recent events

**4–7 September 2013** – Dr Debbie Risius presented on the effect of different forms of exercise on the breast at the American Society of Biomechanics in Nebraska.

**3–5 September 2013** – Emma Burnett presented her MRes project on the biomechanical assessment of bras at the BASES Student Conference at the University of Central Lancaster.

**7–11 July 2013** – Dr Jenny White presented 'Breast support implications for female recreational athletes during steady-state running' at the International Society of Biomechanics in Sports conference in Taiwan.

**3 May 2013** – The Research Group in Breast Health held an open day for the opening of their new breast biomechanics laboratory.

**4 April 2013** – Dr Debbie Risius, Emma Burnett and Dr Alex Milligan presented at the BASES Biomechanics Interest Group meeting at the University of Wolverhampton. Dr Alex Milligan was awarded the prize for best student oral presentation.

## Selected publications

Brown, N. White, J., Brasher, A. and Scurr, J. (2013). The experience of mastalgia in female runners of the 2012 London Marathon and its effect on exercise behaviour. *British Journal of Sports Medicine*

Ayres, B., White, J., Hedger, W. and Scurr, J. (2013). Female upper body and breast skin temperature and thermal comfort following exercise. *Ergonomics*

Brown, N., White, J., Milligan, A., Risius, D., Ayres, B., Hedger, W. and Scurr, J. (2013). Limitations of clinical selection criteria for mammoplasty. *Evidence Live*

Brown, N. and Scurr, J. (2013). The need for a standardised anthropometric protocol for objective assessment of pre and post-operative breast surgery. *Evidence Live*

Brown, N. and Scurr, J. (2012). The need for a standardised anthropometric protocol for objective assessment of pre and post-operative breast surgery. *Gland Surgery*



Emma Burnett at the opening of our new breast research laboratory in May 2013

# How we can help you

## Workshops

Our workshops offer the chance to expand your knowledge and understanding of the science behind breasts and bras. We are keen to share our research experience with bra manufacturers, designers, healthcare professionals and any other interested parties. To register your interest, email Dr Jenny White at [jenny.white@port.ac.uk](mailto:jenny.white@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 Dr Joanna Scurr at [joanna.scurr@port.ac.uk](mailto: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](mailto:breastresearch@port.ac.uk)

W: [www.port.ac.uk/breastresearch](http://www.port.ac.uk/breastresearch)