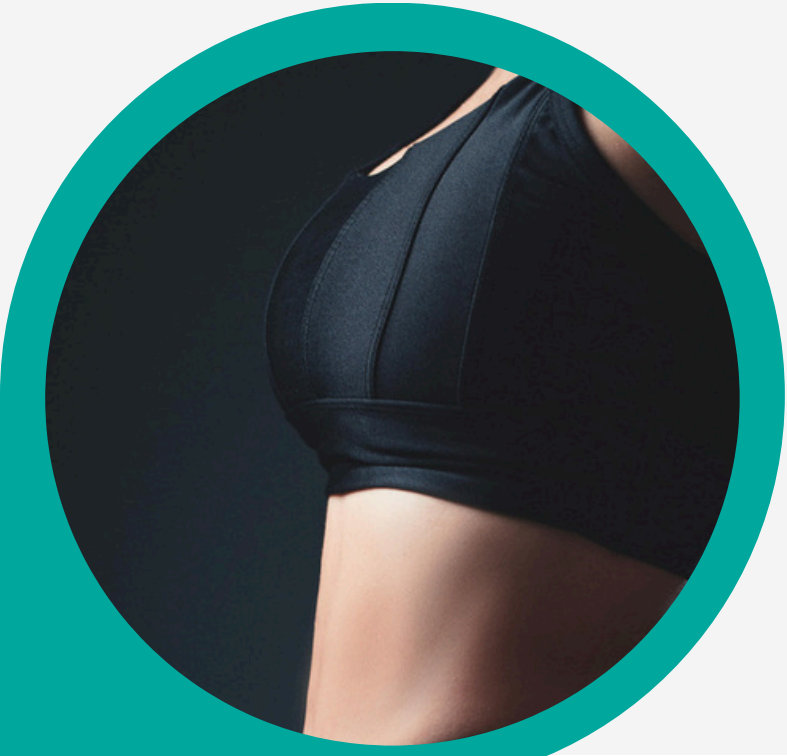
Empowering Through Education

BREAST HEALTH TOOLKIT

SPORT
HEALTH
EXERCISE

TUS



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BREAST HEALTH: ANATOMY

Breast health basics:

The female breast is a **unique structure** and is composed of three major components:

1. Fibrous (connective) tissue
   - Nerves
   - Blood vessels
   - Lymphatic tissue
   - Cooper's ligament
2. Glandular (mammary) tissue
   - Lobes
   - Lobules
   - Aveoli
   - Ducts
3. Adipose (fat) tissue

The **Cooper's ligament** is a supporting structure of the breast along with the **overlying skin**. There are **no muscles** present within the breast, which means breasts have **limited support or protection.**

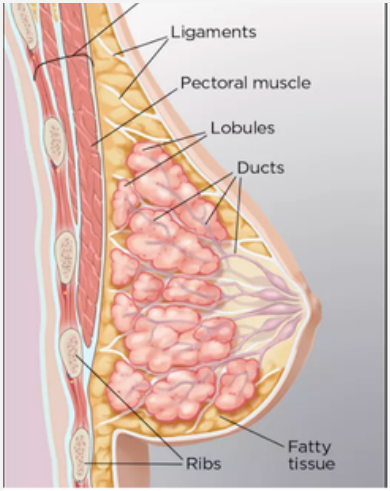


*Image from Memorial Sloan Kettering Cancer Centre[1]

Breasts are as individual as every woman, with distances between the breasts varying from 2.7-45.6mm, and 89% of women experiencing asymmetry in breast movement[2,3].
With such limited anatomical support, and hyper individuality it is important to wear the correct size and type of bra, including sports bras.



YET!

59% of adult athletes and 89% of adolescents wear a poor-fitting sports bra[4,5]

75% of female marthoners experience sports bra issues related to poor fit[6]

Studies show 55-75% of adult and adolescent athletes have never had a professional sports bra fitting[4,7]

These factors may impact **participation in sport and exercise, as well as performance.** As such, it is important to be aware of the **different types of sports bras available** and how we can **ensure correct fit.**

BREAST HEALTH: ANATOMY



Breast health basics:

Unsupported, breasts can move vertically by 4.2-9.9cm in running or 18.7cm in jumping activities[8,9].

During a marathon, unsupported breast tissue travels 3.8 to 8.9 km's purely in vertical up-and-down movement the equivalent of your chest running its own continuous 5K to 9K race while you cover the 42.2km.



Breasts don't just move vertically however, studies show 1.8-6.2cm of medial-lateral (side to side) movement and 3.0-5.9cm of anterior-posterior (forward to back) movement![8]

BREAST HEALTH : SPORTS BRAS

THERE IS NO CHEST TOO SMALL, NO ACTIVITY TOO LOW IMPACT...

...ALL CHESTS MOVE AND REQUIRE SUPPORT

The breast moves in a figure of 8 pattern, as shown in the chart below:

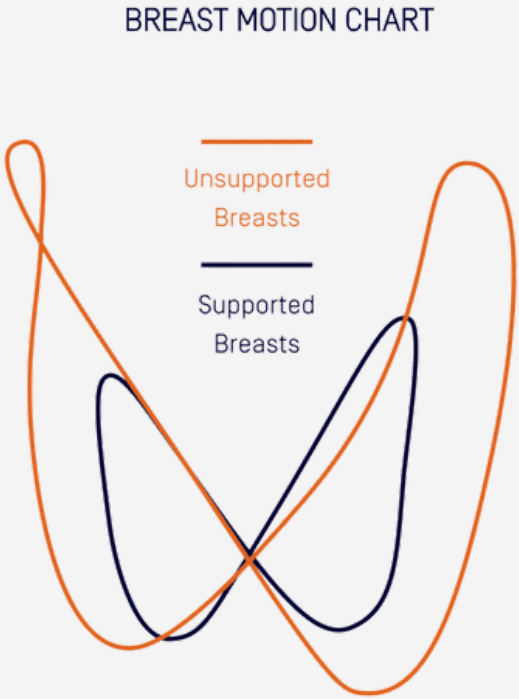


*Image from Australian Institute of Sport, Female Health and Performance Initiative[10]

THE AIM IS NOT TO STOP ALL MOVEMENT

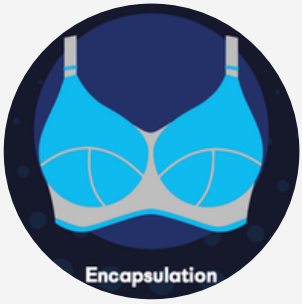
As you can see from the chart, the aim is to reduce movement while maintaining comfort.

Quality, well-fitting sports bras are important for all, regardless of chest size or activity. So forget the "I only..." and get to know which type and size is best for you.

BREAST HEALTH : SPORTS BRA FIT

Sports bra types:

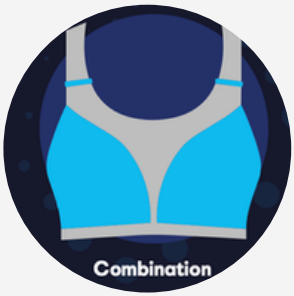
There are **three** distinct styles:



1) **Encapsulation** - works by lifting, encapsulating and supporting each breast individually

2) **Compression** - works by compressing the breast tissue to the chest wall



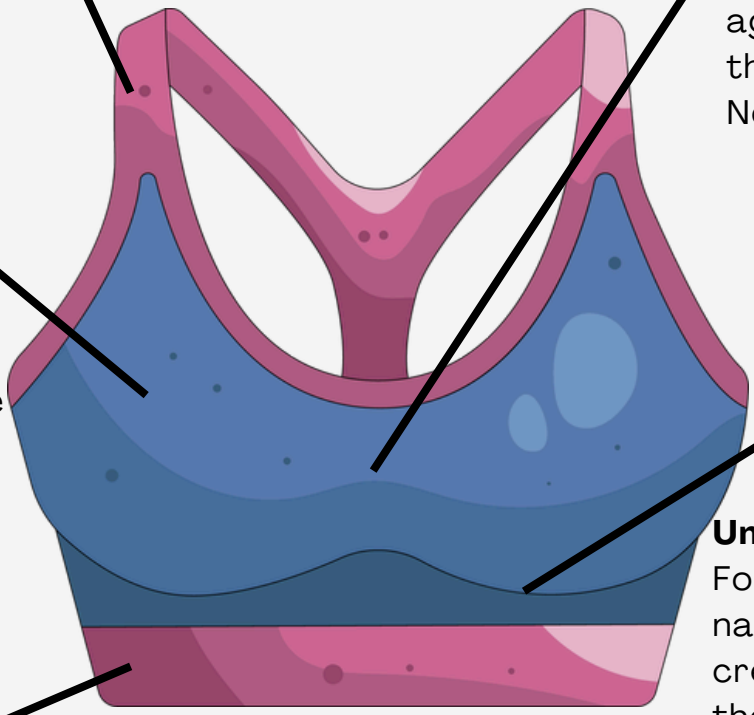


3) **Combination** - incorporates both compressive and encapsulating features.

*Images from UEFA Sports Bra Guide[7]

Having separate cups (encapsulation) only works well if you can actually adjust the straps and underband to fit your specific body. Without adjustable straps, a "good" bra can actually perform worse than a simple compression top because it locks one side in while leaving the other completely unsupported[11].

BREAST HEALTH:
FIVE STEPS TO THE BEST FIT:



3 **Straps:** Adjusted to comfortably give support without being too loose.

4 **Front:** Flat against the body. No gaping

2 **Cup:** Breast tissue should be fully enclosed

5 **Underwire:** Follows the natural crease of the breast.

1 **Underband:** Firm fit around the chest.

*University of Portsmouth, Research group in Breast Health[11]

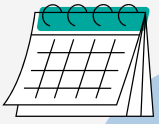
BREAST HEALTH : PROFESSIONAL FITTING

An ill-fitting sports bra can cause pain, postural issues, and even affect breathing and gait mechanics!

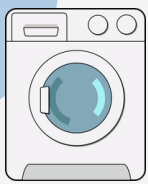
Common sports bra complaints include:

- Rubbing/chafing
- Shoulder straps digging in
- Upper body discomfort
- Underband discomfort
- Breasts poorly supported

A correctly fitted sports bra can significantly reduce the prevalence of exercise-induced breast pain and cyclical breast pain (mastaglia)[11,12,13].



Replacement is recommended at least every 6-12 months, or sooner if the elastic becomes loose, after ~ 25 washes, if shoulder straps dig in or if your breast size changes[7,14].



BREAST PAIN:
EIBP AND MASTAGLIA

Exercise-Induced Breast Pain (**EIBP**) can occur when the nerves and soft tissue are aggravated by breast movement under poor support. It is experienced by up to 44% of elite female athletes[16].

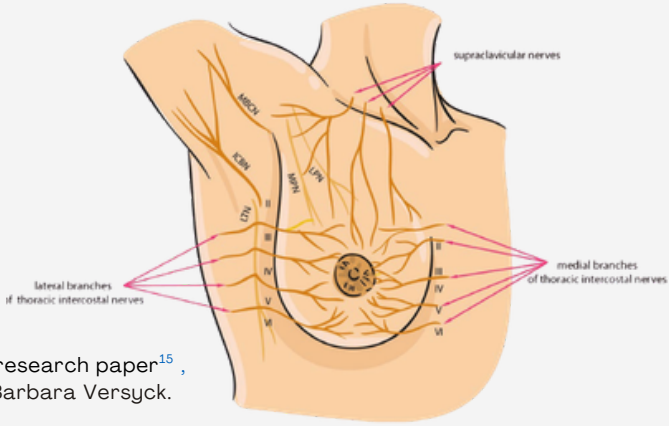


*Image from research paper[15], crediting Dr Barbara Versyck.

Acceleration and deceleration of breast tissue relative to the torso, known as breast bounce, is believed to be primary cause of EIBP. Breasts can bounce up to a rate of 10000 times per hr in slow speed running. (**REF**)

Cyclic Mastalgia is breast pain related to the menstrual cycle, and can occur in 32-60% of female athletes[6,16,17].

The most effective strategy for managing EIBP and mastalgia is a correctly fitting sports bra to provide breast support during sporting activity.

CONTACT BREAST INJURY

Contact breast injury (**CBI**) can occur from impact with the ball, ground or another player, causing pain and swelling.

Delicate structures such as lobules, ducts and alveoli are poorly protected, therefore impact may cause issues in bud development or lactation.

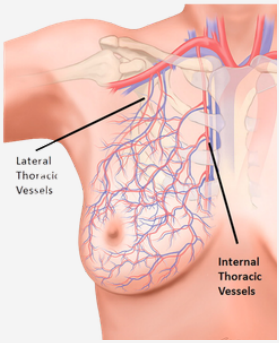


*Image from Jessinger *et al.*, (2011)[18]

Bruising and blood collections (haematomas) can easily occur in the breast due to its many small blood vessels after impact or injury. These injuries may form oil cysts or areas of fat damage that can later harden or calcify. Medical assessment is important if a lump develops after an injury.

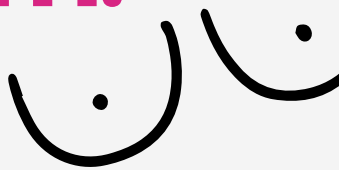
Athletes have reported taking protective measures to prevent breast injuries including altering running mechanics and avoiding physical contact. However **breast protective equipment** is available.

Studies show 36-58% of athletes across multiple sports have experienced a CBI[19-21].

But only 5-10% reported the injury to a practitioner[19,20].

55% had no awareness of CBI[22].

BREAST HEALTH:
GENERAL HEALTH



Fluctuations of oestrogen and progesterone levels throughout your life can cause changes to your breasts from puberty to menopause, including throughout the menstrual cycle phases, pregnancy and breastfeeding.

It is therefore important to regularly perform breast checks, **at least once a month,** to get to know 'your normal'.

It is important to know that not all lumps are something to be concerned about, you may:

have dense breasts which have more glandular and fibrous connective tissue	have swollen and tender breasts before or during menstruation due to extra fluid in the breast which can feel like a lump
feel lumpy during pregnancy due to an increase in milk producing ducts	experience more tenderness and lumpiness near the onset of menopause as hormone levels are changing

Additionally, nipple discharge can be caused by birth control pills, medicine, and infections.

BREAST HEALTH:
BREAST CHECK



To check your breasts and armpits once a month:

Observation

In front of a mirror check for:

1. Breast symmetry
2. Skin changes
3. Nipple position

Raise both arms and repeat the observations.

Palpation

To identify irregularities or changes in consistency:

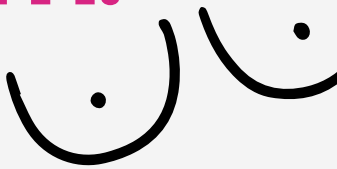
- standing or lying down
- Use the fingertips of the three middle fingers
- Make circular motions

Check both breasts up to the collarbone and both armpits.

Checking in the shower, and in the week post period can aid palpation of the skin (Irish Cancer Society)[23]

Get to know what your breasts look and feel like normally. Any and all changes should be checked by your GP for advice and reassurance, but don't expect/fear the worst!

BREAST HEALTH:
BREAST CHECK



See a GP if:

- You have a lump or swelling in your breast, chest or armpit.
- You have any changes in your breasts, chest or nipples that are not normal for you.
- You notice changes in the shape or consitency of the breast or breast area
- You have pain in your breast or armpit that does not go away.
- You experience nipple changes or discharge.
- You experience recent nipple inversion
- Your skin changes; itching, redness or darkening, scaling, swelling, dimples, or puckers on your breast or nipple that don't go away.
- You experience any unexplained retraction, swelling or wound of the skin

This leaflet provides general information about breast awareness and the signs and symptoms of breast cancer. It is not a substitute for medical advice. If you notice any changes to your breasts or have concerns, please contact your GP for assessment and reassurance.

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The SHE Research Sport Performance Pillar is led by Dr Niamh Ní Chéilleachair

Content for this booklet was curated by Angela Kenneally, Sarah Doran, Khayla Timothy, Dr Áine O'Connor, Dr Niamh Ní Chéilleachair, Dr Emma Cowley and Dr Aoife Lane