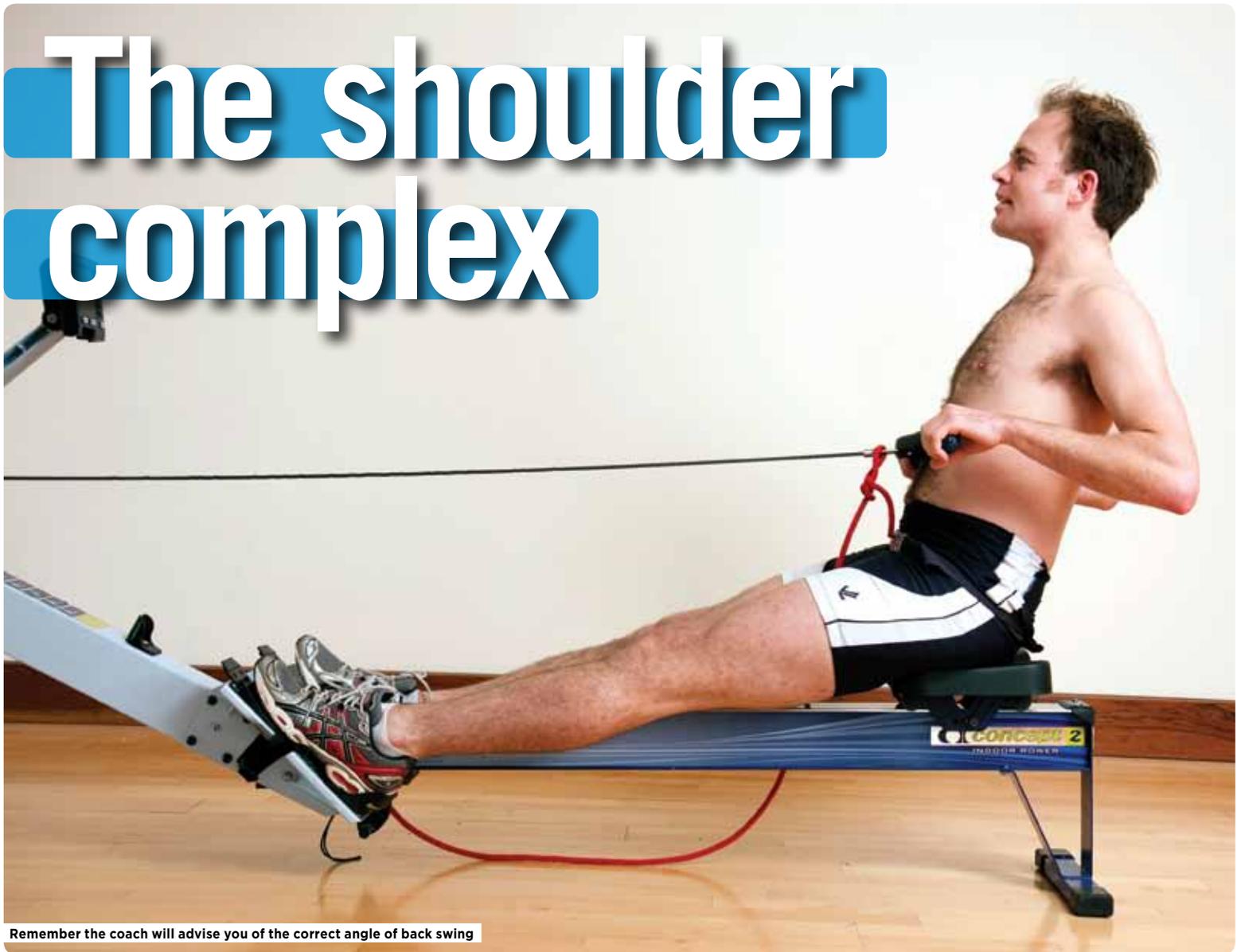


# The shoulder complex



Remember the coach will advise you of the correct angle of back swing



**Mark Edgar**, Head of Medical Services for the GB Rowing Team, looks at the role of the thoracic region in the rowing stroke

The shoulder comes in for a lot of 'coach criticism' - only part of which is justified. I will attempt to explain some of the thoracic wall / shoulder girdle biomechanics which will hopefully allow coaches to differentiate between problems that originate either from the shoulder joint or from poor thoracic cage positioning.

First, the thoracic cage is made up of the 12 thoracic spinal vertebrae, each of which has a rib attached and the (anterior) sternum. The upper seven ribs swing round to the front and are attached by a 'dry joint' to the sternum or in the case of the eighth, ninth and tenth rib to a fibrocartilage system and then onto the

lower sternum. The final two ribs, which can be felt at the sides, seem not to be too attached - and indeed their connection is soft tissue, either muscular or cartilage.

The reason for describing the thoracic region in such detail is because their primary function is to help with breathing -

which is quite important in rowing! The ribs swing during the inspiration cycle in much the same way as the handle of a bucket. As we breathe in the ribs rise, and then settle downwards again as we breathe out.

The massive diaphragm muscle is attached to the lower ribs then to the



Pulling the chest to the handle is wrong



Over-extending at the beginning of the recovery



Watch for any gross anomalies in the tension lines on an all-in-one



Tightness in the anterior shoulder structures can result in a posture change in the small of the back. Stretching can improve this

sternum and to the front of the spine. It acts like a pair of bellows, assisting and driving the motion of the ribs. Any over-compensation of spinal posture - *i.e.* the 'rod up the back' posture - will inhibit the ability of the rower to ventilate properly because the ribs from the back will be held back down the spinal muscles that should be assisting in breathing.

To check this, ask the rower to attempt various postures at different positions on the ergo slide - *e.g.* massively slumped, sticking the chest out or looking like they have a rod up their back - all while holding the handle. In general terms if the rower cannot inflate the lungs deeply then they are probably trying to hold their posture inappropriately. If this is so, they need to concentrate on being less stiff through the thoracic region while relying more on the lumbar spine for stability.

Once the thoracic positioning has been settled, the shoulder girdle (the shoulder blade, the clavicle and the upper arm) will tend to fall very close to the correct position.

Take a look at the musculature of a rower in the position below. Basically, the idea is to use the latissimus dorsi - or the lats - and the lower portion of the trapezius. These muscles wrap around the thoracic cage and connect the arm to the spine.

**Lat pull-downs:** the latissimus can be trained specifically using a lat pull-down machine or a vertical pulley system. When using a machine in a sitting position it is important to 'draw down' with the whole shoulder girdle - then pull down with the arms. During the arm draw the shoulder girdle should remain stable: *i.e.* creating a stable platform for the arm draw. On the lat pull-down

machine do not just swing back with the weight of the body and yank with the arms.

**Seated row - lat engagement:** the lats can also be trained in a seated row position or at the finish of the ergo stroke. Again make sure that the trunk is in the (coach's) correct finish position; make the trunk a stable platform and then create the arm draw utilising the lats.

While we are looking at the shoulder position on the thoracic region, make sure that you and your coach are aware of the physical changes that you need to make to achieve the right position. This will enable you to repeat / achieve the same posture / position out on the water. ▀



The lat muscles can clearly be seen here

## Jenny's tip



It's quite common, particularly in scullers, to see a lot of tension in the shoulder area at the catch, often as a result of over-reaching in an effort to achieve more length. Poor shoulder positioning, or tension in the thoracic region, is often a sign of a lack of flexibility through the lower back.

Jenny Rachel has been coaching for ten years. Currently coaching the senior women's group at Maidenhead RC, Jenny is also a qualified sports and remedial massage therapist.

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