

# The right gear



H SCT Coach Katherine Morris oversees a junior rower at Oundle Town Rowing Club



## Mark Edgar, Head of Medical Services for the GB Rowing Team explains why one size doesn't fit all in the boat

Throughout this series I have looked at how we can try to protect the rower's body or improve the biomechanics to reduce the development of injury. Hopefully this will also ultimately result in a more efficient rowing stroke.

When rowing, the aim is to hold your posture without obvious deformation through the loading phase. However, some aspects of gearing may have an influence on the rower's body and may present areas of concern. Below are a few areas to be aware of.

Clearly coaches are in a better position than me to vary the gearing of a rowing boat but it's worth bearing in mind that incorrect rigging can lead to some discomfort and potential for overload and therefore injury.

### Inboard / Span / Oar length

While definitely within the realms of the coach, what should be noted is that one size does not necessarily fit all.

In simple terms if the rowers are small then easier gearing may be required. This can be achieved by varying any aspect of the lever arm including both span and inboard.

However, a tall strong rower may be able to row in a bigger arc so the boat should be rigged accordingly.

But of more concern is a shorter rower who is asked to row a far bigger arc than he or she can do efficiently in biomechanical terms. As a result he or she may be rowing outside what is potentially safe and, certainly, what is effective for their build. So they may be over-reaching, over-compressing and over-rotating. All these issues increase the load – usually onto the lumbar spine – leading to greater potential for injury.

So what can be done? In these cases, it may be necessary to use a shorter oar so the rower can row the same angles but at a reduced load etc.

## “One size does not necessarily fit all”

Bear in mind though that too much inboard will make the middle of the stroke hard to develop as the hands will need to swing outside the normal line of force. While too little inboard will make the finish hard to achieve. In both cases the rower will probably try to compensate by swinging outside the normal line of the boat. The coach should be able to pick this up by following the crew from behind (or head on) or from observing while the crew is going under a bridge.

### Foot stretcher

The foot stretcher is another area that has multiple planes of movement. It can be moved towards the stern thereby increasing the work ratio before the pin or it can be moved backwards, lessening the work before the pin. In some ways moving the stretcher back towards the bow reduces the loading and makes the stroke easier but possibly less efficient.

For advice on the correct angles to row, visit the British Rowing rigging guidelines. Everyone is a different shape and a weaker person may not be able to tolerate the increase of load before the pin if they are rigged too far forward but positioned too far back and they might swing their bodies laterally to achieve some sort of finish cycle.

But, the position of the shoes is more important in terms of the foot stretcher position. Again, check the British Rowing rigging guidelines for advice.

If the rower has poor flexibility at any point in the lower part of the kinetic chain

– in other words, hamstring tightness, hip tightness or ankle tightness – then elevating the shoes will increase the problem of not being able to achieve the correct catch posture. The rower may then over-compensate which may lead to injury.

Over-compensating because of the feet being too high may also lead to hamstring tendonopathy. This is considerably debilitating and it can be weeks or months before it is fully resolved.

The same situation applies with too much angle on the footplate, *i.e.* closer to vertical in the stretcher itself, as this will encourage the rower to overstrain, especially around the ankle. On the other hand, too little angle on the footplate can lead to the back of the shoe impinging onto the Achilles tendon in the final phase of the leg drive motion.

Also, if the rower has a flexibility problem in the hip/pelvis region, then it will be difficult for them to keep their feet together. Allowing the feet to be positioned further apart may help them with the stroke.

Moving on to the feet, or shoes themselves, then correction of any leg length discrepancies should be done at the level of the foot, and on an individual basis. Adding a shim between the footplate and the base of the shoe of approximately three-quarters of the measured actual leg length difference may suffice. The aim here is to achieve an equal leg drive pressure throughout the complete drive phase cycle. ▶



Watch out for any early signs of teno



Getting the boat ready



No one seat suits everybody

You can tell that leg drive pressure is unequal if the knees go down at different times, or if there is twisting or shifting on an ergo seat.

## Seat

Nowadays seats come in a variety of makes, shapes and sizes. Some have holes – some not. Some have a large lip facing the stern – some do not. Concept2 ergo seats are designed in one form and Rowperfect seats in another. Again there is no ‘one seat fits all’ rule.

Those seats with holes are meant to correspond to the bones of your bum, the ‘ischial tuberosities’. However, we are obviously not all designed the same with the greatest difference between men and

proximal hamstring tenderness and piriformis tightness.

Of course, some coaches want their rowers lower in the boat, while some prefer them higher. This can be achieved by manipulating the height of the seat above the decking. Keep in mind the other rigging advice above. Also, the more height on the seat, the greater the vertical level arm, which may lead to balance issues.

## Slides

In summer you can always pick out rowers from the backs of the calf muscles – which are usually scarred in some form. We all know this is associated with the slide ends digging into the calves at the finish of the stroke.

with hands and blisters) is the potential for infection. Please be careful in these cases, washing hands etc. Please also be aware of gear hygiene. If there are many people with blisters using one oar and/or many people with sore scarred calves using the same slides then the same rigorous hygiene rules should be applied to the boat and gear.

## Oar / scull grip

In the last issue of R&R I discussed the onset of tenosynovitis and the role of the oar handle and, or, sculling grip. This includes the size, width of the grip and the material or make up of the grip.

As mentioned before, the appearance of teno is associated with a change of some sort, including different grips, different gearing, tighter gates or worse weather.

Changing grips may also lead to a different pressure pattern and hence different blister patterning. Again, be hygiene-aware and watch out for teno developing on the palm of the hand and/or infection of any blisters. ■

## “The concern here – as with hands and blisters – is the potential for infection”

women being the pelvic shape. Some rowers prefer to gaffer tape the holes shut, others use seat-pads. Likewise there are carbon seats in some Italian boats that seem good for lightweights. Lightweights however have smaller pelvis structures than heavyweights.

Basically, the rule to remember is that the seat has to fit without impingement and discomfort.

There are one or two boatbuilders who will mould seats to the person – well worth considering if you have had ongoing problems with seats in the past and you have the benefit of staying in the same boat. Ill-fitting seats can cause ischial bursitis,

More modern boats have changes in the seat system to seats / axles / bearing type wheel mechanisms so wheels can be separated and hence the slides. Lowering the feet in the boat (potentially due to inflexibility and an inability of achieving the correct catch position) will lead to a greater impact of calves on the slides and so the rower will end up with more scars. Clearly there are other factors here too, which include considering the width of the boat in determining the position of the slides.

Also bear in mind that some types of boat decking seem to run a long way through the cockpit and can provoke the same calf scarring. The concern here (as

## Kinetic chain recap

The kinetic chain is the linkage of the body from **handle** through the **arms** to the **shoulders**, down (and incorporating the **back**) and into the **pelvis**. From there the linkage travels through the **thighs** – the prime boat movers – and into the **feet**, where the drive is concentrated through the **footplate**.