

Low back pain in rowing – what do the experts say?

03 MARCH 2017

In May 2016, World Rowing published the article, [back pain in rowers](#) by Dr Fiona Wilson. Wilson examined the evidence around low back pain in rowing. In this article Wilson combines the clinical expertise of a number of national rowing team lead physiotherapists who have worked for many years with the best rowers in the world.



© Sarah Lombardi, Rowfficient

Risk Factors

Studies to-date have identified previous history and ergometer training as the key risk factors for low back pain episodes in rowing. Clinicians have also noted a number of other components that may predict an onset of this injury.

- There is a strong consensus of the importance of very good range of movement in the hip joints; rowers need to be able to comfortably compress the hips into full flexion to achieve a good position at the catch.
- In some rowers there is an abnormality in the hip joint that will not allow this which then causes the pelvis to tilt back and load the lower back more.
- Males appear to be at more risk than females. Females, however, seem to be at more risk of poor trunk muscle endurance which is observed more frequently in this gender.
- Movement 'dysfunction' (meaning that some joint or joints are not moving normally) can cause great problems as all the limbs and joints are required to coordinate smoothly in rowing. A stiff or unstable joint can have a knock-on effect in the movement chain causing issues. The commonest is the hip joint, but this is also observed when ankles are stiff. Then another joint will compensate for limited movement, thus becoming overloaded.
- Loading of the lower back is associated with low back pain. This is the reason a sudden increase in training load (particularly at specific times of the season such as a change from head racing to 2000m racing) can be associated with a peak in the number of rowers with pain. Loading is eased by good recovery in general (such as rest, sleep and good programme design) but also by paying attention to details such as adequate recovery between water and gym training. A good (safe) weights session may be compromised by an athlete who is very tired from a long water session.

Early recognition of back pain, by athletes, coaches and medical teams is important. Delayed recognition of the problem seems to influence both the severity and the outcome of the injury. A factor which is noted consistently is that

mixed messages from athlete support staff, peers and even media regarding advice in training, injury prevention and management of low back pain mean it's difficult for athletes to know how to manage risk and avoid injury. For this reason, it's important that management teams and clinicians communicate from the outset. The rower, coach and strength and conditioning team all have a role in management.

Screening

Most sports screen their athletes (often pre-season) to assess for issues that may increase risk of injury. Common recommendations are usually stretching or strengthening programmes based on an athlete's individual requirements. Recent research has shown that these programmes are not as useful as hoped in preventing injury although most clinicians working with rowers argue that some simple tests and recommendations make a difference.

The ability to deep squat, keeping heels flat, shins relatively vertical and trunk upright demonstrates the athlete's ability to achieve a good catch position (up on the sit-bones) without overloading the lower back. Positioning the rower at front stops on an indoor rowing machine can also test this. The picture below illustrates this.

Another recommended test is to go from sitting to standing off a low step. A good performance includes the ability to keep a flat lower back and relaxed thorax, rather than 'popping the bottom' with the lower back going into an extended position. This seems to correlate quite closely with the rower's ability to connect with gluts in deep hip flexion and the catch as well as having the trunk control to move the trunk with the pelvis through the first part of the drive.

Likewise, the ability to sit up tall with legs out in front indicates if hamstring tightness or poor endurance of muscles around the pelvis is compromising the back position. Testing endurance of the trunk and hip musculature will provide useful information regarding the athlete's ability to perform safe movement patterns, especially when fatigued. When a rower has the onset of low back pain, some of the hospital-based questionnaires are used by a number of nations (such as the Keele STaRT Back Screening Tool) to assess the severity of the injury. This is common practice in low back pain management.

Early management of low back pain

The good news is that most episodes of low back pain will recover on their own. Clinicians will check for signs of anything serious (this is very rare) which may require immediate or intensive intervention.

'Do no harm' is a rule that is followed which means there is no benefit in pushing through pain. During this time rowing should be replaced by other exercise or training. Rowers should be reassured as anxiety has been shown to make an episode of pain worse. Some people treating back pain advocate 'mindfulness intervention' which has been shown to be beneficial.

Management should be individually tailored and it is important to identify at this time what issues may have contributed to the onset of pain (such as technique or poor recovery strategies). Investigations such as MRI have not been proven to be very useful in helping management (unless there is a specific need for further investigation) as it takes some weeks for new condition to show on a scan and it is normal to have a number of 'abnormalities' on an MRI, which may be causing no problems.

Pain relief medication may be helpful in this early phase as it allows the rower a quicker return to normal movement patterns. It is important for the rower to continue exercising in this phase, guided by their clinician. There is some new research showing that as well as aerobic exercise, isometric contraction of the supporting muscles of the back can be helpful for pain relief as well as reducing risk of injury-related wasting.

What determines recovery?

There are a few factors which determine how well someone will recover from rowing back pain. If someone has had low back pain before, the course of that episode will often determine how quickly and well the rower will recover. If the pain comes on suddenly and dramatically (their back suddenly 'goes' with a lot of pain and inability to function normally), recovery may be slower and less successful. If leg pain and neurological signs such as numbness and/or tingling accompany back pain, recovery is likely to be slower.

Physiotherapists would talk about a 'fixed structural deficit'. This means something in the chain of movement, like stiff ankles or hips, which makes another part of the chain (lower back) move more to compensate. If this cannot be corrected, it makes it difficult to help the rower recover completely. Occasionally, the rower may have a general health disorder which presents as back pain such as rheumatoid arthritis. This does not mean they will not recover enough to row but that a different management approach is needed requiring a clinician with good knowledge of the condition.

Rehabilitation of rowing low back pain

There has been a lot of emphasis recently on individually prescribed rehabilitation for rowing low back pain as well as injury prevention programmes. Early control of normal movement of the hips and pelvis is important and the emphasis at this time is to address movement faults with appropriate exercise. Range of motion exercises (stretching – not just in the back, but also at the hips and ankles) are important so rowers can achieve good positioning of the lower back, then progressing to strength and endurance exercise.

Exercise should emphasise endurance of the trunk extensors, which are very important in protection of the back. Eccentric control of the trunk flexors is also important. Rowers should make an early return to rowing if possible (using exercises in the boat as rehab) avoiding long sessions (no more than ten minutes) on the indoor rowing machine. Use of a dynamic ergometer to gradually expose the rower to the biomechanics of the sport, progressing to a fixed machine allows their movements to be monitored closely. Feedback tools can be very useful and wearable technologies such as inertial sensors which measure back movement are helping rowers correct their own movement faults.

Some key points in low back pain rehabilitation and prevention programmes are that the body should be considered as a 'whole system' and that all joints interact together. Small changes and compensation in some systems (such as stiff hips or poor back muscle endurance) have an influence on the whole athlete. Another area, which is often poorly addressed, is 'specificity' in rehabilitation, especially the 'core'.

An approach which does not consider the movement patterns required in rowing with an over emphasis on static strengthening is of limited use. Dynamic activities, which encourage the lower back to move normally in rowing patterns, are the most appropriate. Rowing Australia has designed a well-constructed programme with this in mind,

[Core stability for rowing](#)

Dr Fiona Wilson – Chartered Physiotherapist Trinity College Dublin, ex Rowing Ireland

Kellie Wilkie – Chartered Physiotherapist Rowing Australia

Sarah-Jane McDonnell – Chartered Physiotherapist Rowing Ireland

Craig Newlands – Chartered Physiotherapist Rowing New Zealand

Mark Edgar – Chartered Physiotherapist GB Rowing