

# Section 2 :

## Technique on the Indoor Rower

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## Technique

The definition of technique is "The skill required for the mastery of a task". Identifying the task is simple with indoor rowing because the task is to cover a given distance in the shortest time.

This doesn't mean that the people who produce the best times on the rowing machine have the best technique. Good technique has to account for efficiency measured by the performance when compared to the potential capacity of the athlete.

So good technique on the Indoor Rower is the ability to convert potential into performance. Developing good technique is carried out in three phases. The first phase is to develop the motor skills to master the sequence of movements, this is the cognitive phase of learning. Muscles respond to electrical impulses from the brain carried via the nervous system. Repeating a movement establishes a strong neurological pathway, which carries these tiny impulses. Breaking the rowing stroke down into its component parts and carrying out each segment slowly until it is mastered is the best method of establishing this pathway. This is followed by joining the segments together, gradually building up to the full stroke cycle.

During the development of motor skills there is no consideration to load; this comes next and is known as the functional stage. Here the muscles become familiar with the load, range and speed that they are required to work at and how it relates to other working muscles.

The final phase is the autonomous phase and here the muscles know their role with respect to the outcome task and movements become automatic.

Often, when people arrive at this stage, they think that this is all the work they need to do on technique. To some extent this is true in that, like riding a bike, once learned you never forget it. However, knowing how to ride a bike and winning the Tour de France are not the quite the same thing. Technique and not just fitness must be continually developed in order to realise your full potential.

You now have to go back to the beginning where we said that technique was converting potential into performance. As you continue to train your capacity increases and so now the emphasis of technique is to carry this increase in physical capacity over into faster times. The focus has now changed from the body position to the output display on the monitor. If it is not what you think it should be then you may need to go back and look at the movement to find where power is being lost.

Technical development is one of three crucial and interdependent aspects of training that require equal attention, with the other two being physical and mental development. Failure to exploit any one of these areas will result in underperformance. The interdependence is that first you have to make the decision and commitment to train to improve your physical condition. This is the mental area and mental strength is needed when things get tough and it is easier to quit.

Physical development will require hours of training, sweat and pain. Through technique you produce a result bringing all three areas together and reward for the effort and commitment.

It is easy to get hung up on the aesthetics of technique. Unlike ice skating, indoor rowing has no prizes for artistic content. On the other hand, poor technique won't win any prizes either. If you're looking at technique, keep focussed on the important areas. At the beginning of the stroke the legs come on early and are driving the handle back. Make sure that the handle moves back at the same time as the seat so the legs are not just driving the rower back.

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Check that the trunk is held firm so that the power developed on the footplate is transferred directly to the handle right through the Drive phase. Often rowers transfer stability from the trunk to the legs and use the trunk to supply power. This can go almost unnoticed at low intensity work but is very inefficient. Although the upper body is responsible for over 50% of the stroke length the legs are responsible for 70% of the total power. This is because the load is at its greatest at the beginning of the stroke and decays to the finish. Good technique matches up the most powerful muscle groups in the legs to the greatest load and the faster muscles in the arms to the lighter but faster Finish.

Because you cannot realise potential without sound technique you can use pace as a technique tool. In all the training bands set yourself a target pace and try to stick to the recommended stroke rate, which can only be achieved with good technique. If you can coincide pace, stroke rate and heart rate then you will be developing all three areas simultaneously: mental, physical and technical.

### Recommended Reading

Concept 2, *Technique Handbook and Video*

## Frequently Asked Questions on Technique

**answered by Terry O'Neill**

Why is it that pictures taken at the World Indoor Rowing Championship reveal rowing forms (i.e. technique) that my Concept 2 manuals and video would illustrate as being incorrect. Am I misinterpreting your guidelines?

The technique advocated by Concept 2 in our manuals and video is based on sound biomechanical principles. For the majority of rowers following this method will produce the best results. However, there will be variation for a number of reasons. There is one well-known rower who has won virtually every race he's been in but, if you look at his technique, there are many faults. He rows with bent arms and doesn't sit square on the seat. This was a result of an accident several years ago which resulted in a permanent bent arm which he physically cannot straighten. He has one leg shorter than the other and so he has adapted his technique to suit his body.

Scullers are used to rowing the oars in an arc and so when they get onto the Indoor Rower their elbows tend to go out at the finish. You would not teach this on the machine because there is no angular element to the stroke, however, if the user of the machine's main aim is to perform on the water you would not want to change this characteristic.

Finally, the pulling of the 'oar,' or handle, to the chin. This stems from the belief that the extra length will give better results and although this extra long pull may initially result in the split time coming down, there will be an extra energy cost to the rower making the stroke less efficient overall. It also puts more stress on the back increasing the likelihood of injury.

I've been sliding forward until my calves kiss the backs of my thighs and I've been bending forward far enough for the handle to finish up just about under the monitor. I thought I was achieving correct posture. I'm now told that I have been sliding too far forward, thus depriving myself of the power in my legs, and that I have been swinging forward too far. What is the disadvantage to sliding too far?

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If you overcompress the legs at the catch you put yourself at a mechanical disadvantage. You should compress the legs until the shins are vertical and the angle of the body should be around 30° (this will be when the body touches the thighs). Don't let your knees splay out too far as it is more efficient to pass the load through the centre of the joint, so keep your legs as parallel as possible.

This is an 'ideal' technique but there will always be variation caused by different body builds and flexibility. For example, if someone has a very strong upper body and relatively weak legs that person may be better off using a long body swing and short leg drive to compensate.

**I know that my legs are more powerful than my arms and form an important component of the drive, but I don't think that I'm getting all of the power and efficiency from my leg drive that I should. What can I do to improve this?**

There are a couple of exercises you can try. As you come forward think about the weight shifting on the foot towards the toes and also the compression of the legs, like squeezing down a coil spring. When you come up onto your toes release the spring. This is to make sure you take the beginning of the stroke with the legs.

The other exercise is, from the beginning of the stroke, keep the arms straight and just push off of the footplate moving back a couple of inches but making sure that the handle moves the same distance as the seat. Gradually increase the leg drive keeping the arms straight all the time, using them as a connection to the handle only. Do not pull the handle into the body.

**When using the Indoor Rower I take the catch with bent arms. This is due to my knees being in the way and having to reach around them. I have lowered my feet to the bottom setting but still have the problem. I am 6'4", which is not tall for a rower. I also have the habit of rowing slumped but, when I sit up I find I am not drawing the handle in a straight line as the height of the chain is below my finish point (just below the chest). How can I put this right?**

Although you are right to say that 6'4" is not exceptionally tall for a rower, the key is the ratio of leg to trunk length, regardless of height. If your legs are really long then at the beginning of the stroke they will be right up under your chin, even at the bottom setting of the footplate. If you slump, this will further aggravate the situation. If your elbows are bent out rather than down, your knees can come up between your arms. Try this; as you come off the finish sit tall and think about lifting your chest and reaching over your knees. To achieve this straighten the arms, lean slightly forward and allow the knees to come up into the space between your arms until your chest touches your thighs, keeping the arms straight. Then push the legs down out of the space and use the upper body in the second half of the stroke.

**I find that I am not tiring my legs at all during a row unless rowing above 90% maximum heart rate. Even at 60% however, I am getting some back problems, I assume because my pull uses too much back. What am I doing wrong?**

At the Finish the contact is mainly on the heels and you will feel the foot straps on the upper side of the feet. As you swing your weight forward, the contact changes from the heels to the balls of the feet where you should feel the pressure building as you break your forward momentum, to the point where you drive your body back. During this period the back, arms and shoulders are used solely to connect the handle to the footplate where the force is being developed. They are held firm and still so that, as you change the

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emphasis from slowing the forward movement down to driving back, the seat and the handle move exactly the same distance. As the hands pass the feet the back becomes dynamic and starts to swing back. As the handle passes the knees the legs should be almost flat and then the arms draw the handle into the body.

An exercise you can try is to sit at the beginning and just push the legs back one to two inches, holding the body and arms still so that the handle and seat are moving the same distance. By doing this you are isolating the legs at the beginning of the stroke and you will feel the loading on the legs.

### **I'm experiencing a slight aching in the wrists. Is this to do with technique, or fatigue?**

The wrists are involved in feathering the oar when rowing on water but on the Indoor Rower they should remain flat.

If it is the rowing that is causing the ache it can only be because the wrists are being stressed. Check your technique and if this does not help then there are some exercises you can do that will strengthen the wrists, giving them greater support.

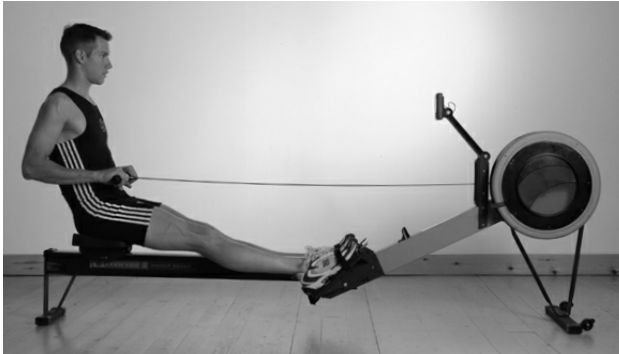
You will need a round piece of wood, like a broom handle. Tie a piece of string, about one metre long, to the middle. On the other end of the string tie a weight of about five kilogrammes. Turn the handle so that the string winds itself around, raising the weight off the floor, and then lower the handle with your palms facing downwards.

Another exercise is with a tennis ball held in the hands, palms facing each other. Turn the ball clockwise with the left hand and anticlockwise with the right as if you were opening a jar. Then change direction as if you were closing the jar. These are simple exercises that can be done at any time and, along with rowing, will strengthen your wrists which should solve the problem. If it persists, consult your doctor.

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#### **THE FINISH**

Lean back slightly, legs flat, handle drawn to the body.

Forearms horizontal.



#### **Arms extend, body rocks forward.**

The arms are relaxed and extended fully.

The body rocks forward from the hips.



#### **The Slide**

AFTER the arms have fully extended and the body rocked forward, slide forward maintaining arm and body position.



#### **THE DRIVE**

##### **Full Slide - The Beginning**

Shins vertical with body pressed up to the legs.

The arms are straight and relaxed.

The position should feel comfortable.

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### **The Start of the Drive**

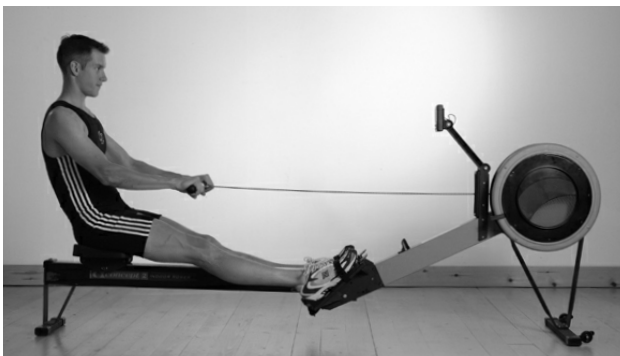
The legs push down and the body begins to lever back.



### **The Drive continued**

The legs continue to push as the body levers back.

The arms remain straight.

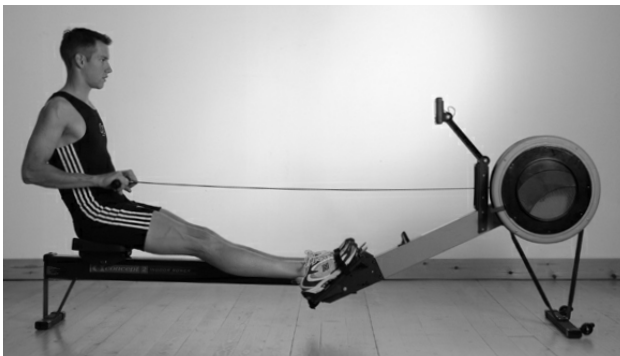


### **The body stops levering back**

The arms draw the handle past the knees and then strongly to the body, returning to the Finish position.

Legs flat.

Forearms horizontal.



### **THE FINISH**

Lean back slightly, legs flat, handle drawn to the body.

Forearms horizontal.

You are ready to take the next stroke.

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## Technical Faults and Solutions

Correct technique is essential for efficient rowing and to reduce the risk of injury. Here are some of the most common errors, with the reasons they are inefficient, and solutions to help you prevent or correct any problems.

### Fault

### Solution

#### 1. Rowing with bent arms

When the arm supports a load in one position the muscle remains contracted. Contraction expels blood from the muscles reducing the oxygen supply, increasing lactic acid build up and hastening fatigue.



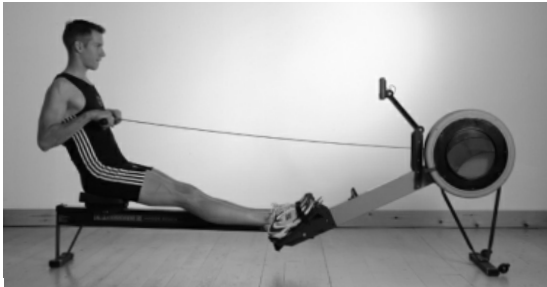
The rower starts the Drive by pulling with the arms rather than pushing with the legs.



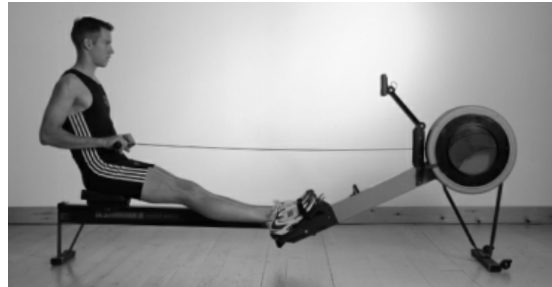
The Drive should start by pushing the legs and bracing the back with the arms fully extended and relaxed. The arms connect the legs and the back onto the handle.

#### 2. Rowing with bent wrists

Work can be carried out more efficiently and the risk of injury reduced when the load passes through the centre of joints.



Rowing at various stages of the stroke with bent wrists.



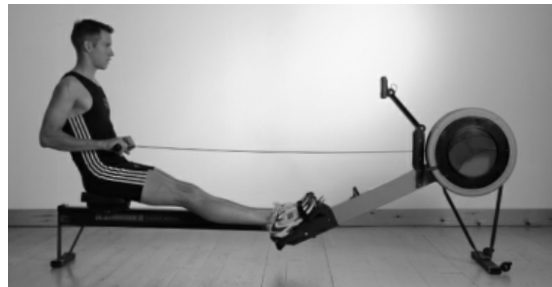
Always row with FLAT wrists. Check the hands at each stage of the Drive.

#### 3. Pulling up too far and leaning back too much

Leaning back too far requires a great deal of energy to swing the body back through the upright position. The energy costs are greater than any gains through rowing a longer stroke.



At the Finish of the stroke, the rower pulls the handle up too high and leans back too far.



Draw the handle into the body. The wrists should be flat with elbows drawn past the body, forearms horizontal.



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## Fault

## Solution

### 4. Slide shooting

The legs are the most powerful muscles in the body and are used to start the acceleration of the flywheel, which represents the greatest load. Any movement of the seat should result in a corresponding movement of the handle or the legs are not being used to the greatest effect.



The legs push away too early, the back is not braced and so the power is not transferred onto the handle.



The legs begin the drive and the body moves back with straight arms transferring the leg power onto the handle.

### 5. Using the back too early

Using the back too early means that the weaker muscles are taking on the greater load and the stronger muscles are used when the load has decreased.



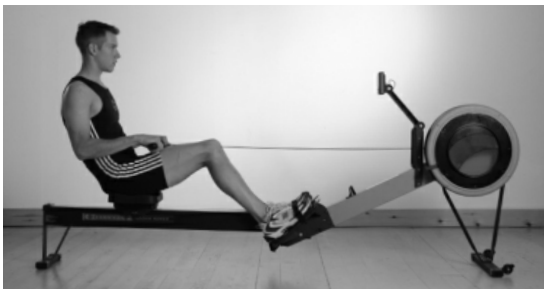
The rower starts the Drive by swinging the body back rather than pushing the legs. This results in a weak movement.



The legs begin the drive and the body leans back with the arms fully extended and relaxed.

### 6. Knees up too early

At the beginning of the stroke you need to be balanced and in control in order to develop maximum power. If the recovery sequence of hands, body then slide is not carried out correctly then this will mean a last minute adjustment at the beginning of the power phase, throwing you off balance and out of control.



On the Recovery the rower slides forward before the handle has extended past the knees. The hands either hit the knees or they are lifted up to clear the knees.



The Recovery sequence - hands, body, then slide. AFTER the arms have fully extended and the body has rocked forward, slide forward, maintaining the arm and body position.

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### Fault

#### 7. Over reaching

Over reaching at the beginning of the stroke places the lower back at maximum flexion. If you then load it up there is a risk of tissue damage in this area.



The body stretches too far forward. The shins may be past the vertical. The head and shoulders tend to drop towards the feet. The body is in a weak position for the Drive.

### Solution



The shins are vertical. The body is pressed up to the legs. The arms are fully extended and relaxed, body tilted slightly forward. This position should feel comfortable.

#### 8. Body too tense. Grip on handle too tight

The only muscles that should be contracted are those directly involved in moving the flywheel. Any muscles in the shoulders and neck that are not directly involved will just drain energy if tensed.



Teeth are clenched, shoulders hunched and the rower is gripping the handle too tightly.



RELAX! Relax the shoulders down, unclench the teeth and relax the jaw. Keep a LIGHT hold on the handle.

#### 9. Pulling the body to the handle

If you pull the body towards the handle there is an energy cost but it will not add anything towards moving the flywheel.



At the Finish, the rower, instead of pulling the handle to the body, pulls himself forward to the handle.



At the Finish the rower leans back slightly, holds the legs down and draws the handle to the body using the upper body as a firm platform.