rowperfect

The Rowing Stroke Cycle

Rebecca Caroe

The Rowing Stroke Cycle: Part 1 – Posture

A six part series on the Rowing and Sculling Stroke Cycle. We review all the movements that go into making the rowing and sculling stroke. Each post is designed for rowing coaches and athletes who want to teach themselves more skill to understand better what is needed; drills and exercises to teach and explore skills and the benefits / perils of good or bad technique.

Sit up

Posture is the way you hold yourself as you row.

Good rowing posture has the pelvis in a neutral position i.e. tilted in line with the lower spine.

- NEUTRAL – pelvis and lower spine aligned. Lower back is FLAT.
- 'COUCH POTATO' – pelvis tilted back more than lower spine. Lower back is BOWED, curved outwards.
- 'GYMNAST' – pelvis is tilted further forward than lower spine. Lower back is HOLLOW, curved inwards.

How to find the correct rowing posture for you

- **Sit down on an erg or at the kitchen table** – somewhere un-upholstered so that you can tell how much sagging is you and not the soft cushions. Slump a little, let your back relax. Now have someone press firmly on the top of your head. Push your head up against this hand until you are sitting tall. Notice how you lengthen your spine.
- Which muscles did you feel moving first?
- What happens to your shoulders as you push your head up more firmly?

That's right – the higher you try to go the more you pull your shoulders down. It is a long lower back that makes you taller.

Good rowing posture requires core strength. If the athlete is weak and lacks control of the muscles in the core then sitting well is not possible for long periods.

A brief description of the rowing posture

Description of Good Posture

Good posture in sculling or rowing requires that the pelvis be in neutral position and the lower spine straight. The upper body is free to stretch forward during the recovery towards the catch and will be slightly rounded.

In order for the pelvis to be in the neutral position the athlete should sit well on the seat rather than on the front edge. The athlete should have contact between the upper thigh and the seat rather than the lower back and the seat.

- Sit on an erg in your usual TV-watching slumped position, feet unstrapped. Your tailbone will be somewhere near the middle of the seat and your back curved. Now stretch forward as far as you can.
- Where do your fingers reach to?
- How do the muscles round your shoulders and chest feel?
- What happens to your feet when you stretch forward?

Now roll forward until your shins are vertical.

- How far has your handle moved?

Go back to the finish position and shuffle back on the seat until your tailbone is at the back and you can feel the front of the seat against your hamstrings. Stretch forward again.

- There may be some protest from your hamstrings but how far can you reach forward now?
- How do the muscles round your shoulders and chest feel?
- What happens to your feet when you stretch forward?

Now roll forward again

- How long is your stroke now?

POSTURE

Sit up

Posture is the way you hold yourself as you row.

Good rowing posture has the pelvis in a neutral position i.e. tilted in line with the lower spine.

- NEUTRAL – pelvis and lower spine aligned. Lower back is FLAT.
- 'COUCH POTATO' – pelvis tilted back more than lower spine. Lower back is BOWED, curved outwards.
- 'GYMNAST' – pelvis is tilted further forward than lower spine. Lower back is HOLLOW, curved inwards.

How to find the correct rowing posture for you

- **Sit down on an erg or at the kitchen table** – somewhere un-upholstered so that you can tell how much sagging is you and not the soft cushions. Slump a little, let your back relax. Now have someone press firmly on the top of your head. Push your head up against this hand until you are sitting tall. Notice how you lengthen your spine.
- Which muscles did you feel moving first?
- What happens to your shoulders as you push your head up more firmly?

That's right – the higher you try to go the more you pull your shoulders down. It is a long lower back that makes you taller.

Good rowing posture requires core strength. If the athlete is weak and lacks control of the muscles in the core then sitting well is not possible for long periods.

A brief description of the rowing posture

Good posture in sculling or rowing requires that the pelvis be in neutral position and the lower spine straight. The upper body is free to stretch forward during the recovery towards the catch and will be slightly rounded.

In order for the pelvis to be in the neutral position the athlete should sit well on the seat rather than on the front edge. The athlete should have contact between the upper thigh and the seat rather than the lower back and the seat.

How to coach rowing posture

Sit on an erg

in your usual TV-watching slumped position, feet unstrapped. Your tailbone will be somewhere near the middle of the seat and your back curved. Now stretch forward as far as you can.

- Where do your fingers reach to?
- How do the muscles round your shoulders and chest feel?
- What happens to your feet when you stretch forward?

Now roll forward until your shins are vertical.

- How far has your handle moved?

Go back to the finish position

Shuffle back on the seat until your tailbone is at the back and you can feel the front of the seat against your hamstrings. Stretch forward again.

- There may be some protest from your hamstrings but how far can you reach forward now?
- How do the muscles round your shoulders and chest feel?
- What happens to your feet when you stretch forward?

Now roll forward again

- How long is your stroke now?

Benefits of a Good Posture

Sitting towards the back of the seat allows the pelvis to tilt, increasing the range of movement in your lower back and increasing the length of your stroke.

Rocking your pelvis forwards brings your weight onto your feet adding to your poise and balance.

Using the pelvis and the muscles around it to stretch forward relaxes the upper body. This will make it easier to move your arms and thus control the blade as well as making it easier to breathe.

Moving the pelvis means that you're using the large muscle groups around it; using them through a greater distance and making it possible for them to do more work generate more power and accelerate the boat better.

The Rowing Stroke Cycle: Part 2 – Catch

The catch is the placing of the blade in the water at the end of the recovery.

The catch is also the connection of the blade to the water, the connection of the rower's power to the boat at the beginning of the drive.

It lies between the recovery where the hull is gliding free and the rower is rolling forward out of contact with the water and the drive phase where the crew is connected to the water and applying force to accelerate the boat.

The catch occurs when the rower is moving and changing direction, the blade is moving and changing direction, and when the boat is changing speed.

- Think of Tiger Woods hitting a golf ball. He's not a big man. We know plenty of rowers taller and stronger than he but few, if any, could drive the ball as far. It's not just about being able to hit the ball, although some of us find that hard enough. Timing the swing to transfer the maximum momentum from the club to the ball is something Tiger does better than we do.

A well timed catch allows the rower to begin applying power without there having been any check to the speed of the hull. Of course Tiger has it easy; he is standing on solid ground and the ball is sitting still.

- Think of Roger Federer then. Making those smooth and apparently effortless returns isn't all about speed. His timing comes from his being in a good position on the court, his body being in a good position, his racquet in a good position – all ready to change the moving ball's direction.

A good catch in rowing comes as much from being in the right place and in the right position as it does from being at the right time.

Benefits of a good catch

- Turn your bicycle upside down and stand it on the handlebars and seat.
- Spin the wheel by stroking across the top of the tyre with your fingers.
- What do you feel each time your finger comes in contact with the tyre?
- What do you see?

Turn your bike upside down

A well-timed catch allows the boat to run on freely. A boat that isn't slowed, or even stopped, by the catch will be quicker.

A good catch allows the boat to run more nearly horizontal; this way less energy is wasted moving the hull in directions other than the shortest distance to the finishing line.

Spin the bike wheel

- Try spinning the wheel again, this time stroking directly downwards on the side of the wheel.
- How much spin do you get with these short strokes?
- OK, go back to stroking across the top. Take the rating down (take longer between strokes) and try to spin the wheel as fast as you can.
- What happens to the amount of time your finger stays in contact with the wheel as you try to build speed?
- Did you notice your fingers starting position move closer to the frame?

A good catch also places the blade closer to the bow making for a longer stroke. The longer the propulsive phase the faster the boat.

The patience and smoothness of a well-prepared catch set up a better rhythm for the crew.

Catch it

The catch is the placing of the blade in the water at the end of the recovery.

The catch is also the connection of the blade to the water, the connection of the rower's power to the boat at the beginning of the drive.

It lies between the recovery where the hull is gliding free and the rower is rolling forward out of contact with the water and the drive phase where the crew is connected to the water and applying force to accelerate the boat.

The catch occurs when the rower is moving and changing direction, the blade is moving and changing direction, and when the boat is changing speed.

- Think of Tiger Woods hitting a golf ball. He's not a big man. We know plenty of rowers taller and stronger than he but few, if any, could drive the ball as far. It's not just about being able to hit the ball, although some of us find that hard enough. Timing the swing to transfer the maximum momentum from the club to the ball is something Tiger does better than we do.

A well timed catch allows the rower to begin applying power without there having been any check to the speed of the hull. Of course Tiger has it easy; he is standing on solid ground and the ball is sitting still.

- Think of Roger Federer then. Making those smooth and apparently effortless returns isn't all about speed. His timing comes from his being in a good position on the court, his body being in a good position, his racquet in a good position – all ready to change the moving ball's direction.

A good catch in rowing comes as much from being in the right place and in the right position as it does from being at the right time.

Benefits of a good catch

- Turn your bicycle upside down and stand it on the handlebars and seat.
- Spin the wheel by stroking across the top of the tyre with your fingers.
- What do you feel each time your finger comes in contact with the tyre?
- What do you see?

Turn your bike upside down

Spin the bike wheel

A well-timed catch allows the boat to run on freely. A boat that isn't slowed, or even stopped, by the catch will be quicker.

A good catch allows the boat to run more nearly horizontal; this way less energy is wasted moving the hull in directions other than the shortest distance to the finishing line.

- Try spinning the wheel again, this time stroking directly downwards on the side of the wheel.
- How much spin do you get with these short strokes?

- OK, go back to stroking across the top. Take the rating down (take longer between strokes) and try to spin the wheel as fast as you can.
- What happens to the amount of time your finger stays in contact with the wheel as you try to build speed?
- Did you notice your fingers starting position move closer to the frame?

A good catch also places the blade closer to the bow making for a longer stroke. The longer the propulsive phase the faster the boat.

The patience and smoothness of a well-prepared catch set up a better rhythm for the crew.

Perils of a bad catch

An ill timed catch results in the boat slowing unnecessarily before the blades are anchored in the water and thus losing speed.

- Set your bike upside down again and let the brave (or foolhardy?) amongst you try spinning the wheel by inserting a finger between the spokes and pushing against the next spoke before quickly withdrawing your finger.
- Repeat to take the next stroke.
- What happens if you are too slow changing from sticking your finger in to pushing the wheel along?
- If you stick your finger right through?
- Think what might be happening in your rowing stroke as you change the vertical movement placing the blade into the horizontal drive.

Being too slow into the water or too slow connecting to the water slows the boat down. Going deep at the catch also makes it difficult to connect with the water.

If the blades are not placed in the water at the optimal time (when the seat reaches full forward movement) the boat will pitch more than it should, lowering the boat speed.

A poorly timed catch makes it difficult for a crew to generate the ideal

A poorly timed catch makes it difficult for a crew to generate the ideal rhythm during the drive; if the catch isn't taken at the full extent of the reach forward then the stroke is short and doesn't allow the "hang and accelerate" of a good drive phase.

The catch position

At the catch the rower's shins are vertical, with his chest against the thighs and his pelvis tilted slightly towards the stern. Shoulders are extended forward and relaxed, arms straight but not rigid. The rower is balanced on his feet.

A brief description of the catch

Catch Position

The catch involves placing the blade at the full extent of the reach and changing the direction of the movement of the seat nearly simultaneously. In an ideal world the blade would enter the water and the seat would change direction instantaneously; there would be no check at all to the speed of the boat.

Many sports involve hitting or catching objects with sticks; cricket, lacrosse, tennis, hockey, polo and so on. Rowing involves sitting on a moving seat, in a moving craft, trying to catch a piece of a liquid that is moving past. And then it needs to be done in time with up to seven others.

In a purely mechanical sense the rower seeking a good catch must ensure the blade is square before he/she arrives at full extension and lift the handle as he/she arrives at the turning point of the seat so the blade is quickly buried with a minimum of disturbance. Simultaneously the legs begin to drive and the pressure generated on the foot stretcher moves the seat backwards applying force through the link of the body and arms to the handle and thus the blade and pin.

The same is true for a sculler working two blades simultaneously.

And how should the catch feel?

- Sit at the backstops in and place the blades square in the water. (This is easier in a crew boat than a single.)
- Back the boat down by pushing your hands away from you. Push firmly till they are over your knees and the boat has started moving. As your hands go over your knees and the boat has started moving. You may need to push up on the handle(s) to keep the blade(s) in the water.
- Once the boat is moving relax and follow the handles forward to the catch position. (Let the handle(s) draw you forward.)
- Feel how easily you stretch forward, how easily the handle(s) glide with the movement of the boat.
- Feel how the pressure comes onto your feet as you get closer to the catch position.
- Keep your blade(s) in the water as you move through the catch and take a stroke.
- Feel how smooth the transition between gliding forward and pushing back is. Feel how the blades are locked against the water as you change direction.

Solid, precise, patient, definite, handle moving away from the athlete, thumbs moving apart (for scullers) are all good descriptions of the catch.

The myth of the 'sculling catch'

Something that I have never understood is the idea that sculling and rowing have, or should have, a different catch. There appears to be some idea out there that scullers are gentle and skilled at inserting the blade into the water and that sweep rowers can get away with just banging it in.

The principles are the same from a single scull 1x to an 8+. The blades must be inserted as quickly as possible without disturbing the boat. Yes, the build up of pressure after the entry must be faster in a speeding eight than in a comparatively slow single but the catch follows the same logic and the sequence of actions to connect the athlete(s) to the water are the same.

The Rowing Stroke Cycle: Part 3 – Drive

The drive phase is the part of the stroke where the athletes move the boat.

This happens during the time the blades are in the water: from the time the blades are placed in the water at the catch to the time that the blades are extracted from the water at the finish.

The drive is a dynamic and fluid movement that allows the athlete(s) to apply their maximum power. A good drive sequence is not just a heave; it is a rhythmical unfolding of the body which has been compressed during the recovery. It involves all the parts of the body linking the handle(s) to the boat, a chain of muscles from your hands gripping the handle to your feet pressing on the footstretcher.

- Imagine holding the end of a length of chain (a slinky is even more fun!) lying on the ground. Move your end sharply to one side and back and watch the other end move. How do you get the fastest, whippiest movement from that last link?
- Are your movements short? Long? Fast? Slow?
- Do they accelerate? Slow down? Have a constant speed?
- How does the chain itself move at the times when you have got the fastest end movement?
- In what sequence are the links moving or being moved?
- Do they jump and rattle or have you got a sinuous snake?

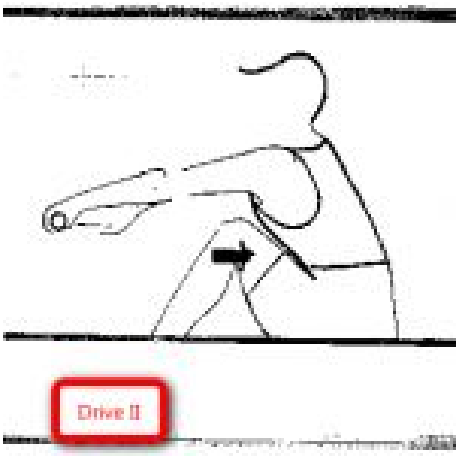
In the drive the pressure put on the feet passes through the linking muscles to accelerate the handle(s) The longer, the stronger and the smoother our actions the greater our finishing handle speed.

Sketches of good drive

Drive 1

- The catch is considered separately, the drive sequence starts after the blade is buried in the water.
- The movement is initiated by the legs pushing against the foot stretcher.
- The seat and handle should move the same distance relative to the boat.
- The low back holds firm. This requires that the hamstrings, gluteal group and core hold firm.

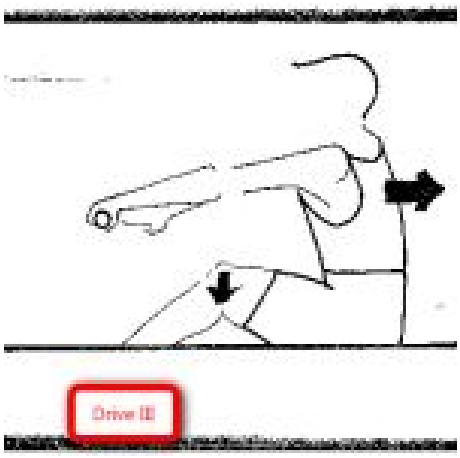
Drive 2



- The back holds the same angle / opposition as the drive starts and develops.
- The athlete hangs off the handle, weight is mainly on the feet, pressure on the handle, light on the seat.

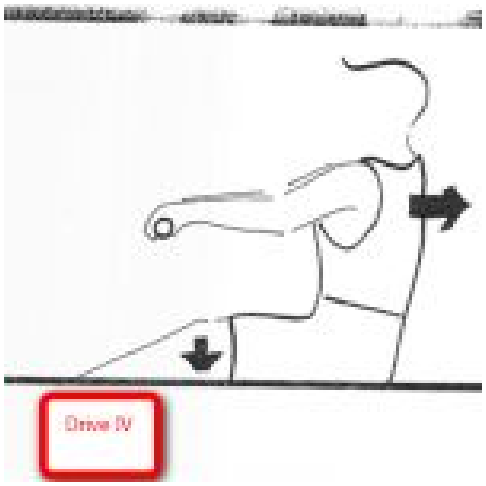
Sketches of good drive

Drive 3



- The legs continue driving.
- The back begins to open, swing from the hips as the legs pass through point of maximum power(knees at right angles).
- The athlete still hangs from the handle.

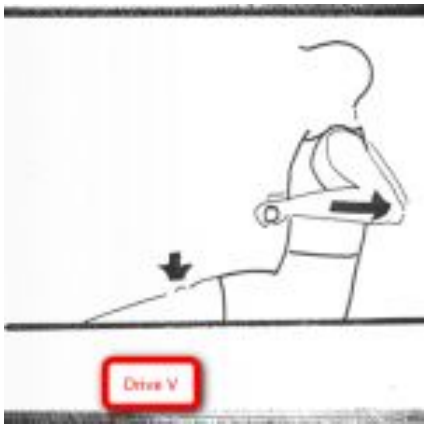
Drive 4



- Legs still driving.
- Body still swinging.
- Shoulders begin to squeeze, draw the handle in with arms still straight.
- After shoulders begin the arms begin to bend and draw.

Sketches of good drive

Drive 5



- Legs fully extended but feet still pushing against the stretcher.
- Gluteal-hamstring group holds firm.
- Shoulders fully compressed.
- Arms draw handle so outside hand barely touches 1st rib.

Benefits of good drive sequence

The immediate and most important benefit from good driving is more speed. The drive is the part of the stroke that has a direct and positive impact on the boat speed. A good drive sequence will allow a sculler or crew to get the boat to the highest possible short term speed each stroke given their power to weight ratio.

Good driving imparts a rhythm that makes it easier to maintain effort and therefore speed. If a crew rows in a rhythm that matches the boat then they are more likely to be efficient and able to row at high speed for longer periods.

A good drive also helps the attitude of the boat in the water. A good drive reduces unnecessary vertical weight displacement by the athlete(s) and helps maintain the optimal, horizontal, boat attitude.

Kris Korzenowski, the celebrated coach of the Dutch, the Americans, and the Chinese says "What goes up goes to God; what goes down goes to the devil; we want to go along."

Perils of bad drive sequence

Incorrect drive sequence wastes energy. If the drive is ill sequenced and ill timed more of the athlete(s) energy is wasted warming up the water rather than moving the boat. In order to maximise the effect of the available power the sequence of the drive needs to be good and it needs to be done in time with the boat.

- Remember your chain? What happened when your movements were too sudden? Too slow? Too weak?
- Imagine now that you're holding the chain in the middle and still trying to make the end move at its fastest. Go on, give it a shake. Clunk! The end's just come back and hit you on the hand.
- Try again. Can you get the same speed? The same smoothness? The same translation of power?

Incorrect sequence like trying to move your back before you're pressed on your feet, leads to bouncing of the boat, jerky and wasteful acceleration and lower than optimal speed.

Pre-requisites for a good drive

Most of the pre-requisites for a good drive sequence are physical.

An athlete needs sufficient flexibility and strength to be able to perform the sequence correctly. Improving flexibility and strength don't happen overnight, it takes time and is more likely to happen if the athlete is in a structured exercise programme.

- Try shoving a box or crate along the floor to improve your leg drive sequence. Use something with a bit of mass; a petrol tank, crate of drink bottles (if they still exist), the Club's box of boat ties.
- Stand on one leg with the other foot on the box and shove it away, pressing on your foot and stretching out your leg
- Can you make it go further still by stretching right to your toes?

- Even more fun is lying on your back on a shiny gym floor, knees bent and feet flat against the wall – high enough up so that your shins are parallel to the floor.
- Now push.
- What sort of push takes you furthest? Short and sharp? Long and strong?
- What sort of push will move the boat further?

P.S. Lying on a mat that slides will save you from getting you knickers in a twist!

How to get a good drive in rowing

Get strong and flexible! The drive is a complex series of movements under load and the aim is to apply maximum power to the boat. In order to do this an athlete needs flexibility, strength and coordination in order to perform a few go0d strokes and fitness to do it frequently and at high ratings.

There are plenty of land based exercise programmes available to help with flexibility and strength. The Home Exercise routine or another similar callisthenic routine is a basic tool that is highly recommended. A good core stability and strength programme is also vital; we will include some on this site and others are readily available.

A good simulation of the drive sequence is the squat jump. If a group of rowers and scullers is asked to perform a series of good squat jumps there will be an extremely high correlation between those who jump well and those who drive well. If you can’t jump you can’t row.

In particular short or inflexible hamstrings, inflexible ankles, weak and inactive gluteal muscles, weak or unused core, all make good drive or jumping difficult.

The ultimate exercise for preparing rowers and scullers to drive well is the Power Clean. This an Olympic Weightlifting lift. Cleans simulate the rowing action well and are an excellent form of strength training. All top level rowers and scullers should be able to power clean.

The ability to perform a power clean well isn't something that is acquired over night, the athlete needs a properly structured programme using simpler lifts to prepare the body and learn the skill before attempting the full lift.

The Rowing Stroke Cycle: Part 4 – Finish

Finishing the rowing and sculling stroke

The finish is the final part of the drive where the rower draws the handle(s) in towards his body.

The finish is also where the blade is taken out of the water.

The finish occurs at that point in the stroke when the boat is moving at its fastest and the blades change from applying pressure against the water in one direction to moving freely in the air in the opposite direction.

- Imagine throwing a ball without being able to use your fingers at the end of the throw; trying to skip a stone without a flick of your wrist, jumping high without being able to stretch your legs out to your toes.

Rowing without an effective finish is the same. A good clean finish can add the last available fraction of acceleration to a good stroke.

- Remember setting your bike upside down and putting your fingertips through the the spokes to spin the wheel. (See Catch)
- What happened when you were too slow pulling your fingers out once the wheel was moving?
- What happened when you didn't pull your fingers straight out (at right angles)?

A bad finish can act as a handbrake slowing the boat and undoing much of the good work of the drive.

Benefits of a Good Finish

Holding the pressure on through to the end of the stroke accelerates the boat more each stroke. More acceleration during the drive means greater speed once the blades are released.

If all blades in a boat hold the pressure on for the same length of time the boat will remain balanced and stable. This provides a better platform for the crew. If the boat is steady as the crew extracts the blades it is easier to stay balanced.

A cleanly executed finish releases the boat to run on and sets up the rower for feathering smoothly and easily before moving fluently into the recovery.

Perils of a Bad Finish

In a bad finish the blades are inefficient and speed is lost and the unevenness of the work in the water upsets balance and poise.

If blades are not held in the water, at the same height as they were during the main drive, and are instead allowed to ride up as the finish is approached the rower is said to be washing out. This wastes energy by turning water to froth instead of propelling the boat and tends to pull that rigger down upsetting the balance. The water thrown up by such a finish often hits the blade of the rower next towards the stern and disrupts her recovery.

When a rower fails to apply sufficient force to the handle in the finish the puddle behind the oar closes up and the blade acts as a handbrake and slows the boat as the drive ends instead of carrying the acceleration on.

When a sculler or crew has differences in the finish from blade to blade and side to side balance is always compromised. The finish must inevitably apply vertical forces to the rigger as the blade is lifted from the water and if these are not equal between riggers the boat will be forced out of balance.

Drawing the handle in.

In order to produce a good finish the rower must be able to apply power to the handle throughout the stroke. The power for the last part of the drive sequence is provided by the muscles of the shoulders, upper back and upper arms.

To draw the handle to the appropriate height, usually around the first rib, the shoulders are opened, shoulder blades squeezed together, and the elbows drawn past the chest. This requires that the lower back is held firm to provide the base off which the upper body can work. The pelvis should be in the neutral position and the lumbar spine straight and aligned with the pelvis. The shoulders stay low and move only in the horizontal.

The inside arm and elbow move out a little from the body to keep the forearm at right angles to the handle and the outside elbow is allowed to move sufficiently far out from the body so that the elbow, wrist and top knuckles form a horizontal line.

Good draw at the finish

The handle stops just before the body.

- Sit on an ergo with your legs straight, holding the handle with your arms straight.
- Now take your feet off the stretcher. Aaaah … now we see how good your core control is!

- Once you are balanced draw the handle in towards you.
- What happens?
- Put your feet back on the footstretcher but without strapping them in. Leave your legs straight and draw the handle into your body.
- How much sound comes from the flywheel?
- Try again, this time pressing against the footstretcher with your feet as you draw your elbows past your body.
- Hear that?

- And again, starting the push on the whole of your foot on both feet and finishing stretched out to your toes as the elbows draw back. Your legs don't move but you'll feel the muscles in your thighs contracting as you stretch.
- How's that flywheel going now?

A good finish with lots of acceleration stays connected to the boat through the feet.

Extracting the blade.

The blade is taken out of the water by tapping (pushing) down with the outside hand.

Once the blade is out of the water the inside wrist and fingers turn the blade to horizontal (feathered).

The tap down and the feathering movements are separate.

- Think of a high jumper, arm outstretched as they jump over the bar.
- Think of their leading hand as they start jumping; reaching up, stretching over.

In a good clean finish the blade will follow a smooth arc as it comes up and out of the water.

Description of the sculling finish

The essence of the sculling finish is the same as the rowing finish described above. The lower back and pelvis are held firm to provide the fulcrum off which the shoulders and arms work.

The shoulders are opened and then the elbows drawn back past the chest so that the top knuckles, elbows and wrists of each arm form a horizontal line. This requires that the elbows come some distance out from the chest but enables the wrist to be straight and the draw to be applied at right angles to the looms of the sculls.

The handles stop just before the body.

Picture of good arm and hand work at the finish below.

- Sit on an ergo with your legs straight, holding the handle with your arms straight.
- Now take your feet off the stretcher. Aaaah … now we see how good your core control is!

Sculling finish

- Once you are balanced draw the handle in towards you.
- What happens?
- Put your feet back on the footstretcher but without strapping them in. Leave your legs straight and draw the handle into your body.
- How much sound comes from the flywheel?
- Try again, this time pressing against the footstretcher with your feet as you draw your elbows past your body.
- Hear that?
- And again, starting the push on the whole of your foot on both feet and finishing stretched out to your toes as the elbows draw back. Your legs don't move but you'll feel the muscles in your thighs contracting as you stretch.
- How's that flywheel going now?

A good finish with lots of acceleration stays connected to the boat through the feet.

The Rowing Stroke Cycle: Part 5 – Recovery

Recover; The importance of the recovery and how it fits in the rowing and sculling stroke

The recovery is the part of the stroke where the rowers let the boat move and prepare for the next stroke.

This happens during the time the blades are out of the water: from the time the blades are extracted from the water at the finish to the time the blades are placed back in the water at the catch.

- Imagine you are in a playground pushing someone on a swing. Place your hands firmly and evenly on their back and push your arms out straight to shove them away.
- What did you do as the swing moved away from you?
- What did you do as the swing came back?
- Do you notice your hands leading the swing back in towards you until they matched its incoming speed?

Your legs bend in the same way, preparing to push the boat away and matching its speed.

- Now think about making the person swing higher.
- How does this change the way your arms and hands work to push?
- How does this change the way your arms and hands prepare to push?

That's right: you push more firmly, recruit more of your body in the push without changing the way your hands recover their position.

A good recovery is easy and relaxed and allows for the maximum of recuperation between strokes. If the recovery is well done it takes very little energy and effort.

During the recovery the crew cannot speed up the mass of the boat and rowers. They can prepare themselves so that the minimum of speed is lost at the next catch. Preparation and rest are the goals during the recovery and patience and poise are the means to that end.

The Benefits of a Good Recovery

Rowing is one of the sports that has a glide phase (the others mostly involve ice and snow) where speed can be gained by technical skill without work.

If a crew or sculler executes the recovery well the boat will run further between strokes and thus move faster for the same effort.

The recovery phase of the stroke is also the preparation for the next power phase and thus a good recovery makes it easier for the rower to execute the next drive or power phase well.

During the recovery the athlete has a chance to rest and recuperate. A smooth and easy recovery allows for more rest and recuperation by the rower and thus saves energy for the drive where it is beneficial.

Perils of a Bad Recovery

A bad recovery is wasteful of speed and energy.

- Go back to the swing in the playground.
- What happens if you are not ready to push at the height of the swing's return?
- If you were late in the push did you find yourself pushing when the swing was already on its way down, feeling as if you were chasing after the swing without a firm grip?
- If you hadn't taken your arms back did you notice how stiff and juddering your push became?
- And what happens if you're too keen and try to push sooner or more quickly?
- Did you notice the swing's chains jinking, bumped out of their smooth flight?

If the recovery is rough and ill timed relative to the boat the run of the craft will be disturbed and speed lost.

Tension and the resultant extra energy needed to roll forward will cost a rower or crew dearly. When the recovery is easy and fluid more time is available to rest. A hurried and forced recovery costs vital watts of power output and slows the athlete and leads to premature exhaustion.

A Brief Description of the Recovery

The recovery is the reversal of the movements in the drive.

There are three main parts to the recovery after the blade(s) come out of the water: the arms straighten the body rocks forward and the legs bend. These three movements follow this sequence and overlap to some extent as the rower returns to the catch position.

- Sit at the backstops in and place the blades square in the water. (This is easier in a crew boat than a single).
- Back the boat down by pushing your hands away from you. Push firmly till they are over your knees and the boat has started moving. As your hands go over your knees and the boat has started moving you may need to push up on the handle(s) to keep the blade(s) in the water.
- Once the boat is moving relax and follow the handles forward to the catch position. (Let the handle(s) draw you forward.)
- Feel how easily you stretch forward, how easily the handle(s) glide with the movement of the boat.
- Feel how the pressure comes onto your feet as you get closer to the catch position.

In the backing down exercise the movement of the boat is enough to draw you into the catch position. Transferring the weight onto your feet early in the recovery gives you the same feeling of the catch coming to you. The three actions are run smoothly together with each subsequent one beginning as the previous one nears completion.

It is vital that this sequence is observed to ensure that the transfer of weight from seat to feet takes place early in the recovery and that the back and pelvis are returned early to the strong catch position.

A good general description of how the movements run together is that the hands approach the mid-thigh before the back moves and the shoulders are in front (relative to the rower) before the seat moves.

In rowing there is an asymmetry in the recovery as the back and shoulders must swivel to follow the oar handle towards the catch. This is best done early, as the back moves through the vertical.

The Rowing Stroke Cycle: Part 6 – Grip

Rowing oar handle grip

Grip is the way we hold the handles of the oar as we row.

The oar is the lever we use to move the boat; the grip connects us to the oar and thus to the water. The better our grip, the better our control of the oar and the better we transfer our power.

- Ever played tennis? golf? hockey? Imagine holding the stick of your choice.

- What happens to your control when you hold the handle away from the end? And how much power do you have when you only use one hand? How smooth is your action when your grip is too tight?

Just as your ball was sliced or hooked or merely dribbled when you wanted it to fly so to is it with rowing or sculling and a poor grip. We miss our connection with the water, send the boat and blades in the wrong direction and change the way our bodies move.

Benefits of a Good Grip

When an athlete learns to grip the oar / scull well then he/she is able to manipulate and control it properly. The catch can become better because the hands are in good control of the blade and can now time the entry correctly. The finish can be more efficient because the pressure can be kept on for longer and be more cleanly released.

A blade with a clean finish can impart more acceleration to the boat and the balance is liable to be better because the hull is not disturbed by the extraction.

After time spent improving the grip you can expect the blade work in general to be tidier and more effective and it is often a good idea to move on from a grip focus to one on the turning points of the stroke.

- Try hanging off a chin-up bar with both hands – not just for a second or two but for as long as you can
- What do you notice about your grip? Where is your thumb? What about the palms of your hands – are they touching the bar? What shape is your wrist? Where do you feel the pressure on your fingers?

Perils of a Bad Grip

A bad grip imposes costs on the athlete. A too loose or too tight grip reduces the maximum power that can be transferred from the legs, body and arms through the hands to the handle.

Bent wrists, hands, especially outside hands, slipping off the handle at catch or finish also diminish the power transferred.

Bad grip also exposes rowers to higher risks of injury. The various forms of overuse injury in the wrist, tenosynovitis and others are often caused by grip and feathering technique that requires an exaggerated movement to rotate the oar.

- Try hanging off your chin up bar again. This time squeeze the bar as tightly as you can.
- What happens?
- And again. This time bend your wrists.
- What happens now?

The Rowing Grip in the Drive Phase

During the drive we hang off the handle as we would hang off a chin-up bar.

Hanging form a bar – photo rotated 90 degrees

Note the similarities to a rowing grip.

The handle is loosely held with the fingers wrapped around so that the second knuckles are in front. The thumbs are underneath and the handle is held so that there is space between the webbing of the thumb and the handle. Both wrists are flat.

In rowing the outside hand has a static grip. The wrist stays flat, the fingers stay still. In effect the grip is a hook, and the handle is free to rotate in this hook when the blade is free of the water and there is no pressure being applied. Hand separation is to some extent personal and what is comfortable

- Stand up and make sure you've got some room in front and behind you. Now swing your arms, hold them straight and swing them up to your shoulder height in front of you and as high as you can behind you. Swing backwards and forwards in a big arc. Starting to relax? Hands feeling nice and loose? Stop the next swing with your hands straight in front of you – how far apart are your hands.

Or if you are more of a left brain sort of person:

- Open your thumbs out between your hands and where they just touch is where you should place your hands.

Pre-requisites for a Good Grip

Before an athlete can get a good grip these things must be in order:

1. Rigging. The span and inboard, through the work, and height must put the handle in a comfortable place for the rower or sculler.

- Sit yourself or your rower at the finish, blade square and buried. The outside wrist should be just outside of and alongside the first rib.

If the rig is too high or too low you'll have trouble keeping the wrists flat.

A sculler should have the hands at a similar height and at least a hand width between.

2. Handle size and material and condition. The handle must be appropriate for the athlete. See Care of equipment, Choice of equipment.

Sweep finish position

Sculler at the finish position

A brief description of the sculling grip

During the drive we hang off the handles in much the same way as we would hang from a chin-up bar. The only difference is that in sculling our hands are on the end of the handle.

The handle is loosely held with the fingers wrapped around so that the second knuckles are in front. In the drive the wrists are flat.

In sculling each hand has to control both the height and the rotation of the respective blade. The action is similar to that of the inside hand in rowing. At the finish the handle is tapped down with the wrists flat and then the wrist may flex slightly and the fingers are uncurled so the blade rotates to the horizontal.

- Use a sculling grip, a screwdriver handle, a little vegemite jar – anything with the diameter of a sculling handle to practise the sculling grip, and feather. You can do it anytime, even while watching TV.

Photo of hand on scull

Photo of scull grip in recovery

Feathering practice with stick, drive.Feathering practice with stick, recovery.

One of the key skills in sculling is the cross-over of the hands. The near universal convention in sculling is that the right hand is the bottom hand. In the drive phase the right hand is below the left, and leads the left hand towards the body. The lead should be such that the top knuckles of the bottom hand are on the heel of the upper hand.

In the recovery phase the top hand, the left hand leads out and the bottom hand the right hand follows. When this is done correctly, and combined with a good feathering action, the handles can be kept close together and the wrists remain straight.

One lovely phrase to describe the sculling grip is “Hold the scull as you would a little bird, tight enough to stop it escaping but loose enough to avoid hurting it.” I first heard this used by Tony O’Connor of Ireland and Christ’s College, New Zealand and I believe it came from Adrian Henning. six part series on the Rowing and Sculling Stroke Cycle. We review all the movements that go into making the rowing and sculling stroke. Each post publishes on Mondays and is designed for rowing coaches and athletes who want to teach themselves more skill to understand better what is needed; drills and exercises to teach and explore skills and the benefits / perils of good or bad technique.

Scull handle grip when oars are in the water

Sculling handle grip when oars are not in the water

Rowperfect UK sells equipment, book, DVDs and tools for rowing and sculling supporting excellence in technique and coaching.

We aim to sell products that help improve technical skills and deliver fast boats.

Our news page includes coaching advice, commentary from around the web about the sport and product news, special offers and promotions.

Get in touch if you would like us to sponsor and support your rowing club school or university team.

rowperfect