

Rowing Technique

There are many rowing textbooks available outlining the points of good rowing technique, and any good coach should acquaint themselves with a few. Texts, while very useful, are sometimes a little too comprehensive and sometimes have rather “mechanical” descriptions in their efforts to achieve an air of objectivity. It can be hard to sort out the essential practical points of teaching good technique, and, where texts differ (and they do), to sort out the wheat from the chaff.

What I have tried to do with this series of workshops is to distil all the theories into some basic aims, some practical teaching points, common errors and fault correction exercises. I've mixed what is in the texts with what is endorsed by Rowing Australia and incorporated some ‘tricks of the trade’ that I have picked up in my own rowing career, during which I have been coached by a number of very good coaches.

I have also learned from experience that with any advice on rowing technique there are two major provisos:

1. People are different - in body type, motor skills, limb lengths and strengths and weaknesses. What works really well for one person may not work quite so well for another. Effective variations on basic good technique can and do exist - there is often more than one way to skin the proverbial cat.
2. It is difficult to isolate one element of the stroke from another when they are all so interdependent - for example a major reason for a poor catch may lie in how the rower comes forward on the slide.

The Catch

The aim of a good catch is to put the blade(s) into the water at the maximum point of reach and to take up the drive directly without “missing water”, and without disturbing the run of the boat.

The catch is the last thing you do on the way forward. A good catch drops vertically and directly into the water at the end of the slide forward. The hands reach forward and up and almost let go as the blades drop straight down. This is the quickest entry the blades can have. There is an instant of stillness as you reach full slide just before you change direction - this is the instant that the blade must enter the water. It requires perfect timing which in practice means that the movement must begin earlier than instinct would tell you. It helps to think of dropping the blades in as you are still coming forward.

Teaching Points

As the seat slides forward to the catch, the body position is stable and the arms, while straight-ish, are relaxed rather than ramrod straight.

1. Only the hands need to move up and forward slightly to drop the blade(s) in. This is achieved by stretching the arms and shoulder girdle “up and away” from you in a smooth and coordinated way while simultaneously letting the blades fall. (We are not talking big movements here - it should be barely perceptible from a coaches

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speedboat).

2. The splash from the blade as it drops in should be even on each side of the blade.
3. The blade should drop so that the whole of the blade is just beneath the surface of the water - the blade is designed to float at this level.
4. When the blade has dropped the legs/feet should initiate the leg drive, which should be in tune with the speed of the boat (e.g. faster leg drive for quads and eights, slower leg drive for single scull).

(Note: If you were to let the blade go entirely as you were dropping it in, the blade would drop slightly below the surface of the water then bob up again before settling in its floating position. A good trick is to think of initiating the leg drive (smoothly) before the blade can bob up).

5. All the above should be executed in a way to minimise disturbance to the run of the boat. (This means being smooth into the front and having a momentary period of calmness as the blades enter the water before the leg drive is applied).
6. With a good catch where little water is missed, the blades make a “gloop” sound as they enter the water (rather than a smacking or splashing sound).

Common Faults

Hands dip before the catch resulting in “skying” of the blades (i.e. blades are high off the water) and then blade is chopped into the water. Usually a lot of water is “missed”.

1. Overreaching into the catch where the body keeps moving over the knees in a general downward trajectory. The shoulders are then used to initiate the catch as they open back to a more upright position. Invariably much of this part of the stroke is in the air, resulting in “missed water”. The initial dipping of the body tends to push the stern of the boat down in the water and check the run of the boat. The lifting of the back to put the blade in the water results in a very weak and inefficient beginning to the stroke as the legs are not being applied.
2. Arms bent at the catch and early in the stroke, which will mean a weak stroke at this point because the full power of the legs cannot be applied if the arms have to be held in a bent position. Alternatively the arms snap straight after the leg drive is applied, which is a waste of the leg drive as the legs have been applied with no resulting movement on the oar.
3. Racing into the catch, causing overreaching, with the same effects as in (2) above.
4. Late squaring - blade is not squared until after the full slide is reached, causing a late entry of the blade into water and missed water.

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5. Leg drive is initiated before the blade is in the water, resulting in a stopping of the boat at every catch.
6. Blades carried too high off the water, resulting in chopping into the water as in (1) and (2) above.
7. Blades carried too low to the water, resulting in a dipping of the hands and skying of the blade (as in (1) above) to make room for it to square before dropping it in.
8. Hesitating at the catch, rather than having a smooth, seamless change of direction. Inevitable result is an initiation of the leg drive before the blade is in, and a chopping of the blade into the water and with all the faults outlined in (1) and (2) and (6) above.

Disadvantages of Missed Water or a Late Catch

- Shorter effective stroke, hence less acceleration developed, hence lower boat speed
- Wasted time at catch means having to rush forward in order to attain a high rating. Rushing forward means that the change in direction at the catch is sudden and severe and results in a checking or stopping of the boat run
- Blades go too deep into the water, applying unwanted vertical forces, and inevitably resulting in a dirty and untidy finish which will also slow boat run.
- Leads to poor legs/body/arms coordination during the drive phase of the stroke with the final result being that the second half of the stroke is taken with the arms only, which results in a weak finish and poor acceleration of the hull.

Fault Correction Exercises

1. Catch slap

In a normal stroke after arriving at the catch position lift hands up to put blades in but keep the blades feathered so that they “slap” the water then square and put them in the water.

Purpose: To assist in learning to raise the hands to drop blades into water; to assist timing of the catch in a crew boat; to stop the legs coming on before the catch, i.e. to separate the catch from the leg drive.

2. Roll ups/strikes

Starting at the finish with square blades, extract the blades, feather, and slide up to the catch position making sure that the crew goes through the recovery smoothly and with the correct sequence reaching body over by about half slide. From here they simply keep the seat moving to the front without any extra body swing. The catch is then taken with the hands only and is not followed by the leg drive. Try to make the “gloop” sound as you put the blades in at the catch.

Purpose: To slow down the preparation for the catch ensuring the body position is set and stable before taking the catch so that the catch is taken with the hands only; to reinforce the idea that the catch is part of the recovery and is the last thing you do on

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the way forward rather than the first thing in the drive; to separate the catch from the leg drive (good for correcting crews who get their leg drive on before the blades are in the water).

3. Feet out

Row with the feet out of the shoes.

Purpose: To encourage relaxation and balance on the way forward; to stop the rower racing into the front by pulling themselves forward by the foot stretcher. Racing into the front always leads to a poor catch.

4. Early squaring

Squaring the blade earlier than usual.

Purpose: An exaggeration exercise for rowers who square late and consequently have slow catches.

5. Double catches

Place blades in at catch then take out and place in again.

Purpose: To reinforce the idea that only the hands need to be used to put the blades into the water.

6. Catch drop and hit

Drop the blades into the water in the catch position and initiate the leg drive before the blades bob up to the surface.

Purpose: To encourage good timing of the catch and the leg drive; to separate the catch from the leg drive (in that order) by as small a gap as possible.

The Drive

The Aim of the drive is to impart maximum work (force times distance) to the boat in the direction of travel while minimising any forces that may retard the run of the boat (i.e. maximum total force with minimal disturbance).

The drive involves the legs, body and arms working together in an overlapping sequence (in that order). The drive should be in tune with the speed of the boat. The bigger the boat the faster the initial leg drive and quicker the build-up of force should be. Smaller and slower boats such as singles and pairs should be moved with a comparatively lighter catch and slower build-up of maximum force.

Teaching Points

- The leg drive should be initiated directly after the catch when the blades are in the water (NOT before).
- The pick-up of the drive at the catch should be in tune with the speed of the boat.

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The sequence of movements is as follows:

1. The drive should be taken with the legs first - the upper body and shoulders remain over the knees while the feet press into the stretcher.
2. This creates what is known as the Hang where all the tension is in the legs as the prime movers - they are by far the most powerful muscles. The arms and shoulder girdle are drawn forward and body feels light on the seat, suspended between the feet and the hands. This arms are not exerting any force at this early stage of the drive.
3. At mid-drive maximum force is being exerted on the boat because the blades are exerting force on the boat directly in the direction of boat run. The angle between the trunk and the horizontal has opened (unrolled) a little, and the body weight is still suspended between legs and arms.
4. As the stroke comes through mid drive the arms start to come into play, the movement being initiated by further opening of the body and drawing the shoulders back.
5. Legs, upper body, and arms all work in an overlapping sequence and should finish almost together for maximum accumulation of force and acceleration. (In actual fact the legs finish slightly before the arms, but it feels as if they finish together).
6. The leg drive should accelerate through the stroke as does the boat speed.
7. The speed of the handle(s) accelerates through the drive, reaching maximum speed just before the release. This will result in a clean finish as there is a "pocket" of air formed behind the blade which makes it easier to take the blade out of the water.
8. The blade should be just covered throughout the stroke at an even depth. This can only occur if the draw is "flat", i.e. horizontal.
9. The force applied to the boat during the drive should be smooth throughout, without any "two-part" action. This will result in the maximum summation of forces possible from the legs, upper body, and arms working smoothly together in correct sequence.

Common Faults

1. The blades "bounce" through the stroke, bobbing up and down in the water—indicating an uneven, i.e. a non-linear and non-accelerating application of force.
2. The blades go deep at the catch then come out before the finish of the drive ("rowed out").
3. The leg drive finishes well before the arms so they can't work together. The finish is sluggish and the blades don't come out cleanly and easily—this slows the run of the boat.
4. Taking the catch with the shoulders and upper body (see section on The Catch).

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5. "Bum shoving" where the legs are extended and the bum goes back, but the upper body is left behind at the catch position and the oar handles don't move. This often results in the blades going deep as the body swings open quickly to "catch up" to the legs. An unnecessary and energy-wasting vertical force component is applied to the blades/boat, and boat run is diminished
6. Jamming the legs on hard at the catch so that the boat is checked at the catch and stops every stroke.
7. Swinging to one side or other during the drive, unbalancing the boat.
8. Raising the shoulders (hunching) during arm draw, resulting in less than optimal horizontal force being applied.

Fault Correction Exercises

1. Catch drop and hit

Drop the blades into the water in the catch position and initiate the leg drive before the blades bob up to the surface.

Purpose: To encourage good timing of the catch and the leg drive; to separate the catch from the leg drive (in that order) by as small a gap as possible.

2. Taking the drive with the legs only

The upper body is left in the catch position while the leg drive is taken to point where the legs are fully extended and the body is still in the catch position. The blades are extracted at this point.

Purpose: This is a tricky exercise to perform and is meant to correct taking the catch with the upper body. It is an exaggeration and not meant to be the correct way to execute the stroke. Many novice rowers "bum shove" and this exercise is not suitable for them. It is meant only for those who take the catch with their shoulders.

3. Working up the slide

Starting at back chocks row with hands only for 20 strokes, then 20 strokes with body swing, 20 at $\frac{1}{4}$ slide, 20 at $\frac{1}{2}$ slide, 20 at $\frac{3}{4}$ slide, then full slide.

Purpose: To correct bum shove by helping to coordinate the drive so that the legs and upper body/arms finish together.

4. Ergometer rowing

Ergometer rowing is a good way to correct bum shove or other major sequencing problems through the stroke, especially if there is a mirror wall available for the rower to check his/her position.

Ergometer rowing is also good for demonstrating the Hang during the drive. Get the rower to slide up to the catch position. The next step is to secure the handle so that the rower cannot pull it back towards them. A rope securing the handle to something solid would do, or if the ergo is a Concept model B, a long screwdriver can be wedged between the fan blade and the surrounding cage. Get the rower to push with

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the legs so that the bum feels light on the seat, the shoulders feel pulled out of their sockets and the weight is suspended between the balls of the feet and the hands. If you have used the jammed screwdriver trick, the screwdriver can then be released when the rower is hanging correctly.

5. Building the pressure applied during the drive

Row 20 strokes with very light catches building to light finishes, then 20 with light catches building to $\frac{1}{2}$ pressure finishes, then 20 building to $\frac{3}{4}$ pressure finishes, then 20 with light catches building to full pressure finishes.

Purpose: To correct taking the catch too hard and to demonstrate the rhythm in the leg drive. It is also especially good for getting the leg drives together in a crew boat.

6. Resistance rowing

This can be done with a resistance strap of some kind around the boat or rowing in a crew boat with some of the crew not rowing to provide resistance. It can also be done on an ergo with the resistance turned right up.

Purpose: Is useful to demonstrate effective application of force, e.g. if arms are being bent too early the stroke will not be strong and it will be more apparent when the resistance is much higher than normal. This will encourage correct use of the legs to initiate the stroke, and hanging the body weight through the draw because the arms alone will not be strong enough to do much effective work.

7. Looking at the blade moving through the water

Description and Purpose: The rower looks at the blade while rowing to check the blade depth through the stroke, whether the finishes are clean and the type of puddles made. Optimum force is being applied if puddles are deep and swirling but not splashy.

8. Taking as few strokes as possible in a set distance

Try to take as few strokes as possible to complete a set distance or conversely take a set number of strokes (say 20 or 30) and see how far you can get in comparison with another crew. This can be done at any level from beginner to elite level and is similar to set rating pieces but is more easily managed. (It is very hard to ensure that a set rating is being adhered to if you are coaching a number of crews at once).

Purpose: These exercises reinforce that an effective stroke has a very powerful drive phase which comes mainly from the legs, and a very relaxed recovery.

The Release

The Aim of an effective release or “finish” is to extract the blades from the water at the completion of the drive with as little disturbance to the run of the boat as possible.

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Teaching Points

1. A good release should be part of the continuous acceleration of the drive so that the air pocket created behind the blade doesn't fill in and create a "dirty" finish where there is a lot of water splashed around the blade as it is extracted. A dirty finish will slow the boat down just where it should be accelerating. (The fastest speed that the boat achieves is just after the release and it is important not to disrupt this acceleration.)
2. The power of the finish should derive mainly from a strong leg drive with a coordinated opening of the body and arm draw to add to the total force applied.
3. The release should be flat, in line with the rest of the draw, not drawn down into the lap. The rower needs to feel that he/she is pulling the handle up into the finish.
4. The release should be executed with flat wrists or a slight downward rotation of the wrist (inside wrist in sweep-oared boats) to help feather the blade, with minimal tap down of the handles for sculling blades (just enough to clear the blades from the water). This is because with cleaver blades most of the blade hangs below the shaft, and once the blade is feathered the shaft does not have to be lifted very far to clear the water surface. Try to feather the blade in the air pocket created behind the blade, which will ensure a clean release.
5. With sculling blades learn to feather by rolling the handles into the fingertips rather than by dropping the wrists. With sweep blades use the inside wrist to feather (although many scullers use both wrists with sweep oars)
6. At the release the elbows should be drawn back past the body, with forearms parallel to the water. The shoulder blades should also be drawn back (and should feel as if they are meeting in the middle of your back in sculling boats). In sculling boats it is okay to follow the handles round their arc at the finish and draw the elbows slightly out to the sides (but still keeping the forearms parallel to the water).
7. The release should be smooth, not jerky
8. At the finish the hands should come in, around the turn, and away without stopping—it keeps the finish smooth and saves time when rowing at high ratings, so that there is less need to rush forward up the slide (thereby introducing a whole range of boat-stopping movements).
9. A strong stable body is necessary for a strong finish because the body must be held steady while the blades are drawn to it.
10. At the release the body should be just leaning back from the vertical about 25 degrees but not slumped, and the head should be looking straight ahead (not thrown back or with the chin on the chest).
11. In a sculling boats the hands should be approximately 14–16 cm apart at the release, depending on the size and build of the rower. Sculling blades should not be able to be pulled past the body.

Common Faults

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1. Pulling the handle down into the lap, causing the blade to wash out and resulting in a shorter, less effective stroke.
2. “Lugging it in” at the finish, i.e. leaning back too far and pulling the handle heavily downwards to finish off the stroke. This causes the boat to dip at the finish, slowing the boat run.
3. Handles slowing down at the finish—usually caused by lack of coordination between the legs, upper body and arms through the stroke so there isn’t an efficient summation of forces culminating in maximum acceleration. Often the leg drive is finished early, leaving the weaker arms to finish the stroke—a two-part drive and weak finish result.
4. Slow finishes can also be caused by lack of skill with feathering. This is common with beginners.
5. Elbows “winging” out at the finish—this will not result in maximum force due to an inefficient pulling angle, making arm draw weak.
6. Drawing the body to the handle rather than the handle through to the body.
7. Drawing the handle too far past the body, or not drawing the handle far enough through (cutting it off).
8. Leaning too far back at the finish or not leaning back far enough.

All the above are common faults with beginners. It is very important that rowers form a mental and sensory picture of correct body posture at the release. Videos and work on the ergo in front of a mirror are very good for this feedback.

With beginners a lack of core stability strength may be contributing to the incorrect posture at the finish. Gym work on abdominal strength and upper and lower back strength will help core stability. Even elite crews do work on developing and maintaining core strength as it is very important for injury prevention.

Fault Correction Exercises

A good release is the product of a good coordinated drive phase, so it is difficult to separate release exercises from exercises for the drive.

1. Tapping down and away exercise

Sitting at finish and tapping the handle down and away repeatedly.

Purpose: To develop tap down and feathering skills. For crews it also good for coordinating the timing of the release.

2. Square blade rowing and delayed feather

As per title. A delayed feather is when you extract the blade vertically, then feather the blade once it is clear of the water.

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Purpose: To develop tap down and feathering skills; for separating the two actions.

3. Building abdominal and back strength

Sit-ups are effective for building strength in the abdominal muscles. There are several exercises with and without weights for developing back strength.

4. Rowing hands only

Sitting at back chocks rowing hands only without any body swing.

Purpose: Helps to establish a strong finish position and cement that position in the mind.

5. Quarter slide work

Quarter slide work with squared or feathered blades is good for coordinating the finish. Starting at $\frac{1}{4}$ slide and progressing down the slide to full slide is also a good exercise for this coordination. All $\frac{1}{4}$ slide work will improve the stability at finish if done correctly. Quarter slide work is also good for improving feathering skills.

When done at speed $\frac{1}{4}$ to $\frac{1}{2}$ slide work is a good warm-up to bring crews together in the timing of the release.

The Recovery

The Aim of a good recovery is to carry the blades forward to the catch position with minimal effect on the run of the boat. It is also a time for recovery from fatigue and provides a time to relax the prime moving muscles.

Teaching Points

- A good recovery should be in tune with the speed of the boat and take at least twice the time of the drive. It sets the rhythm of the boat and a top crew will always have a relaxed efficient recovery.
- A good recovery will set the rower up for a relaxed but sharp catch, with little missed water.

The sequence of movements is as follows:

1. The hands come away smoothly from the release, with the knees held down to give the boat stability and allow the boat to accelerate from the release.
2. As the hands pass over the knees the shoulders follow the hands forward, followed by the seat moving smoothly up the slide as you let the boat come all the way under you. The body angle for the catch position is achieved by $\frac{1}{2}$ slide
3. The speed up the slide should be constant or slowing slightly all the way to the catch with no jerky movements or pauses at any point.

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4. The hands should come forward at the correct height with blades just above the water with enough clearance to square before the catch without having to make room by skying the blade before the catch.
5. Hand heights in a crew should be even as should bow and stroke sides in a sweep boat.
6. The upper body should be as relaxed as possible (“rubbery” or “like a blancmange”) on the way forward. This allows the muscles a chance to recover, be replenished with oxygen and have waste metabolic products cleared (more difficult if constricted). This is also useful in rough water where if the rower is tense the movements of body and boat will be exaggerated.
7. Above all the rower should develop a “feel” for the boat and be sensitive to the way the boat runs under him/her so as not to disturb the run.

Fault Correction Exercises

1. Exaggeration of the recovery time

Ensure a very slow slide by counting “1000, 2000, 3000” for the recovery, then “4000” for the drive. Alternatively you could have an experienced stroke in the crew who will stick to this slow recovery time. Progress to counting “1000, 2000” for the recovery and “3000” for the drive.

Purpose: To encourage a smooth controlled recovery; to encourage crews to let the boat run on the recovery.

2. Feet out rowing

Rowing with the feet out of the shoes will ensure a smooth recovery in tune with the speed of the boat because rowers will not be able to pull themselves forward by their feet and will not speed up as they come into the catch. It also helps boat balancing skills, as the balance has to be achieved with the hands only and hand heights have to be perfect.

3. Square blade rowing and variations

Square blade rowing will ensure a consistent handle height on the recovery and guard against carrying the blades too low to the water to feather without skying.

A variation on the exercise is the delayed feather where the blade is feathered between $\frac{1}{4}$ and $\frac{1}{2}$ slide on the way forward.

A further progression from this exercise is the double feather where the blade is squared and feathered twice on the recovery. This is really only suitable for experienced crews.

4. Checks or pauses during the recovery

A very useful sequence of exercises are checks or pauses during the recovery, then rowing on. These can be made at various positions depending on the problems with the rowers/crew.

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Pausing at hands away is good for crews who do not sit back at the finish and do not hold their knees down while the release is made. It is also good for crews who need work on the timing at the release and the “hands away” beginning of the recovery. Many crews have problems here with different hand speeds which, in turn will cause different slide speeds as the crew members try to get into synchronisation with each other on the way forward. Different slide speeds will result in a wobbly, unstable boat.

Pausing at “bodies over” is a very good exercise for those rowers who don’t have much body swing forward from the finish. Without this they will not be correctly set up for the catch and may dive into the catch. It is also good for rowers who do not hold their knees down while their shoulders come forward. Holding the knees down while the upper body swings forward allows the boat to be more stable and gives the boat time for maximum run from the release.