

ROWING TECHNIQUE

INTRODUCTION

This document sets out the main principles of rowing technique, as practiced at Doncaster Rowing Club. Whilst there may be other rowing styles used by other clubs, we feel that it is important that we all row with a consistent style, so that we can assemble scratch crews that can have worthwhile and enjoyable outings. The Club's coaches have agreed these principles and will apply them when coaching individuals and crews.

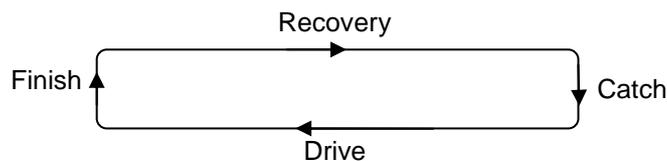
ROWING A BLADE

Rowing is an unbroken flow of movements. Each movement flows smoothly on from the last and into the next, without a pause. Every movement depends on the one before, so you have to get each one right.

THE BASICS

- **Rowing hurts!** Rowing is an intensive sport. If you can't learn to endure and work through pain, don't row competitively, as you will be letting your fellow crew members down. Instead, just row for fun or find another sport.
- **Sit tall.** Sit comfortably upright, with the small of your back pressed forwards a little, head up, chest out.
- **Loose hands.** In a sweep oar boat, hold the handle with your hands about two hand-widths apart. Hold it loosely in your fingers. Use your inside hand to square and feather by rolling the handle in your fingers, keeping both wrists flat. Let the handle revolve in your outside hand. In sculling, make sure both hands are really loose on the recovery; a good exercise is to straighten your fingers so that the blades are simply resting under your hands.
- **Sit centrally.** Keep the body over the centreline of the boat. This will help the balance and avoid forcing someone else to lean as well to compensate. However, some lean **into** the oar is OK as you swing through the stroke. Leaning away from the oar, especially at the finish, indicates a problem – usually that the boat is rigged too low (so you have to lean out in order to get your blade out of the water).
- **Drive with the legs and buttocks.** Your leg and gluteus (buttocks) muscles are the most powerful in the body. If these are not burning after a row, you are not rowing effectively. Most rowers do not engage their gluteus muscles effectively, thereby not achieving full power. To solve this problem, drive through your heels, not through your toes.
- **Hand heights.** To balance the boat, the oars must be at the same height on both sides of the boat all through the stroke, recovery and swing (hands up tips the boat away from the rigger, hands down into the rigger). On the recovery (sweep oar), the oar handle should be about 2" (5cm) above the saxboard; it should not be necessary to drop the hands in order to square. Touching the water with the blade on the recovery should be taboo. Press out against the pin at all times.

- **Blade depth.** Row your blade through at a consistent depth, just below the surface. This requires loose hands, acting like hooks, rather than gripping like vices. The blade should float to the correct depth.
- **The stroke.** The stroke can be broken down into two main components: the recovery and the drive. The drive should take less than half the time of the recovery (i.e., 1:2 or 1:3 or more when paddling light). Bashing up and down the slide like a metronome should be avoided – the recovery should feel like “floating”.
- **The ideal blade profile.** Whilst impossible to achieve in practice, the goal is to achieve a rectangular blade movement as shown below.



SWEEP OAR BOATS

THE RECOVERY

The objective of the recovery is to maximise the distance that the boat travels between strokes. It requires a well-organised body sequence.

- **Hands – body – slide.** This is still the best way to row. The hands move fastest, the body is slower, and the slide is slowest of all. Keep your weight on your feet.
- **Hands away.** Hands away quickly (but not rushed) after the finish until your arms are loosely straight (never lock your elbows). The handle should end up about 2” (5cm) above the saxboard. Hold the legs down.
- **Swing.** Swing from the hips until you feel the front of your seat pressing on the front of your buttocks and the weight transfers onto the soles of your feet. Imagine that you are “taking a bow” and practice this on land.
- **Slide.** Once your body has swung over into the catch angle (i.e., the handle is over your knees), you will feel your weight transferring onto the soles of your feet. **Only then should you start to slide.** Let your knees relax and rise naturally, keeping your head up and shoulders relaxed. Reach over your knees rather than through them.
- **Let the boat run.** Once you've started, slide steadily. Don't speed up or slow down. The boat should run under you, rather than you pulling yourself up the slide with your feet.
- **Squaring.** Square your blade positively before the catch, normally starting to square **as your hands pass over your feet.** Do not get into the habit of squaring too early. Your hands, wrists and arms must be loose and ready for the catch. It makes sense to delay squaring in a head wind or rough water, so follow the stroke's lead. More accomplished crews tend to square later.
- **Compression.** Your outside leg will move naturally outside your shoulder but do not let it swing out sideways. Don't slide too far; your shins must never go beyond vertical at the catch. Don't let your outside shoulder

drop, or your inside shoulder hunch up. Your shoulders will twist a little being lower on the blade side. *Don't* do a last minute extra reach. *Don't* use your little finger against the end of the handle to maintain outward pressure; press out with your hands. It may be useful to mark the ideal reach position of your hands with a cable tie; coaches will arrange this.

- **The catch.** This is the hardest part of the stroke and is best viewed as part of the recovery. The aim is to drop the blade into the water vertically. You have to get your blade in fast *and* instantly drive it. Relaxed, loose hands are essential for a fast catch. The outside arm should be loosely straight (avoid a bent-arm catch). Start putting the blade into the water while you are still moving forwards, so the blade creates a small, "V"-shaped splash. The bow-end splash of the V should be slightly lower than the stern-end splash. Do not "slide" the blade into the water after you have started to drive; this can result in missing the first 10" to 20" (25 – 50cm) of the stroke.

THE DRIVE

The stroke is one long sweeping movement with legs and buttocks driving all the way through. The objective is to accelerate the boat to maximum speed.

- **Spring.** You can't begin the stroke until you grip the water. And until you grip, pressure on the stretcher just slows the boat. A good catch is like a punch or thump as you spring your weight against the pin, picking the boat up with as little pause or check on the run as possible. Imagine that the end of the blade is locked onto a fence post in the water, so that you are pulling the boat past a fixed point. You should hear a "bell note" or "ker-choomf" sound as you hit and drive the weight together.
- **Leg drive.** Legwork is the foundation of rowing. As you start to drive, your heels will come down onto the plate. As soon as they do, drive through your heels (not your toes), hammering your legs down flat as hard as possible, to drive your weight back against the pin all through the stroke. Your back will naturally brace up to take the weight, but don't try to swing back your body at the catch. Also, make sure you do not "bum shove" (driving the legs without transferring the weight through your back. Concentrate on brutally hard leg/buttocks drive and blade control.
- **Draw.** As the boat accelerates, your arms can naturally draw in to keep up the pressure on the blade. The power now comes from your back muscles. Don't try to snatch or jerk the blade through with your arms. Although your outside arm has more leverage, try to draw evenly with both arms, using the muscles on both sides of your body. Try to keep your shoulders square across the boat, and keep your head over the centreline (but slightly into the rigger at the catch and finish).
- **Finish.** Row your blade through as hard as you can. Use your weight to accelerate the handle into the finish. The finish must be square and is much more powerful if you swing back your body (don't crumple), rather than just pulling with your arms. Hands should be drawn up level with the bottom ribs; do not allow your hands to drop into your lap.
- **Extraction.** Just before your handle hits your ribs, drop your outside hand

very quickly to lift your blade out. This is a small movement from the elbow, but it has to be as fast and clean as the catch. And like the catch, it should feel vertical. You'll find that pressing out helps a lot. Lift your blade out square before you feather. Make it smooth and quiet, with minimal rattle at the swivel. At backstops, hold the legs down and take your time (except for your hands moving away). Let the boat run.

- **Feathering.** Feathering is a very fast, blended movement. Feather by dropping your inside wrist. Or better still, roll the handle out into your fingers, keeping both wrists flat (this takes practice).

SCULLING

Sculls move a boat in the same way as oars, so that most of the techniques required for sweep oar boats apply to sculling. However, there are a few key differences in technique:

- **Hands.** Square and feather your sculls using your fingers, **not your wrists. Keep your wrists flat** and loose as you reach out for the catch (i.e., do not bend your wrists – a very common mistake in many scullers, especially novices). The fingers should be like hooks. Keep your thumbs around the ends of the handles, and press out against the pins all the time.
- **Finish.** Adjust your stretcher so your thumbs just brush past your bottom ribs at the finish (you should be leaning back slightly). Bring the handles into your body at the same time and at roughly the same height (the right hand handle will be slightly lower).
- **Recovery.** Don't skim the feathered sculls over the water, because you won't row a confident catch. Push your hands down and away, to get your sculls off the water.
- **Crossover.** The widely recognised worldwide convention is left hand over right, with the right hand leading and slightly below the left. Your left hand should lead away on the recovery. The left gate should be rigged 1-2cm higher than the right hand gate. In doubles and quads, it is essential that all crew members use the same convention.

COXSWAINS/STEERING

Coxing or steering a boat is a very important role and requires the necessary training. Whilst the full details are not included in this document, there are some vital points that coxes and those steering coxless boats or sculls must bear in mind:

- Be vigilant at all times, keeping a lookout for other boats and hazards, such as logs, in the river.
- Stay on the correct side of the river (i.e., right).
- Never assume that a boat coming the other way has seen you. **You should shout a warning to all coxless boats and sculls.**
- If you see another crew who are clearly rowing a set piece, give way and **get out of the way.** Allow them to keep their line and take the inside of any bend. When moving out of the way, be aware of any boats coming in the opposite direction.

BOAT SETUP

It is vitally important that boats are set up correctly. The boats should be correctly rigged with the pitch set at around 4°. As most of us do not have aspirations to win international events, gearing should be relatively light.

- **Backstops position.** To ensure that the boat is sent away level at the finish all crew members should have the same blade angle at backstops (i.e., 30° to 35°). **Any “macho” tendencies to set the stretcher too far forward should be resisted.** Sweep oar boats should be set up with tape next to the slide to show all crew members where to position the back wheels of their seats at backstops. The tape should be marked from 60cm to 65 cm from the pin. Taller crews should set the centre of the back wheel of their seat to 65cm. Shorter crews should move forward but should all be the same, if possible. **Coaches/crew captains should check that all crew members are in the same position before starting an outing.**

In a scull, it is a common mistake to set the stretcher too far forward; it should be set so that the thumbs can just brush past the bottom ribs at backstops (leaning back in the finish position).

- **Foot height.** It is easier to row with feet lower down in the boat (but not too low), especially for novices. A high foot setting results in the body tipping back in a weak position at the catch. However, more experienced crews can raise their feet a bit. Ensure that your heels do not touch the bottom of the boat, as this could damage it.
- **Rake.** Keep the stretcher angle steep and no less than 45° from the horizontal. If people’s ankles are not “flexible”, they should do flexibility exercises in the gym, not compromise by changing the rake in the boat.

TRAINING

Effective rowing requires a combination of power and endurance, so training has to be geared to a simultaneous building of both. This requires progressive overload, i.e., regularly increasing the magnitude of the training stimulus. In short, rowing hurts - no pain, no gain - so to learn how to row effectively, crew members need to push the boundaries and progressively increase their ability to endure pain. Working at AT (Anaerobic Threshold) and above (TPT - Transport and AN - Anaerobic) are essential for success. However, work at Utilisation levels (U1, U2 & U3) is also useful, especially during the winter months.

Because most club members have limited time, we need to find ways to “fast-track” training. This includes the following:

- **Boats and ergos.** The most time-efficient way to build endurance is to row intervals (in the boat or on the ergo) at full pressure (at TPT and AN above 28 spm). This has the added benefit of developing power and speed, as well as increasing people’s pain threshold. Up to a dozen one or two minute intervals are ideal (with one or two minutes of rest, respectively). Flogging away for long intervals at $\frac{3}{4}$ pressure (U1 at 19 – 23 or AT at 24 – 27spm) requires concentration and self-discipline, so can have limited benefit, unless a coach is present to encourage individuals to

concentrate and push themselves. Do not allow the rowing to degenerate into a “metronome” rhythm (“bashing up and down the slide”).

- **Cross training.** In addition to ergos, the best forms of cross training for rowing are cycling, running and circuit training. In circuit training, using heavy weights can be risky, as it can easily result in injury. We therefore recommend using the body’s own weight (or light weights) for resistance exercises. Lunges, deep squats and burpees are good exercises for the legs, pull-ups (chins) and bench pulls (using moderate weights) for upper body strength and “the plank” and press-ups are good for building core stability.

BOAT EXERCISES

Some effective exercises for improving your rowing and getting crews to work together effectively include the following:

- **Feet out.** This should be done for a few minutes in most outings, preferably during the warm-up. However, do not overdo it, as it can result in a reduced lean-back at the finish.
- **Rapid half slide.** Once warmed up, the crew rows at half slide at full pressure (forward position with knee level with the upper forearm, just below the crease of the elbow). Starting at around 28 spm, the cadence is increased by around 3 spm every 10 strokes until a very high rating is reached (well over 40 spm). Then wind down. This sharpens the hands away and is a great way to get a scratch crew rowing together.
- **Alternate square and feather.** This exercise is aimed at programming the body to keep the hand heights low/consistent throughout the recovery (thereby improving balance) and ensuring a loose catch and square finish. It should be done for long intervals (5 – 20 minutes), both paddling light and during steady state paddling (but not into a head wind). This exercise requires concentration and can be very frustrating in a poorly balanced boat. It is therefore necessary to persist until the crew gets it right.
- **Eyes shut.** This should be a regular exercise and is aimed at getting people to “feel” what stroke and the crew is doing. Changing the rating (from stroke) is an effective variant.
- **Outside hand off.** Rowing 10 to 15 strokes with the outside hand off just before a full pressure piece is good way to improve the sense of how the outside hand should draw the blade through to the finish. The hand comes back on for the first full pressure stroke.
- **Low rating.** Very low rating (14 – 18 spm) at light or half pressure is a great way to build confidence and teach crew members how to “float” on the recovery, allowing the boat to run. The finishes must be positive. The lighter the pressure and lower the rating, the harder the exercise. This is a great way to finish an outing but can also be done during interval training.
- **Sculling.** Practice straightening the fingers on the recovery, resting the handle under the end of the palm. Occasionally spreading the fingers will ensure a loose, hooked grip.

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REFERENCES

- **Rowing Technique**; Peter Holmes with Andy Holmes, Disley Print & Kinder Press Ltd.
- **Sculling Training, Technique & Performance**; Paul Thompson, The Crowood Press Ltd.
- **Rowing Faster**; Volker Nolte, Human Kinetics, Inc.
- **Training for Rowing**; Peak Performance, P2P Publishing Ltd.
- **Peak Performance**; various newsletters.