

Skill Development Handbook

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This resource is suitable for Level 2 awards (Session Coach) and certificates (Club Coach).

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Introduction

This Handbook is designed for use with rowers from all backgrounds and all levels of fitness. The core content of the Handbook is the Skills Matrix which details five levels of achievement, from Level 1 aimed at developing confidence to get in and out of the boat, to Level 5, which demonstrates a high degree of competence in all skills.

The type of boat a beginner uses is not really important as they can start in any kind, from fine singles to clinker octuples or coastal fours. The Skills Matrix is designed so that the first three levels can be carried out in any boat type; however Levels 4 and 5 should be done in a single sculling boat. All J14s and below should be learning in sculling rather than sweep boats and ideally in single sculling boats or equivalent.

The Handbook focuses on skill development because this is now widely believed to be the best way to teach beginners and to develop experienced rowers. This approach lends itself to supporting individuals learning to row in any setting but equally can be included within the training programme of an existing rower. Skill development should set the foundations for all rowers, whether they want to take part in rowing to get fit or if they aspire to be future Olympians and Paralympians.

Key points for consideration:

When embarking on a Skill Development Programme, there are a number of points that should be considered alongside of this.

Safety

- Safety guidance for coaches working with beginners is available through RowSafe. Before using the Matrix, either as a coach or rower, it is important to understand the whole rowing stroke cycle (refer to the Technical Handbook for more information – this is a Club Coach Certificate resource).

Technique

- Traditionally the rowing stroke has been built up from backstops and while the recovery sequence remains very important, rowers often do not gain an understanding of how they hang their weight on the blade. Therefore, this Skill Development Handbook starts the stroke sequence from front stops / the catch but has exercise and drills that work on both areas.
- The whole stroke sequence and the concept of suspending or hanging through the drive is initially best demonstrated either on a rowing machine or in a rowing tank.

Fitness

- Rowers will start with varying levels of fitness that may or may not match their aspirations within rowing. The Skill Development Handbook does not aim to significantly help improve the rower's fitness, as its focus is to develop an individual's skill. However, rowers can be encouraged and guided to partake in land activity that will improve their fitness. As in all rowing programmes it is best practice to carry out a pre-screening questionnaire with all rowers before advising on a fitness programme. Consideration should be given to formal and informal sport / activity that school pupils / students may be taking part in, in addition to any rowing programme subscribed, to ensure they are not doing too much (refer to "[How much and How often](#)" and "Coaching 100 Beginners" for more information).
- With adults it is slightly different; consideration should be given to building an appropriate fitness programme involving the traditional land training activities of running, cycling and swimming. The programme should be tailored to their aspirations and it is also advised to factor in elements which may hinder participation in exercise, such as home life and work constraints. If they already attend a gym then they could work with the instructor there, they may be able to join some club circuit sessions or perhaps they only need to be encouraged to cycle / walk to work occasionally!
- Rowing machines are a brilliant way of developing fitness but the rowers need to be supervised and technically competent; rowing machine technique should complement and reinforce water-based technique and skills.

Flexibility and posture

Again, rowers will start with varying levels of flexibility and understanding of correct posture. These areas are fundamental to injury prevention and skill development in rowing and will need to be developed, but there are some basic activities you can do with rowers to help them. Brush up your background knowledge first using the Flexibility, Strength and Stability (FSS) posters available to buy through British Rowing.

- Many people have tight hip flexors and hamstrings and both of these will restrict the ability to rock over and achieve the correct posture in the boat.
- Encourage stretching post exercise. Particularly focus on hamstring and hip flexor exercises as these are so crucial for the rowing action - use the FSS posters.

- Posture is important and in rowing, we particularly need to concentrate on getting the pelvis and lumbar spine to move together. From this, you can teach rowers how to pivot from the hips, tall and strong in the way that you will want them to 'rock over' in a boat. For recommendations on good technique, the British Rowing Technique posters for sliding seat, fixed seat and indoor rowing are available to buy through British Rowing.

Encourage the strengthening of core muscles through understanding and correction of posture in everyday activities such as watching TV on a Swiss ball, sitting correctly at work, standing correctly when washing up / ironing etc.

- Trunk and core strength is not the only area for work on posture, so when the above have been mastered, encourage work on scapula shoulder setting exercises.
- The gluteal muscles are key to generating the power to move a boat. Both the gluteal medius and maximus need to be strong and stable to enable this to happen effectively.
- As this is such a specialist area we advise that rowing clubs use physiotherapists and/or Pilates classes at local gyms to help identify exercises specific to rowers needs.

Learn to Row

See British Rowing's 'Learn to Row programme' for details of initial sessions that can be carried out with individuals who are new to the sport of rowing.

When an individual has completed a series of Learn to Row sessions, the Matrix can be used to develop their skill base further. This can also help motivate them, harness their physical strength, develop their feel for the boat, improve technique, enjoyment and, ultimately, if they choose, speed.

Skills Matrix

This Matrix details five skill levels and associated skill progressions. Each level develops the rower's competence and builds from a Learn to Row base.

Key goals of each level:

Level	Sliding Seat	Fixed Seat
Level 1	Developing confidence to get in and out of the boat and demonstrate simple tasks. Learning to row.	Includes simple skills such as lifting the boat, launching, holding an oar and learning to row.
Level 2	Developing confidence to get in and out of the boat and demonstrate simple tasks. Learning to row.	Developing sound technique and manoeuvring.
Level 3	Showing good competence at simple skills and developing more complex skills. All rowers taking part in the sport should aspire to this level of competence.	Competent rowing and execution of skills such as those in the technique development module.
Level 4	Demonstrating a high degree of competence for most skills. Good club rowers and those breaking into High Performance should reach this level.	More complex skills, e.g. one handed rowing, eyes closed, coxswaining.
Level 5	Demonstrating a high degree of competence in all skills. Any aspiring international or Start athletes should aim to reach this level.	Ability to execute all skills including buoy turns, coxswaining in races.

The Matrix uses a number of rowing terms which can be found in the glossary in the Learn to Row Handbook or on the British Rowing website: <https://www.britishrowing.org/knowledge/online-learning/techniques-and-training/glossary/>.

The Skills Matrix of Level 1-5

Skill	Level 1 In any boat type Sculling or rowing	Level 2 In any boat type Take individual to competition	Level 3 In any boat type	Level 4 In a single	Level 5 In a single
Getting afloat	<p>With help:</p> <ul style="list-style-type: none"> • Carry the boat out, turn and place on water. • Place the blades in the correct swivel and tighten. • Adjust to correct backstops position. • Explain the rules on direction of boating. 	<p>With help:</p> <ul style="list-style-type: none"> • Carry the boat out, turn and place on water. <p>Independently:</p> <ul style="list-style-type: none"> • Place the blades in the correct swivel and tighten. • Adjust to correct backstops position. 	<ul style="list-style-type: none"> • Independently get afloat. • Including pushing off without assistance. 	<ul style="list-style-type: none"> • Independently get afloat in a single. • Can enter a boat and then do up the waterside swivel. • Can launch from different bank settings, e.g. from a bank level jetty, from wading, from steps (or can explain how this would be done). 	
Rowing terms	<p>Understand meaning of:</p> <ul style="list-style-type: none"> • Easy oar • Hold it up • Back stops • Front stops • Number off from bow • Recovery • Catch • Finish 	<p>Understand the meaning of:</p> <ul style="list-style-type: none"> • Bow side • Stroke side 	<p>Explain which sides correspond to port and starboard.</p>		

Skill	Level 1 In any boat type Sculling or rowing	Level 2 In any boat type Take individual to competition	Level 3 In any boat type	Level 4 In a single	Level 5 In a single
Equipment	Identify and name the following: <ul style="list-style-type: none"> • Stern • Bow • Riggers • Foot stretcher • Slides • Seat • Swivel • Gate • Blade – spoon, button, handle 	Basic equipment maintenance: <ul style="list-style-type: none"> • Checking nuts and bolts. • Attaching riggers. • Understand how adjustment of foot stretcher and height effects position in boat, comfort, stroke length, posture. 	Rigging measurements: <ul style="list-style-type: none"> • Understand the effects of changes to and how to adjust: <ul style="list-style-type: none"> ○ Span / Spread ○ Height ○ Outboard ○ Inboard • Can adjust height. • Can adjust inboard / outboard. 	Rigging: <ul style="list-style-type: none"> • Can measure blade pitch. • Can measure lateral pitch. • Can explain the effect that negative, neutral, and positive lateral pitch would have on the blade throughout the stroke. • Can adjust spread, span and lateral pitch. 	Rigging: <ul style="list-style-type: none"> • Can adjust lateral pitch.
Grip and posture	<ul style="list-style-type: none"> • Correct sculling / rowing grip. • How to sit in a boat. 	<ul style="list-style-type: none"> • Correct sculling / rowing grip. • Square and feather using the fingers. • Maintain good posture for whole stroke sequence. 	<ul style="list-style-type: none"> • Maintain good posture across the course of an outing. • Maintain alignment of the pelvis and lumbar spine through the catch, drive and recovery. • Can attain a strong catch position without bending at the lumbar spine. 	Has sufficient flexibility to tilt the pelvis anteriorly (rock over) from backstops, without compensating at the catch.	

Skill	Level 1 In any boat type Sculling or rowing	Level 2 In any boat type Take individual to competition	Level 3 In any boat type	Level 4 In a single	Level 5 In a single
Confidence and balance skills	Can perform all of: <ul style="list-style-type: none"> • Circles • Rigger dips, sitting • Rock and remove hand(s) • Rigger dips, standing • Stand up in boat • Slapping or chopping • Balance, blades off the water in the safe position 	Building on all the exercises for Level 1 but increased targets and quality.	Keep building on previous work improving speed and quality.	<ul style="list-style-type: none"> • Further improvement. • Stand up and turn round then sit down. • Tossing an oar / rowing in difficult sea conditions. 	Exceed the Level 4 abilities in these exercises.
	This is not required at Level 1.	Can do a roll up.	Can do 10 roll ups whilst keeping the blades clear of the water on the recovery.	Can do a roll up and then return from the catch to the finish whilst keeping the blades clear of the water.	Can do roll ups and return across all slide progressions whilst keeping the blades clear of the water, and maintaining perfect balance.
Manoeuvrability	<ul style="list-style-type: none"> • Paddle on and back down with one or two blades. • Basic understanding of how the boat will move. • Turn the boat full circle. 	<ul style="list-style-type: none"> • Tap turn a boat. • Turn the boat 360 in 55-60 sec. • Get onto a stake boat, use passing blades forward technique to 	<ul style="list-style-type: none"> • Turn the boat 360 in 35-40 sec. • Confidently get on to a stake boat and hold the boat straight in a cross wind. 	<ul style="list-style-type: none"> • Show equal competency in being able to turn in 35-40 seconds in both directions. • Explain the effect of current, tides and wind on steering. 	Can turn a boat by rowing on with one side and keeping the other blade clear of the water.

Skill	Level 1 In any boat type Sculling or rowing	Level 2 In any boat type Take individual to competition	Level 3 In any boat type	Level 4 In a single	Level 5 In a single
		maintain straight course. <ul style="list-style-type: none"> Can show looking over both shoulders when steering. 	<ul style="list-style-type: none"> Move off stake boat on a straight course. 	<ul style="list-style-type: none"> Use current to hold a position on the river. Steer a good and safe specified course with bends and turns. 	
Stopping skills	<ul style="list-style-type: none"> Perform an emergency stop and sit in safe position. Can carry out an emergency stop when backing down. 	Successfully carry out an emergency stop from strong paddling speed.	Complete an emergency stop at speed without losing control or falling in!	Can complete an emergency stop when directed at speed and stop within two boat lengths.	
Whole stroke	Recovery sequence: <ul style="list-style-type: none"> Hands, body and slide. OR <ul style="list-style-type: none"> Recovery sequence for fixed seat boats. 	<ul style="list-style-type: none"> Demonstrate hands, body and slide on recovery. Demonstrate the recovery in a fixed seat boat. Arms only, body lean (hip pivot). 1/4, 1/2, 3/4, full slides with correct body and hand position at each point – where appropriate for the boat type. 	Retain posture and technique at low and high ratings.	<ul style="list-style-type: none"> Maintain good posture across the length of an effort in training. Analyse your own posture and technique using video feedback. 	<ul style="list-style-type: none"> Maintain good posture across the length of an effort in training. Analyse your own posture and technique using video feedback. Maintain correct sequencing of whole stroke when pressure applied.

Skill	Level 1 In any boat type Sculling or rowing	Level 2 In any boat type Take individual to competition	Level 3 In any boat type	Level 4 In a single	Level 5 In a single
Catch and connection	<ul style="list-style-type: none"> Place the blade at the catch squarely with shins vertical and shoulders down. OR <ul style="list-style-type: none"> Correct catch position for fixed seat boats 	Place blade at the catch whilst seat wheels are still moving forwards.	The catch is taken as the last part of the recovery, whilst the rower is still on the way forward and connects power to the water with minimal slippage.	The catch is taken as the last part of the recovery, whilst the rower has flat hands (test this over 250m).	Can row with flat hands and place the blade at the catch with flat hands.
	Attempts suspension drills on rowing machines and in boats, and can lift off seat.	Can lift their weight off the seat while pushing from the catch position five times.	Suspend weight in a moving boat throughout the drive phase.		
	Able to sit at backstops / position for extraction and extract square blade when stationary (or place the blade between the pins).	<ul style="list-style-type: none"> Square extraction whilst paddling. Introduce feathering with early re-squaring. 	<ul style="list-style-type: none"> Square clean extraction at all speeds and rate. Can do sequences of alternate squaring / feathering. 	Can row full pressure, square blade.	
	Understands what ratio and rhythm in a boat is and why it is important.	<ul style="list-style-type: none"> Recovery follows hands, body, slide model with good posture. OR <ul style="list-style-type: none"> Fixed seat recovery with good posture Hands are held so that blades are clear 	<ul style="list-style-type: none"> Recovery sequence follows hands, body, slide model with good posture. Hands are held so that blades are clear of the water. Squaring is completed by $\frac{3}{4}$ 	Can perform late squaring and still get correct catch sequence.	

Skill	Level 1 In any boat type Sculling or rowing	Level 2 In any boat type Take individual to competition	Level 3 In any boat type	Level 4 In a single	Level 5 In a single
		<p>of the water on most strokes.</p> <ul style="list-style-type: none"> • Squaring is completed by $\frac{3}{4}$ slide in preparation for the catch. • Demonstrates good ratio and rhythm at low rate. 	<p>slide in preparation for the catch.</p> <ul style="list-style-type: none"> • Demonstrate good rhythm and ratio at all rates and pressures. 		
		<p>Distance per stroke:</p> <ul style="list-style-type: none"> • Water 1000m @ 24 • Rowing machine 1000m @24 	<p>Minimum strokes square blade.</p>		

Teaching pointers

This section looks at exercise progressions to help rowers achieve the criteria set out in the Matrix.

Getting afloat

Make sure that rowers keep their backs straight when lifting and have good spatial awareness when carrying a boat. As a part of this, teach how to point the boat into the stream or prevailing wind for going out and coming in and why this is important. Enforce practices that you and your club wish to see continued, such as washing the boat down after an outing, noting equipment problems and noting any incidents on the water (using British Rowing's [Incident Reporting System](#)).

Getting in and out of a sculling boat

- Get the rower to hold the handles of both blades in one hand and press down on the rigger nearest to the bank or pontoon with the other.
- They should slide the seat out of the way and place their foot nearest the boat between the runners (**Note:** Instruct them to never place their foot in the footwell as this is the weakest part of the boat and liable to crack if their full body weight is on it).
- Next bring the other foot into the boat to rest on top of the shoe and using upward pressure on the handles to keep the spoons of the blades flat on the water, stabilise themselves and sit down.

The rower should never let go of the blade handles when getting into and out of the boat. To get out of the boat, carry out the above in reverse.

Adjusting the foot stretcher

When sculling, the rower should have 1 ½ hand widths between the handles at the finish. When rowing, the rower should be able to keep the outside hand in line with the side of their body at the finish.

In a fixed seat boat the rower should have their knees slightly bent when they are sitting on the front edge of the thwart.

If the foot stretcher is too far towards the stern:

- When sculling at the finish there will be little room between the ends of the sculling handles, and this may make extracting the blades difficult.
- When rowing the outside hand will be away from the side of the body.

If the foot stretcher is too far towards the bow:

- When sculling, at the finish there will be so much room between the handles that the rower can draw them past their body.
- When rowing the outside hand will be across their chest.

The number of notches that the stretcher is from the bow, can be adjusted by loosening the side and footwell nuts, and sliding the stretcher backwards or forwards.

Safe position

In a sliding seat boat, the rower sits with their legs straight, back upright, arms outstretched, hands touching and spoons flat on the water.

The safe position is a position where the boat is stable in the water and the rower is sitting comfortably. If at any point whilst rowing they feel uncertain, they can return to this stable position to regain their balance before continuing.

Rowing terms

For help with rowing specific terminology see the A-Z of rowing terms in the Learn to Row Handbook, or the [Glossary](#) on the British Rowing website.

A key way to get new rowers to remember terms is by getting them to play games. For instance, Simon Says, can be done on a rowing machine or in a boat. Following the rules of Simon Says, get rowers to row and only stop when commanded. Such as: “Simon says show me backstops” and “Simon says back down on starboard side”.

What it does for the beginner is to reinforce technical points and ensure correct posture and grip. For adults or young people you could change the game to one where the rower receives points for getting into the correct position or doing something correctly, instead of Simon Says.

Equipment

Again, explanations of rowing equipment can be found in the A-Z of rowing terms in the Learn to Row Handbook or on the [British Rowing website](#) to help with the early stages.

Level 1 and 2 game - Equipment touch

Whether on the bank or in the boat get rowers to point to, or touch the correct part of the boat. Obviously this is slightly limited if the rower is on the water.

Level 2 and 3 game - Rigging competition

Rowers divide into teams and have a boat per team to de-rig, re-rig, adjust foot stretcher, adjust blade length, inboard / outboard or any combination of these. The first team to correctly complete, wins. Tie this in with some fitness activity and get teams to run a set distance at the beginning / end. This is called “Pit-stop rigging” (this can also be adapted to pit-stop labelling where you label the parts of the rowing machine).

Level 3 - Technical rigging

This can only really be taught by demonstration and practice. Don't neglect this skill as you want to encourage the crew you're coaching to do this themselves!

Grip and posture

Grip – it is important to teach beginners the correct blade grip and hand positioning on the grips.

- For sculling, the blade should be held in the base of the fingers with thumbs on the end of the handles.
- For sweep, the blade will similarly be in the base of the fingers with thumbs underneath the handle. Hands should be no more than two fist widths apart.

There are alternative grips for different boat types, for more information contact organisations such as the CPGA or Welsh Sea Rowing Association.

A top tip is to try teaching feathering with broomsticks, toothpaste tubes or toilet rolls.

Posture – refer to the earlier paragraph on flexibility and posture. Reinforce posture throughout every activity and game that the rowers do.

Confidence and balance

See the 'Go Faster with Foster' DVD and Fixed Seat Skills and Drills (on RowHow) for examples of how to do the exercises. You can also see some of these exercises along with other drills on the Session Coach page on RowHow.

These exercises can be used not only to develop confidence but are also important elements in improving balance and general skill. The following skills can and should be carried out in all boat types; eights can rigger dip too.

To maintain incentive for improvement the rower should count their own score while the coach times and records. Each rower will have their own progression rate although some comparison of scores will provide minor competition.

Circles

Look for fluid movement and the boat rocking under the rower, who sits with the body steady in the upright position. Only the hands and boat move.

Why? The exercise identifies what effect distance between hands has on balance. It also helps to improve stability in the boat; it can be demonstrated as large circles or smaller ones.

- The rower should sit in the safe position with legs flat and back straight.
- Roll the hands and the blades round in circles, both forwards and backwards whilst keeping the spoons flat on the water.
- This can be done as a 30 second timed piece to see how many can be done.

Balance skill

This is mostly a fun exercise, which measures static skill that is not as important as the dynamic balance shown in other exercises. The smaller rowers will be more efficient at this than the stronger rowers with a high centre of gravity. For time reasons, restrict the rower to ten trials. Scoring is done by the rower counting aloud in 'elephants' ("one elephant... two elephants... three elephants"). Science has proved that 'one elephant' is exactly equal to one metric second.

Why? The rower will benefit from identifying the hand position relative to the water and it helps them to focus on feeling for the boat's balance using their own centre of gravity.

- The rower should sit in the safe position with legs flat and back straight.
- Hold the spoons off the water, adjusting only the body to balance the boat.
- Keep a strong core body position at all times.

Progression

Progress to various positions on the slide; balance at hands away, balance at $\frac{1}{2}$ slide, balance at $\frac{3}{4}$ slide.

Double slaps

This exercise moves the rower from a stable position (safe position) to the unstable situation with the blades off the water. The body should remain still and only the hands drop with a lot of sensitivity for the blades leaving the water together (a similar skill to the blade release after the drive phase). Look for light and quick movements with a balanced boat.

Why? The rower is able to use this exercise to identify the hand position relative to the water. It can be carried out in crew boats to help work on timing as well as blade positions.

- The rower should sit in the safe position with legs flat and back straight.
- Slap both blades on the water at the same time.

Single / alternate slaps

This skill uses the body weight to rock the boat from side to side, but the rower must acquire great sensitivity for the boat if a significant score is to be achieved in the 30 seconds. Look for subtle movements of the body rather than gross body swings. Any fighting of the body against the boat and blades indicates that the rower will not have a fine feel for a balanced position while rowing. Like most of the other skills here this one can be acquired by practice.

- Rock the boat from side to side and slap the blade down on the water, alternating from one side to the other.

Rigger dips - sitting

This is an advanced movement using the same principles of the previous exercises. This can be difficult for some rowers but a great sense of achievement when they finally get there.

Why? This skill helps with confidence and understanding of the relationship between hand height and the effect this has on balance. This skill requires the rower to have a loose grip in order to get the maximum number of dips. Makes the rower understand the amount the boat can move from side to side in complete safety.

- The rower should sit in the safe position with legs flat and back straight, but will have more room to complete the drill successfully if they sit at ½ slide.
- Get them to rock the boat from side to side by separating (raising and lowering) the handles so that the bottom of the swivel touches the water.
- A light grip keeps the blades on the surface.

Progression

Judge your rower's confidence and ability if they are not able to do this to start with. Progress them slowly by keeping them in the safe position and simply rocking the boat from side to side by raising and lowering the handles.

Rigger dips- standing

This is quite a complex skill for the advanced rower and is a significant test with values which are not immediately apparent. Once the rower achieves the standing position and can put the riggers under, you will find their fear of the water disappears and aggression for rowing fast is enhanced – they will feel nothing is impossible. A very good sculler will have a higher score

for the riggers under, standing than sitting, due to the feel for balance through the feet and the ability to shift body weight lightly and quickly.

- Stand up (lock handles together and pull to help). Then rock the boat, dipping the riggers in the water, by moving the sculling handles up and down so that the bottom swivel touches the water – use feet to help rock boat, keep blades on surface.

Look for relaxed balance and easy control of the body and boat with the body steady and hands and feet moving – like a good snow skier quickly going over moguls.

Standing up in a boat

- Progress to standing up and swapping blades from one side to the other.

A rower can build on these skills by being able to complete more repetitions in 30 seconds and by being able to do the exercises with increasing skill, quality and ease. These can all be recorded to show the rower their improvement and development (a sample Rower progression record sheet can be found in the Appendix along with a table that shows targets of achievement at each level).

The following are additional drills that can be used to build confidence:

Letting go

Why? This builds confidence; even if the blade is knocked out of the rower's hand it does not automatically mean falling in (you could progress to hands off at the catch).

- The rower lets go of the handles of the blades, first with alternate hands and then both hands.

Letting go and rocking the boat using heels

Why? This is to see the effect of balance on the boat using the rower's feet, and builds confidence.

- Rower lets go of the handles of the blades, first with alternate hands and then both hands.
- With hands off the handles, they use their feet to tilt the boat from side to side.

Hands off at the catch

Why? Balance and core activation are required to maintain the position. Increases confidence and emphasises that there is no need to grip tight in the catch position.

- The rower should sit in a strong catch position with core engaged.
- They should be at full slide with blades squared in the water.
- The rower should then take one hand off the handle at a time (right off and hand must pause and be still).
- This should be completed twice on each side.
- Take both hands off the blades at the catch. This can also be completed for sweep with alternate rowers taking their hands off the blade at the catch.

Game - stand up, sit down

A good race for beginners who can't row whole crew yet.

Why? Builds confidence and skill, encourages teamwork and adds competition.

- Line the crews up as in a normal race, on “go” the crews start with only half the crew rowing.
- When the umpire blows a whistle they stop rowing, stand up and wave then sit down.
- The other half of the crew then take over the rowing and the process repeats itself.

Manoeuvrability

Rowers need to know how to turn a boat, land it, and manoeuvre it away from hazards. Manoeuvrability skills are a key element of the Matrix and progress up to Level 3 should include getting on a stake boat, holding a boat straight and holding a boat stationary (as when marshalling to race). To do this on any piece of water and in variable conditions, they will need to have a good understanding of how any movement effects the boat's position and how to correct it if necessary.

Starts to co-ordinate hands- body- slide while only having to focus on one side of the boat at a time. The skill requires both sides of the body to move together while completing independent and complimentary actions. Requires real leg drive.

This will develop naturally over time but there are some activities and games you can set up to help.

360 turn

- Using powerful (whole body) strokes, turn the boat round as close to on the spot as possible.
- Co-ordinate pulling on and backing down strokes using the full stroke length. Maintain the pressure on the blade throughout with the blade at a constant depth and no washing out.
- The drill is complete when the boat is returned to its' original starting position.

Progression

This can be progressed by timing how long it takes and challenging rowers to perform their fastest 360 degree turn, and can be recorded alongside previous drills on the record log to show rower improvement and development.

Manage the activity in both a clockwise and anti-clockwise direction. Improve the stroke quality, power applied and speed of completion.

See the Achievement targets table of confidence and balance skill for the time this should take at each level.

Manoeuvring; turning and stopping

Why? To develop watermanship skills.

- The rower should practice backing down, turning (this in itself can be progressed as a skill) and emergency stops (again this can be done in stages to progress the skill).

Game - retrieving objects

This game can be played using all types of boats, although it works best in singles and doubles. It also works very well in fixed seat coastal boats and forms part of the man overboard drill.

Why? Helps build confidence, balance and promotes teamwork.

- Start by throwing the objects into the water randomly (balls, ducks, etc.).
- Rowers then have to manoeuvre their boats to fetch as many of the objects as possible.
- This can be made into a competition by giving objects point scores, or through timing.
- To ensure the safety of boats, blades and rowers, scores can be enhanced to include the deduction of points for clashes of boats or blades.

Game - slalom course

Why? Helps improve coordination and teamwork.

- Lay out a course on the river, using buoys or general markers.
- Get crews to practise manoeuvring around it.
- This can be enhanced by adding a timing element (how fast can crews complete the course).

Progression

If there is a canoe slalom course laid out, suitable for a single, try using it and recording times to see improvements.

Game - rafting

- Move boats together so that two become one; get the rowers to try and manoeuvre like this.
- Rowers can try swapping boats and also swapping blades whilst rafted.

Remember that it may be best to use an older fleet of boats for activities where there is a lot of clambering around.

Activity – stake boat practice – getting attached and staying straight

Use the club landing stage or any other stationary object (a buoy) to get rowers to practice getting the stern of their boat attached. Also practice passing a blade to the person in front to provide sideways movement and keep the boat straight in a cross wind.

Reinforce that it is not the stake boat person's responsibility to hold the boat straight or cling on to the boat if the bow person is taking big strokes to keep the boat straight! Rowers could have a go at holding a boat on a stake boat to illustrate.

Activity – start line practice – getting on to the start line and holding your position / staying straight

Set up a start line using a suitable landmark or stationary boat, or buoy and ask rowers to practice lining up their boat on the line and staying straight.

Stopping skills (Emergency stop)

Why? For safety, it is very important that all water users know how to bring their boat to a stop as quickly as possible.

You can start by introducing the idea of stopping the boat from slow movement by squaring the blades in the water. Encourage rowers to practice this every time they stop rowing.

When it comes to the emergency stop this is best taught in three stages:

1. Firstly practice slapping the blades on the water flat – one blade at a time to begin with.
2. Once this first stage has been mastered move onto slapping and burying the blade, keeping it flat, beneath the water.
3. The final stage is to add the turn, ensuring the wrists drop to prevent injury – slap, bury, turn.

Progression

Once the process of the emergency stop has been mastered while stationary, start to practice it while the boat is moving, both forwards and backwards, starting slowly and gradually increasing the speed at which you ask them to stop. Ensure that this skill is practiced over subsequent sessions. Test it as they do in a driving test.

Backing down

Why? Backing down is useful in assisting with learning the correct movement of the spoon through the water and handle into and away from the body. In addition, it is an important manoeuvre to master for turning, getting on and off pontoons, out of tricky situations and essential for racing from a standing start.

- To begin with the rower should sit in the safe position with legs flat and back straight.
- Keep one spoon flat on the water and the hand into the body for stability.
- Turning the other blade so it is upside down and square in the water, the rower moves the blade away from the body; this is called backing down.
- Repeat with the other hand and spoon, and then progress to backing down with both blades at the same time.

Turning a buoy

Why? This can be used as a drill for fixed seat boats only, to practice turning around a buoy as a crew in a race or as a safety drill for a man overboard situation.

- Port side continue to row on, and starboard side stop rowing.
- This can be performed with starboard side keeping their oars in the air as port side row the boat around.
- The turn can also be completed with port side continuing to row on, but this time starboard side bury the spoons of their oars into the water, creating a pivot from which the boat can make a tighter turn.
- If rowers are holding two oars, they stop rowing on one side to complete the turn.

Progression

You could turn this into a challenge and time how long it takes the crew to turn the buoy.

Tossing an oar

Why? To be able to perform a tight turn in fixed seat boats only, and to build crew cohesion and confidence.

- When approaching a tight turn the bow rower can flip their oar over to port side in order to increase the number of rowers pulling on one side.
- Once the turn has been complete the rower can toss their oar back onto starboard side again.

Hand positions:

1. First the rower changes their grip to the outside hand on top of the oar, and the inside hand is underneath the oar but close to the oarlock or pins.
2. Next the rower lifts the oar to the vertical position, and then drops the oar into the opposite oarlock.
3. Finally the rower returns their grip to the normal rowing position.

Whole stroke

A top tip is to teach the stroke on a rowing machine first. Traditionally we have taught rowers from backstops starting with hands only, however, this encourages them to pull rather than push. Teaching from front stops, with the leg drive introduced from the beginning, ensures the rower has a greater understanding of the rowing stroke.

The easiest way to teach the slide sequence and progressions is using the rowing machine, and demonstrations are an extremely useful tool. Having mastered the sequence on a rowing machine you can then introduce the rower to the sequence in the boat.

Whole stroke, catch, suspension and drive, extraction, recovery and rhythm

As the rower begins to understand how the whole rowing stroke cycle flows, there are many exercises that you can use to progress their competence and overall boat moving skill. These exercises can be built on and used for all rowing levels from beginner to advanced.

The next section is a series of exercises which can be used to focus on multiple areas. You will find a brief how to do / teach description for each exercise. There is also a guide to which parts of the stroke it can be used to emphasise and therefore which criteria it will help to meet, and a guide to the competence that should be achievable for each level and how to progress the exercise to use it for all levels of experience and competences (see Level and progression, where applicable).

Remember that although many of the exercises can be used to improve different areas of the stroke it is probably best to focus on one point each time you ask a rower or crew to do the exercise.

Suspension and drive

Why? The most important area for all rowers to grasp is the feeling of hanging the weight from the blade during the drive phase of the stroke. There are several exercises that can be used to promote this feeling. The best place to start this is on the rowing machine.

Rowing machine exercises

- Tie the rowing machine handle securely to the cage frame so that the handle can be held at the catch position.
- The rower can then hang from the handle, slightly lifting their weight from the seat to get a feeling for early suspension.
- Check they hold good posture whilst doing this.
- The rower can also suspend and lift off the seat whilst rowing. Someone should be assisting the rower in moving the seat for them.

Level and progression

The rower can be progressed by being held at different positions in the stroke i.e. at ½ slide.

On the water

These exercises should and can be taken right through to Level 4 and beyond and are worth practicing frequently, in particular suspending from ½ slide.

Straight arm 1/2 slide suspension

- The rower starts at 1/2 slide, and should drive into the feet, suspend and drive to the end of the stroke maintaining (a) suspension and (b) straight arms (elbows will flex naturally at the end).

Level and progression

Start exercises in stable boats for Level 1 and move on to doing in singles and as a whole crew.

At Level 2 rowers should be able to repeat the static exercises and by Level 3 should be suspending during normal paddling.

Back down and feel

Why? To feel the resistance they should aim to create against the blade/spoon when paddling normally

- Back the boat down to give more resistance at the catch, come forward to 1/2 slide and place the spoon in the water, allowing the covered spoon to draw the rower in to the catch position.
- When the rower reaches the catch position they should be able to hold and feel the resistance and suspension that they want to re-create when paddling.

Back down and hang

Why? To develop the skill of gripping the water and hanging to recreate how it should feel when the rower is hanging effectively during paddling.

- As above but when the catch has gripped the water the rower lifts themselves from the seat and hangs from front stops to backstops.
- This exercise does not require a vertical lift from the seat but a horizontal hang that is held low in the body.

Hang

Why? To be able to hang without artificially creating resistance /loading the blade by backing down

- Lift the body weight off the seat without first having to back the boat down.

Level and progression

To be able to hang the body weight off the seat during paddling.

Catch and connection

Catch dips / chopping

- Rower sits at the catch position, blades square in the water.
- Dip the blade in and out of the water.

Emphasise just covering the spoon, only using the hands and not the shoulders to move the handles up and maintaining correct posture in the catch position – the shoulder blades should be set down and wide.

Level and progression

Catch dips can be done from Level 1 in all boat types. In crew boats half the crew can stabilise the boat initially.

Move this on at Levels 2 and 3 by doing slide progressions from front stops. Keep arms straight and emphasise pushing the handles up and forwards to cover the spoon with the wheels still moving forwards. Maintain shoulder blade position and body posture. There should be no push on the foot stretcher until the blades are connected (see Sequencing for further guidance).

Straight arm paddling

Why? Use this exercise to encourage the rower to suspend and hang through the stroke for as long as possible. It will also encourage maintaining the shoulder position and posture through the stroke.

- Get the rower to row normal stroke length paddling, but without using the arms to finish the stroke.

Level and progression

This exercise can be done for Level 1. Vary by doing either with or without body swing at the finish.

To progress to Level 2 and Level 3 do this exercise at firmer pressures and higher rates. The slide length from front stops can also be changed. Do with square blades.

Rowers at Level 3 and beyond should be able to hold the arms straight with good posture (see Sequencing for full details of how this can be progressed).

Roll ups

Whole stroke roll up

Why? The primary use for this exercise is to practice the catch preparation and placement at full reach. Look for early square and the blade being covered whilst the seat wheels are still moving forward. The exercise can also be used to monitor posture during the recovery sequence and on placement of the blade. At a higher level this can also be used to get the crew moving together.

- The rower should start from the finish position / backstops, extract the blade, perform a controlled recovery sequence with the blade off the water (feathered) and place the blade in the water at the catch / front stops position.

Level and progression

At Level 1, get the beginners to do this exercise in a stable boat.

For Level 2, progress to doing in a single scull and with more crew members doing it together in crew boats.

By Level 3, rowers should be able to do this confidently and repeatedly in a single, and whole crews should look to be able to roll up together.

At Level 3 and above, crews can use the exercise for real synchronisation; rolling up together with pauses at exact points, with perfect balance and placement as one.

Level 4 and above rowers and crews should be able to do this with flat hands (see page 30).

Level 5 the rower should be able to take the catch with flat hands also (see page 30).

Slide progression roll ups

Why? Use this exercise to practice clean and well-shaped extraction and to emphasise where the hands should be for balance and correct recovery. The exercise will require good posture and core stability to balance the boat.

- The rower starts from the finish position, extracts the blade and holds blades at the hands away position, body over, $\frac{1}{4}$ slide ($\frac{1}{2}$ slide, $\frac{3}{4}$ slide, etc.).
- Hold the hands in the correct position for recovery and balance at each slide length.

Level and progression

At Level 1 work on this in stable crew boats and single sculls.

Level 2 crew members should be able to do this together and fine boat single scullers should be looking for good balance at each position.

At Level 3 and above this can be a whole crew activity and a single sculler should be able to do it well repeatedly.

Clever progressions

- In singles and crew boats move on to getting to hands away and get the rower to let one hand go to touch their nose, the swivel pin, etc.
- Repeat with both hands alternately.

How long can the rower stay balanced for? How many times can they touch their nose? At what points of the slide can they pose, balanced and remove hands, wave etc. Can the rower roll out, come back to hands in the body, and roll out again?

Sequencing / front end sequencing

Why? This is an exercise to improve the sequencing of body movements throughout the stroke cycle. As explained at the beginning of this section it is based on teaching the rower from front stops / catch position. It is a progressive drill with stages which gradually build the stroke length and corresponding body sequences, all from a strong catch position.

- The rower should start the drill by sitting at front stops in a strong catch position and tapping the blades in and out of the water without any propulsion.
- The second part of the drill is to drive the legs flat, with no change in the body angle from the catch; the rower should learn where the legs lose traction and therefore where the hips should open (assess your rower's ability - you could break this down further to help isolate movements by taking the first two inches of the stroke and pushing with the legs for only two inches, then progressing the drill to six inches and gradually up to legs flat).
- The third part is to add the hips, so that the duration of the leg drive is extended.
- Next, the rower should generate momentum from the shoulders to "break the elbows", this is to determine the timing of the arm pull.
- The last part of the drill is to add in the arm pull but with release (light hands) at the end.

Single strokes from front stops

Why? To encourage the rower to take a full stroke, using the legs to initiate the drive/correct sequence through the drive.

- The rower sits in a strong catch position and drives the legs down first, so heels flat on the footplate, then bringing in the body and arms at the appropriate phase of the drive.

Slaps

Why? This demonstrates the lift from the hands needed to cover the spoon for the catch. It also illustrates that the catch is done by a movement of the hands pushing away from the body, not pulling back.

- The rower or crew slaps the flat spoon of the blade on to the water just before the catch and then turns the blade to square and slips the catch into the water.

Level and progression

This can be quite a tricky exercise, if done correctly.
Keep practicing at all levels.

Single strokes / pause rowing

Why? Use this exercise in a crew boat to check that the rowers use the correct recovery sequence and move together and that the hand and blade heights are correct at all points for balance. For the single sculler, the exercise will be about balance and correct recovery sequence.

- During paddling, the rower / crew pauses the stroke cycle at pre-defined points of the recovery.

Level and progression

There is limited application at Level 1 as the rower / crew will still be doing many stationary exercises required to build up a good stroke sequence.

At Level 2 the crew will be starting to paddle and should be able to pause together at set points of the recovery. Single scullers should be looking for balance and correct position at all points.

At Level 3 and above, crews should be pausing together with good balance. Single scullers can look to reinforce Level 2 ability.

Blade work

Tap down and feather - Sculling

Why? This helps to generate the action required to extract the blades cleanly at the finish of the stroke and feather correctly, encouraging rowers to have a loose grip.
Emphasises correct sequencing for extraction and the beginning of the recovery.

- From backstops the rower should tap the blade handles down and away (until the arms are straight, the body should not move from backstops / finish position), feathering with the fingers and thumb (some small wrist movement are allowed, but the hand must open out).
- The left hand should lead the right hand and the boat should be balanced.

Tap down and feather - Sweep

Why? This ensures the correct sequencing at the extraction with the appropriate use of each hand.

- From “backstops” tap the handle down and away. Keep the outside wrist flat and feather with the inside hand by dropping the wrist.

Blade depth

Why? This is to emphasise the correct blade depth during the drive phase so that no energy is wasted. The rower will need to have the correct grip and keep it light on the blade handles.

- Instruct the rower to place the blade in the water at different depths, starting with only covering quarter of the spoon, then half of the spoon and the whole of the spoon.

Drifting blades

- The rower applies no power to their blades so allowing the spoon to drift through the water. The spoon will find its natural depth.
- Build the pressure up, keeping the handle at the same height.

Air Shots

Why? This illustrates what a fine movement there is between the blade being covered and being out of the water. To help guide the rower on correct blade depth, tape can be applied to the blade loom approximately 30 cm from the spoon. This tape should be visible throughout the drive phase of the stroke.

- The rower squares the blade for the catch but doesn't put the spoon in the water.

Square blade paddling and associated exercises

Why? This is an exercise to reinforce square extraction and to emphasise the correct blade height off the water, if early catch preparation is to be achieved.

- During paddling the rower or crew keeps their blades square during recovery.

Level and progression

Level 1 rowers should be practising paddling a stable boat with square blades particularly at shorter slides.

Moving on to Level 2, rowers they should be able to paddle square blade in all boat types. Progressions and variations for Level 3 and beyond include alternate stroke square/feather with the focus on keeping the same extraction shape and hands level for the feathered recovery as for the square recovery.

Alternate side square feather

Why? This focuses on keeping the same hand movements for feathered as for square recovery.

This can be done in either sweep or sculling boats.

- One side of the boat does square blades, the other feathered; swap.

Square / feather / square

Why? The focus is on the hands being at the correct level. It also emphasises the time and poise required during the recovery. In a crew boat all these exercises can also focus on the crew moving together and preparing for the catch together and in plenty of time.

- Get the rowers to do a normal extraction to feather, then square, feather and re-square for the catch during one recovery.

Sweep-specific exercises

Inside hand down the loom / inside hand off

Why? This will emphasise the use of the outside hand for maintaining connection of power to the blade through to the finish of the stroke. It will also help the rower to feel the weight of the blade in the hand.

- The rower puts their inside hand on to the loom of the blade (or puts their hand behind their back).

Outside hand off

Why? This is to emphasise the use of the inside hand for feathering and squaring.

- The rower takes their outside hand off the blade.

Level and progression

The outside hand swaps with the inside hand.

Both of the above exercises are useful at all levels for understanding blade control. Begin in stable boats and/or with only some of the crew and move on to whole crew and small boats.

Sculling-specific exercises

Flat hands

Why? This exercise will enhance the feel during the recovery of correct downward pressure on the handle. It ensures that the grip is loose and correct.

- The sculler opens the fingers of one or both hands from the grip during the recovery.

Level and progression

This can be practiced first as a static exercise (see Roll ups, flat hands page 26), then adding propulsion. You could also develop this to make it more difficult by including keeping flat hands (open fingers) when the blade is dropped in to the water for the catch.

This can then be tested over a set distance. So, after taking three to five normal strokes, the sculler should be able to scull for at least 250m with the hands and fingers completely flat (thumb still on the end of the blade handle) as soon as possible after extraction and feathering. They should close the hand up again to square. The sculler needs to have the correct grip before starting this exercise/test.

Hands down the loom

Why? This encourages the shoulders to stay low and wide for good posture at the catch.

- The sculler moves both hands from the rubber grips and sculls holding the blade loom.

Rhythm and recovery

Eyes closed

Why? This is an opportunity for the rowers to really feel the movement of other crew members and the run of the boat beneath them, which will help them move together rather than just following, as well as moving with the boat.

- Get the rowers to paddle with their eyes closed.

Feet out

Why? This exercise emphasises the posture for the finish movement and pressure on the feet during the finish and recovery.

- Get the rowers to take their feet out of the shoes and paddle with their feet resting on the shoes.

Level and progression

Start with feet out for short slide work, move up to full slide feet out, and then feet out and increase to full pressure paddling.

Low rate

Why? Rowers should feel the boat run under the feet, and hold the balance.

- Get the rowers to paddle at a rate much lower than usual – down to single figures.
- Vary rates and power at each rate.

Cutting the cake

Why? This exercise focuses on timing and rhythm, particularly at hands away.

This can be done in both small and larger boats.

- Start by taking a normal stroke.
- At the finish, extract the blade, feather and move to hands away.
- Then bring the hands back into the body, blade still feathered.
- Then take the next stroke as normal, preparing the blade by squaring for the catch.
- Repeat the drill.

Level and progression

To also improve concentration, you can always increase the number of normal rowing strokes, so for example, every 5th stroke the rowers cut the cake.

Hand spins / spinning the hands

Why? This exercise helps with the timing and rhythm. It also aims to increase the rating by spinning the hands without rushing the slide and keeping the movements controlled. Ensure the rowers don't rush the slide. Observe if there is boat check – if so take the rating down to a point where there is more control. Boat check is how much the boat is slowed during the recovery by poor technique.

This drill is usually done at ½ slide.

- Get the rowers to row normally at a low rating, say 18 strokes per minute.

- Then call “Up two”. Following the stroke person, the rating needs to go up by two strokes per minute to 20. This is done by starting to spin the hands faster.
- Continue doing this. The rating should increase, as should the boat speed.

Racing starts

Why? This exercise emphasises the process required to get the boat moving. Ensure that rowers are not rushing the slide in the first two draw strokes as this will counteract the point of the next three strokes.

This is usually done from a standing start.

- Come to front stops with blades square and buried in the water.
- The next sequence (five strokes) can be altered according to what works best for the individual/crew. The aim is to get the boat up to top speed as quickly as possible.
- The following is a common sequence:
 - Two draws – these are powerful strokes, usually done at $\frac{3}{4}$ slide with no body rock and with control.
 - Three wind strokes – these are quick, punchy strokes with the hands moving very fast – usually at $\frac{1}{2}$ slide with no body rock.
 - Easy at hands away and let the boat run.

Level and progression

Progress to 30 seconds or one minute pieces/races incorporating these racing starts. If you have two boats it’s good to practice manoeuvring skills to make sure both boats are in the right place.

Activity

Rowers can count out the time of their power phase and then the recovery phase (power phase should be quicker than the recovery).

Boat moving

Straws

- Attach one or two vertical straws to the stern of the boat so that one end is in the water and the other above the water. When the boat moves water will spout from the top of the straw.
- The stroke person can watch the spout – a steady height of water shows good rhythm and smooth connection of power. If the spout is not steady, where in the stroke cycle does it break and what is causing this?

Distance per stroke

Why? This exercise is designed to encourage rowers to think about how they can make each stroke as efficient as possible. It links together a number of drills such as rollups and sequencing drills, as well as grip and flat hands.

- The aim is for the rower to perform a controlled recovery to front stops / catch position, place the blade in the water where they reach (remaining in a strong position) and perform an effective drive, (staying connected to the water through to a strong finish position), thus encouraging them to row an effective stroke length.

This can be tested by measuring out a set distance, for example 500m and then seeing how few strokes the rower/crew can use to row this distance (Minimum Strokes). This can be

recorded in the Rower progress record sheet in the Minimum Strokes column. The Achievement targets table below shows how many strokes a single sculler should aim to travel 500m at each level.

The drill will test their ability to perform long efficient strokes and let the boat run in between strokes.

Appendix

Rower progress record sheet

Name: _____

Date	Circles (30 sec) - change direction at 15 sec	Balance skill - 10 trials best score	Double slaps (30 sec)	Single / alternate slaps (30 sec)	Rigger dips - sitting (30 sec)	Rigger dips - standing (30 sec)	360 turn - time to turn a boat	Minimum strokes	1,000 m water trial	1,000 m rowing machine trial

Achievement targets

Level	After first single scull session	Circles	Balance skill	Double slaps	Single / alternate slaps	Rigger dips – sitting	Rigger dips – standing	360 turn	Minimum Strokes 500m
1	5 sessions	40	1 sec	25	10	25	5	85 sec	80
2	10 sessions	50	3 sec	32	15	35	20	75 sec	65
3	30 sessions	60	12 sec	35	25	50	35	60 sec	50
4	60 sessions	70	30 sec	42	25	60	50	50 sec	35
5	120 sessions	80	80 sec	50	30	70	90	40 sec	25

Table reference:

Level 1 = Beginner

Level 2 = Good beginner

Level 3 = Club / school / student

Level 4 = Good club / school / student

Level 5 = Aspiring Start or international athlete