

# BOAT BODY BLADE

FLATWATER RACING  
TECHNIQUE

**GUIDE 1**

BEGINNER  
TO  
INTERMEDIATE



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## **SUMMARY**

# FOREWORD

The Boat, Body, Blade model can be used as a diagnostic tool to spot technique issues and help rectify errors. The following document has tried to simplify the complex subject of flat water racing paddling technique

Guide 1 has been created specifically for beginner to intermediate paddlers. While there is no set definition of a beginner to intermediate paddler, for the purpose of this guide it has been defined as a beginner through to Boys/Girls C in sprint rankings, and up to Division 7 within marathon rankings.

When considering technique with this ability level, specifically juniors, it is important to realise that speed does not necessarily mean technical proficiency or technical progression. Some paddlers will have good technical skills but will be physically less developed and so potentially slower than a physically, more developed paddler with poor technique.

This guide recognises that coaches can only do so much technique work with a beginner, considering a new paddlers understanding of the sport, their cognitive maturity, physical strength and conditioning. However, this guide attempts to highlight the importance of teaching correct technique early. Engrained bad habits are extremely time consuming to rectify in the long term, especially as it requires a paddler to re-learn the neuromuscular pathways and patterns to improve. This is also true when juniors go through growth spurts, patterning and coordination can be challenged and revisiting technical guidance is vital throughout a developmental journey. Therefore, getting it right early will pay dividends in the future.

Lastly, this document has been put together as guidance and to provide a framework for coaches, not a rule book. It is worth noting that as coaches, we must emphasise fun at this stage and attempt to build a love of the sport within each session. Each paddler is unique, as is their paddling journey.

# BOAT

The boat needs to be set up correctly so that the paddler is comfortable. A paddler should not be seated too far back within the cockpit - beginners have a tendency to lay back against the rear of the cockpit. A paddler's feet should reach the footrest without the legs being fully extended but equally not too bent and up towards their chest (**see images 16 & 17 on page 11**). This usually means the seat is in the middle of the seat adjustment and the footrest is then moved accordingly to the desired leg length (see below).



**Seat is too far forward**



**A good starting point**

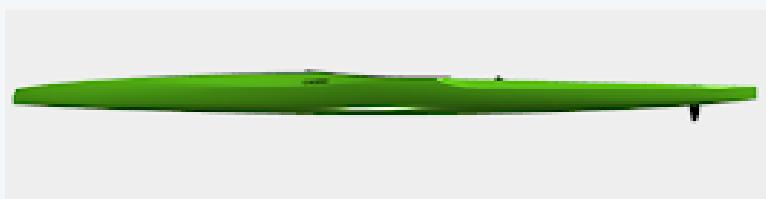


**Seat is too far back**

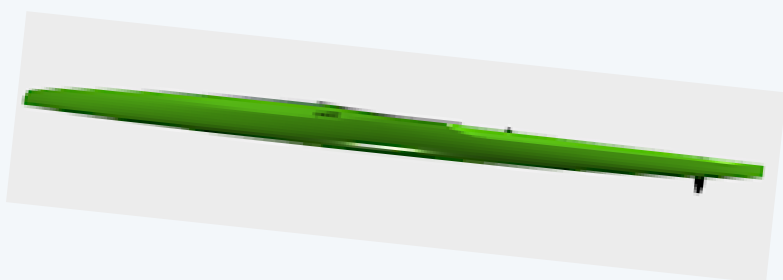


**Seat is too far back, athlete leaning back**

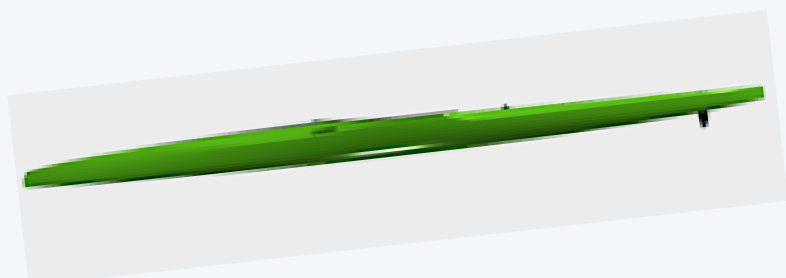
Due to the volume and size of entry level boats it is not too important to be concerned with boat trim at this stage. Boat trim relates to the way the boat passes through the water. Ideally a boat should run parallel to the water, however, entry level boats often have lots of volume in the bow and the paddlers are usually quite small for the boats meaning it's difficult to assess boat trim.



**Boat is running flat/parallel to the water**



**Boat is running nose up/or tail down to the water - usually weight is too far back**



**Boat is running nose down to the water - usually weight is too far forward**

With big stable entry boats, or lightning's, you will not see much change in the way the boat moves through the water. This changes as the paddler progresses towards racing K1s. If performed well, you should see the boat move smoothly forward. There may be an upward motion, but with the whole boat.

If the boat isn't moving smoothly forward, you're likely to observe one of the following:

- Excessive Roll - This is a side to side rocking movement of the boat which is known as roll. This side to side rocking movement which is **off** the paddle in the water, i.e. away from the submerged paddle. This usually means the paddler is not applying their weight onto the paddle but leaning away from the submerged paddle. This rolling causes drag which slows the boat down. See image 1 below and consider the angle of the nose.
- Excessive Pitching - This may also be known as porpoising. This is when the boat rises and falls on it's tail. This usually relates to the body moving and/or the paddle being brought too far back i.e behind the hips. This acts as a brake at the end of the stroke and you may see the nose of the boat dipping down as the paddle and paddler slows the boat.
- Excessive Yaw - This is where the boat moves left and right around the person rather than moving straight forward. This is can be caused by a folded spine leading the top hand to cross over and for the body weight to move off the paddle, see image 2.

[Click here](#) for a video explanation



**Image 1: An example of excessive roll**



**Image 2: Excessive Yaw, as seen from behind**

Image 3 highlights a good example of what to look for. You can see that the nose and tail are vertical and not moving excessively left to right.



**Image 3: A positive example of boat movement with minimal rolling, pitching or yaw**

It is important to progress paddlers from stable boats to less stable boats so they are safely challenged both physically and in their neuromuscular system. This means they avoid getting overly stable in a boat that has little feedback and supports bad habits. This isn't about getting them into "faster" boats too quickly, but equipping them with the skills needed and recognising the right time to progress them. Summer is the obvious time to do this when it's safer and warmer to learn when capsizing. It's important to note though that too unstable a boat too early can hinder technique and more importantly, confidence. At this stage, the fastest boat is the one a paddler can paddle well.

Playing in boats in the warm summer months is a great way to develop an athlete's stability and race boat skills. As a coach, you may want to consider the following 'games with aims' to add into your session to help build stability and paddling skills.



### **Games with Aims**

**Hand Paddling:** Either as races or in circles, or follow the leader. Try to get the paddlers to drive their arms down rather than splash their hands back and forth. They can lean forward but their arms must pull down. This encourages balance, coordination and leg drive for stability. Both arms at the same time is the fastest, opposite sides requires more balance.

**Throwing and retrieving of paddles:** Requires balance to throw the paddle and then hand paddling to retrieve it, and can also include helicoptering the paddles above their heads.

**Ball throwing on the water:** Encourages balance, body rotation, coordination and then potentially hand paddling to retrieve.

**Long paddle pauses:** Groups are in a line paddling and the coach counts down 3,2,1 with the aim to see who can glide the furthest. Try to discourage boat bobbing as the boat is near stationary.

**Standing starts on both sides:** The coach calls "ready/set/go", to practise balance on both sides (most paddlers have a favoured side) and to see if there is a difference in starting capability from side to side (and why), around 20 strokes only.

**Draw stroke races:** Pulling the boat sideways, line up besides each other and the aim is to stay away from one side (left for example) whilst catching the paddler on the other side (right in this instance), then repeat the opposite side.

**Backwards paddling races:** Line up and race backwards, expect lot's of crashing so be careful!

**Shortest stopping distance:** Paddling in a line and the coach calls stop! Quickest to a halt wins. You can extend this by then adding backwards racing to it. Expect lot's of water in boats, a summer activity.

**Getting in the boat from the opposite side:** Many river clubs only ever get in and out facing one way and paddlers can find it hard to get in the other way around, it is surprisingly common.

All the above games are great ways of developing boat and stability skills in young athletes. It's important as a coach to ensure athletes have the opportunity of building these skills. It can often be missed out as athletes progress, particularly if they are perceived as an 'early developer'. However, building these essential skills early will help a paddler in the long term. These games can also be a fun group or club session or an addition at the end of training.

# BODY

## Posture

We want our new paddlers to sit up - we want to avoid a slumped or curved back or the paddler leaning back (see image 4 below).

Initially a new paddler may find this hard to do and it may be a building process as they gain the required core and back muscles to enable them to sit up straight. Low seats (used for stability) can also hinder sitting up due to tight hip flexors and tight hamstrings.

Over time, this can be corrected with stretching and flexibility exercises - consider their use in warm up routines. Additionally, a poor seated posture outside of the boat (think PlayStation/sofa slump) doesn't help, so we must try getting paddlers to sit up for short periods of time and then "relax", so they learn to associate sitting up with performance. Over time they will slowly build a more robust frame.



**Image 4: Leaning too far back**



**Image 5: Leaning too far forward**



**Image 6: A good starting posture**

As the paddler progresses, a slight lean forwards is ok (see image 6 above for a good starting position), but not too far forward for the following reasons:

- Leaning too far forward raises a paddler's top hand above their head and into a weak position.
- It becomes harder for a paddler to breathe as their stomach encroaches on their lungs which are bigger at the bottom.

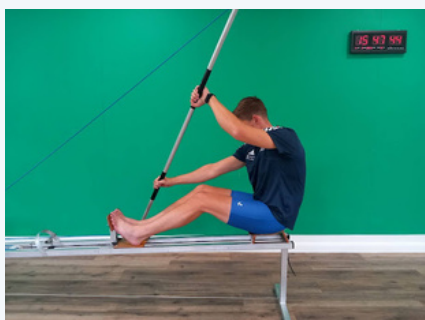


- A paddler will have to lift their head up to look forward using small muscles in the neck which will tire quickly. This can lead to bobbing, which is where the paddler sits up when paddling then leans forward for the catch
- Too much of a lean forward impedes the ability for the hips to move with the leg drive which in turn would negatively affect the rotation of the torso.
- The angle of torso rotation will change from a side to side rotation when seated vertically, to where the shoulder of the arm entering the water will move backwards and up and away from the water, whilst the opposing shoulder will move forward and down towards the water. This will translate into unwanted boat movement, usually rocking side to side.

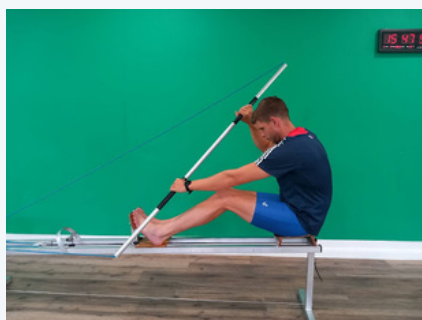
## Look forward

Looking forward helps in many ways! Lots of new paddlers look down when trying hard. Apart from not being able to see where they are going, it also has several other negative effects as listed above. A coach can cure a lot of technical faults by getting a paddler to look forward and to relax their faces. Hard work is often praised, and therefore young paddlers associate hard work with grimacing and tensed facial muscles which in turn engages their neck muscles and prevents a relaxed posture. For some paddlers, it can also prevent them from breathing properly.

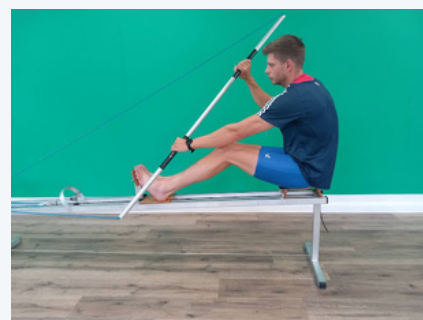
As such, paddlers and coaches should focus on a relaxed face during efforts, relax the face and the brain will follow. It takes a long time to learn to work very hard and keep the face (and brain) calm and relaxed, which is why only the very good paddlers make it look so easy.



**Image 7: Looking down on the left**



**Image 8: Looking down on the right**



**Image 9: Looking forward**

## Arms

“Straight arms - long strokes - reach forward” are common phrases coaches use aimed to get a new paddler to not just use their biceps and/or not just pull backwards with a bent arm using smaller muscle groups rather than connecting larger muscle groups. Unfortunately this is what most people will do automatically unless shown and taught differently.

We want to coach a straight (ish) arm (see image 10 below) that falls down in an arc from set up height, and is not pulled back at the elbow. This has a tendency to lift the paddle out of the water and lift a lot of water into the air. Paddlers who pull straight back down the side of the boat usually bend/break the elbow to allow the hand to stay above the water (see image 13 below) . This only uses the biceps (which also encourages a paddler to lift the paddle out of the water), we want to see a straight arm with the legs, back, and core doing the work while the triceps should be engaged to help hold the waterside arm straight see image 11 below.



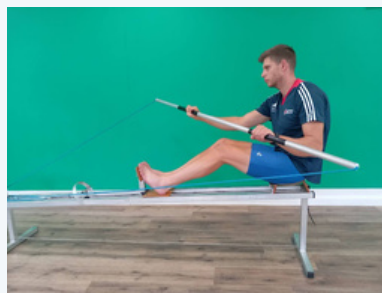
**Image 10: Straight (ish) arm**



**Image 11: Engaged triceps, not biceps**



**Image 12:  
Top arm too low**



**Image 13: Bottom arm  
breaks (bicep pull)**



**Image 14: Top arm too  
low, pushing forward &  
bottom arm exiting  
forward**

Most new paddlers will paddle at a very low height (image 12) with their arms too low. Additionally, they will often have their top arm pushing down at the end of the stroke (image 13).

However, we want them to keep their arms up higher (face height to start). This requires building strength in their upper body to hold those arms up. Coaches can ask paddlers to try and do this either in short bursts or just in session efforts to start with. Make sure that their top hand is in front of their face. A coaching cue for this could be asking paddlers to “look up” and “lift up”, “point to the horizon line” as shorthand for the above movements.



**Image 15: Top hand at face height, head up, looking forward.**

Additionally, a paddler should look to use their body weight as a good form of propulsion as it doesn't diminish when they get tired. If a paddler loads the submerged paddle using their body weight through their arms, it decreases the mass supported by the boat and therefore decreases water resistance, allowing the boat to move more efficiently.

## **Legs**

Let's start with keeping them together. Legs falling open can be a hip flexor issue but usually it is a paddler just not knowing any better. It's a misconception that it aids stability and often it also makes steering harder as their feet are often splayed apart.

For many new paddlers, driving with the legs is a hard skill to understand let alone implement. It requires a lot of coordination and timing to get all the muscles working in the right order. Time and patience is key here to help them develop the correct technique. One way of approaching this is to ask them to push (apply some pressure) with the foot on the same side as the paddle in the water, without worrying about legs driving just yet, this slowly builds understanding and often can make them more stable.

Another drill is to try getting a paddler to push with both legs and see how they get taller in the boat, then paddle with their feet off the footrest and see how unstable the boat is, this can help in the understanding of how much the legs contribute.

Leg length is a very individual set up point, and as a guide (only), when the paddlers push on the footrest, the leg should never go completely flat. The paddler should also be able to push with both legs and rise on the seat but not go off the back of the seat. If seated too close to the footrest, the knees will be too high and a paddler won't be able to extend the leg easily. Conversely, too far away from the footrest and the legs offer very little power or movement.

Images 18 & 19 (below) actually have the same leg length settings, but in image 18, the feet are under the footrest which isn't ideal. It's important to be aware of these simple adjustments (as from the outside of a boat this would look like a good position) that paddlers make without always telling/showing a coach (if they are even aware themselves), especially when paddlers change boats or do K2/4s.



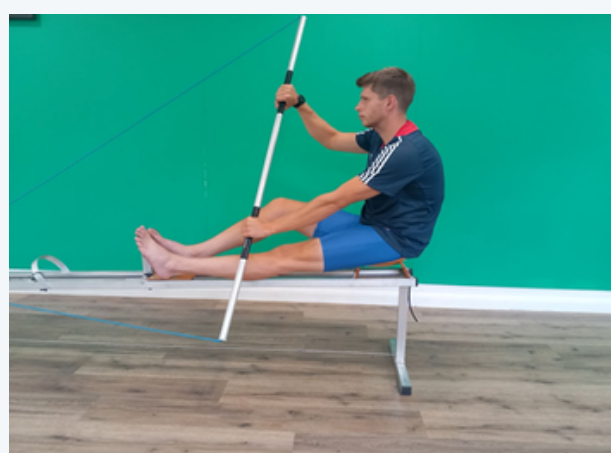
**Image 16: Leg length too long**



**Image 17: Leg length too short**



**Image 18: A good starting place**



**Image 19: Leg should never go straight**

A paddlers leg drive should be checked to ensure that it is actually driving the hips backwards, and not just prompting the heel to go forward or the knees to go up and down, mimicking leg drive. This can be easily seen on an ergo, coaches can get paddlers to squash something under their feet on an ergo (flip flop/sock/foam etc.) and see how the power increases, unfortunately it is harder to see in the boat, so asking for feedback and referring back to the drills is a start

## Feet

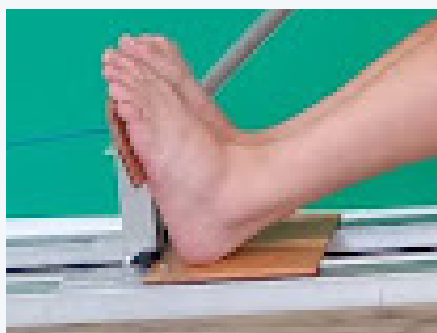
Need to be on the footrest, with heels on the bottom of the boat further away from the footrest, i.e. not directly under it (see pic 19 vs pic 20 below).

Depending on the size of feet, the balls of the feet should be below the tiller bar slot, with their heels on the floor. This then can set the leg length.

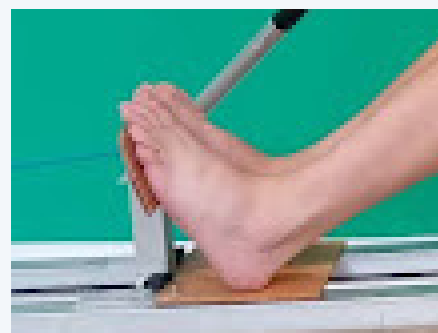
Many new paddlers have very little connection with the footrest, lifting their feet off the floor to steer, or alternating steering side to side, or even toes wrapped over the top of the footrest with feet floating in the air. This loses connectivity with the boat making it more unstable and losing any power from the leg drive, leaving them reliant on their arms for power. Also legs are heavy and lifting them gets tiring, it also makes it very hard to sit upright. Below are two examples of what to look out for and avoid, image 22 is a good starting point



**Image 20: Heel's not on the floor of the boat and too far away**



**Image 21: Heel's are too close to the footrest**



**Image 22: Heel's in a good position**



**Key Coaching Tip! Feet together, heels together, knees together**

# BLADE

Correct length of paddles is important to allow efficient technique and body movement. Additionally, the width of the hand grip is also significant. Too long a paddle and the leverage is too great, leading the paddler to tire very quickly and have a very slow stroke rate (like starting a car in a high gear). Too short a paddle and a paddler will have to reach down to the water, encouraging bad habits of bobbing the body down to the water, from side to side.

With too narrow a grip (the hands too close together) you can't get the arms into good body positions (think of a T-rex) and it tends to lead to a bicep style of paddling, conversely, too wide a grip tends to lead to a swinging motion and the top hand pushing down at the front of the stroke or across the centre line of the boat, forcing the water paddle to far back or wide, see image 23. For context, the centre line of the boat is the middle from the nose to the tail.



**Image 23: Top hand crossing the centre line of the boat**

When coaching a beginner to intermediate paddler, try to avoid starting with too big a blade area/size. Paddlers need to learn to feel the water, to “catch/lock/grip”. Big paddles may mask this crucial skill. Whilst big paddles might provide a short term gain, there is a potential long term loss. This can be especially true of taller beginners who may be given adult club paddles as they “fit” them. This can often make their life harder. Too big a paddle and the child might struggle to keep paddling, get tired very quickly and not enjoy the experience.

As a guide, to get the correct length of paddle stand the paddle upright in front of the paddler with their arm stretched up (barefoot, no shoes). Their hand should just reach the top of the paddle or their fingertips just over. However this doesn't always work too well with really short or really tall people who will have too long a paddle when following this guide. Similarly with people whose arm span is different to their height, (potentially during growth spurts) but it is a starting point. A good paddle manufacturer can sort out your best options.



**Key Coaching Tip! Avoid going too big or too long.**



**Image 24: Too Short**

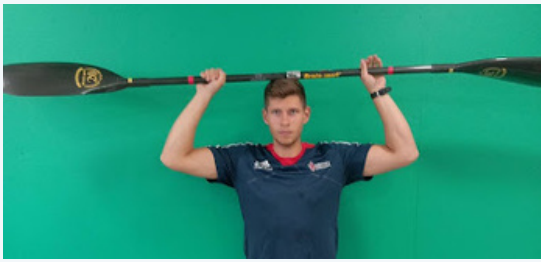


**Image 25: Too Long**



**Image 26: A good starting point**

When working out hand placement/grip position, place the paddle shaft on your head. A paddler's arms should be roughly at right angles and equal distance to the blade ends (see image 29). Often to start with you may need to place some electrical tape near the hands to stop them wandering in or out of position. As the paddler grows, regular adjustments may need to be made to their grip width to ensure they avoid ending up with a very narrow grip later on. Too narrow a grip restricts functional body movement.



**Image 27: Too narrow**



**Image 28: Too wide**



**Image 29: A good starting point**

With modern adjustable paddles coaches need to make sure the paddlers haven't set them up too long or too short especially after a journey to a race or regatta! It is also not uncommon for one hand to wander in on its own, or for one to wander in and the other out, therefore making the paddle off centre (long on one side, short on the other).

Coaches can mark the paddles out correctly but if the paddlers are holding them skew whiff then we need to reinforce correct width as often as possible ("check your hands", "are they on/in/near the tape?" etc.) This way, the paddlers get used to doing this themselves.

## Feather

Paddles come in a left and right handed "feather", this means you have to turn them with a "control hand" (left or right) to make sure one end enters the water "square" or at 90 degrees to the boat, see image 30. The other end is then travelling through the air with less wind resistance, being left or right handed has little bearing on which feather you are, and it is more about what feels right and is comfortable. A ballpark paddle angle to start with could be anything between 55-75 degree however everyone is individual and should explore their set up.



**Image 30: Top paddle is angled to travel flat through the air (right feathered)**



# SUMMARY

This guide has been designed to provide a framework for coaches to work from when seeking to develop technique in beginner to intermediate paddlers. It is hoped that the content within the guide has given you, the coach, a more detailed understanding of the key fundamentals, supplied some examples and ways to implement these concepts and provoked thought around how these concepts can be coached.



## Key Coaching Tips!

### BOAT

**Make sure the boat set up is correct (seat position, footrest and steering) and the paddler is comfortable**

### BODY

**Sit up, look forward, straight arm at the water, other arm not too high, not too low and resist the urge to push forward. Feet together, heels together and knees together. Leg applies pressure on the footrest driving hip & body rotation**

### BLADE

**Avoid going too big or too long to start with.**