



Effective Rigging



November 2024

Focus



- Looking at making the most of the set-up from an athlete & coaching perspective

Factors to consider



- Athletes come in different shapes and sizes, levels of fitness and skill, hence the same rig won't suit them all
- As coaches we can either change the athlete to suit the boat or alter the boat to change the athlete
- Boat type, time of season, technical focus etc. are all key factors to consider as important variables
- Rig is very much dynamic, and there is not a one brush fits all to this, variables change, as do athletes across a season(s)!

Individual athlete responsibilities

1. Foot stretcher position
2. Feet height
3. Foot stretcher angle (IF needed/agreed by coach)
4. Gate height (to a point...!)



Coaching team responsibilities



1. Gate height (can be standardised and then athletes can tinker if needed)
2. Blades - overall length and inboard(s)
3. Spread/span
4. Pitch

Foot stretcher position

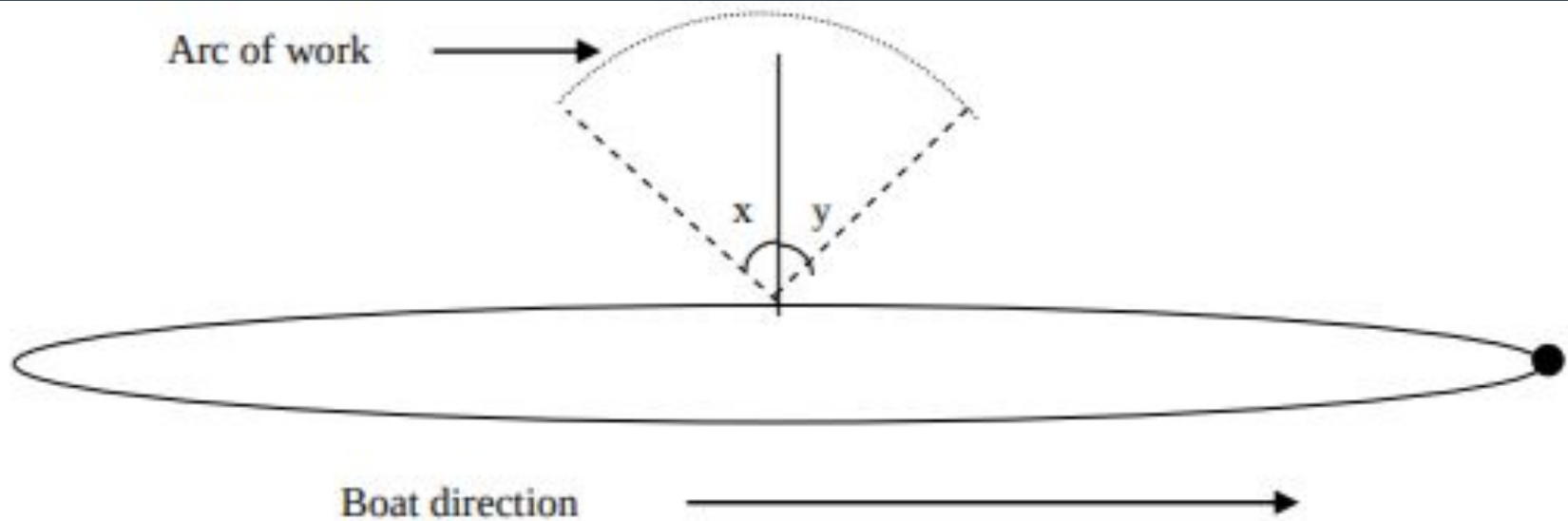


- Each boat is different, with different fixings - however some equipment aids this process with values marked into the shell (in cm from line of work)
- Key check is that the blade(s) is parallel with the 'work line' at hands away
- When sculling, we ideally want 1.5 hands width between the handles at the finish
 - Stretcher too close to stern no room at finish, making extraction hard
- When sweeping, the outside hand should be in line with the body
 - Stretcher too close to stern, hand finishes away from body and rigger

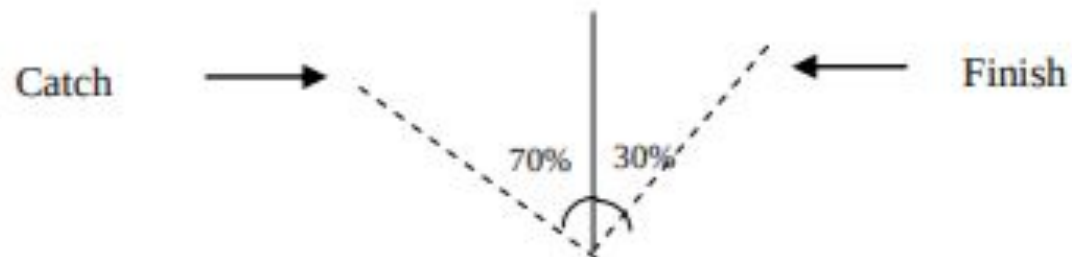
Foot stretcher position cont.



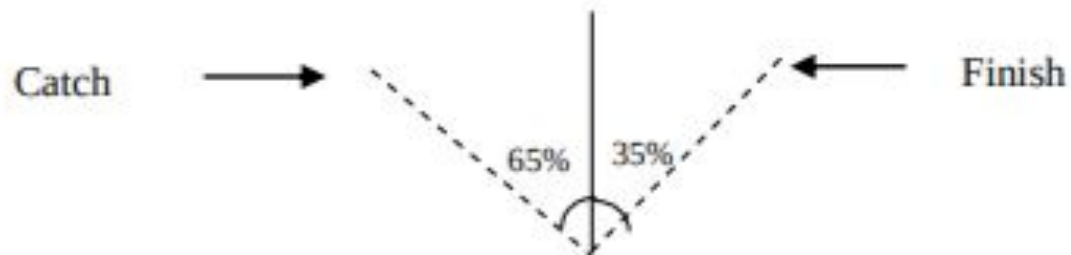
- In more depth, the stretcher position changes the arc of work
- In sweep, ideal arc is 90° , in sculling it is 110° (likely to be less at club level, but aim high..!)
- In faster boats (8+, 4x), peak force wants to happen before the perpendicular - the WL (prior to 40% of stroke length)
- In slower boats (4+, 2-, 2x, 1x) peak force can be later in the arc
- BUT, athletes need to feel able to extract the blade and the guiding principles on the previous slide should be followed as a rule of thumb
- **Athletes should be able to adjust this for themselves, regardless of boat type and do this without prompting**



Effect of moving the stretcher forwards (further away from the athlete):



Effect of moving the stretcher backwards (closer to the athlete):



Feet height



- In an ideal world, shins should be vertical at the catch, but factors like hip, hamstring and ankle flexibility (and body size) can limit this from being achieved
- Feet should be adjusted to enable the athlete to get as close to this position as possible
- If flexible/able, raise the feet higher
- If the footplate is set too high, the athlete will not be able to achieve full compression or rock over from the hips, and in addition the boat will be less stable
- If too low, over-compression will be achieved, resulting in a weak drive
- Different boats have different plates, hence knowing where to have this is a key consideration and a key athlete responsibility

Foot stretcher angle



- Also known as the ‘rake’
- This *can* be adjusted, but needs to happen in good time as it involves removing the footplate from the boat
- Most plates are set between 42° and 45°
 - Higher the angle = more mobility/flexibility & vice versa
- Ankle flexibility is the key limiting factor here, if poor the angle will need to be reduced to enable sufficient compression at the catch
- It is the individual athletes responsibility to change this, but the coach and club captain needs to be informed as it will need to be re-set for other athletes

Gate height



- This is a balance between comfort and enabling a linear work line
- If the gate is too low, this will cause an arc, shortening the drive
- If too high, it will cause connection to be lost and large slip at both catch and finish
- Typical range for sweep is 16-19cm (measured from seat to base of gate by a coach)
 - Women on the lower end 16/17cm, men on the higher 18/19cm
- For sculling height should be 15-18cm (with bow side gate 1cm higher to enable cross over at finish)

Gate height - key points!



- All boats are different and the number of spacers or inserts **does not correlate!!**
- Don't just base it on 'that looks low/high'!
- Coches are responsible for setting up the whole boat, individuals can then ASK to adjust based on their feeling when in the boat, or ideally pre session
- Some boats have spacers (plastic inserts) which come in varying sizes - these can vary gate height by 0.5-1cm, but keep in mind the margins are very small when adjusting!
- The heavier the crew, typically more height is needed as a *basic rule of thumb*

Blades



- The overall length of the oar can be adjusted as can the inboard (distance from the end of the handle to the collar)
- This should **ONLY** be done by the coaching team with the club captain's permission
- As a general rule of thumb, shorter people need shorter overall and less inboard
- Worth noting that different blade shapes (big balde, fats, vortex edges) all have varying values on this - do consult me if unsure!

Gearing



- Gearing is the ratio of overall blade length and the inboard + span/spread (more later) - determines the ability of the blade to come through the water i.e. feeling heavier/lighter, which an impact rate & energy transfer
- Typical oar length 372cm (lightweight women) - 378cm (heavyweight men)
- Typical scull length 286cm (lightweight women) - 292cm (heavyweight men)
- Inboard is also determined by boat type - as a guide: 8+ 114cm, 114.5cm 4-, 115cm 4+, 116cm 2-. 88.5cm 1x, 88cm 2x, 87.5cm 4x. These values are typically for heavyweight men, so need to be adjusted accordingly.
- Individualisation can be utilised to suit specific athletes - but this is at the discretion of the coaching team

C.L.A.M.s



- We can quickly change the inboard to suit boat type (and conditions if on the water) with the use of a CLAM
- Clip-on Load Adjustment Mechanism - not just the shape!
- The orange CLAMs will give an additional 1cm to the inboard, perfect for when going from an 8+ into a 4+/4-
- Two CLAMs can be used when in a 2-
- Same applies to 1x from 4x blade set up

Span/spread



- Span is the distance from pin to pin in a sculling boat
- Spread is the distance from the pin to the centre line of the boat
- Rule of thumb - the shorter the individual, the smaller the span/spread
- Boats will be standardised by coaches, but can be adjusted for individual athletes if/when needed - this is NOT up to the athlete to decide
- E.g. 8+ 84cm, 4+ 85.5 cm, 4- 85cm , 2- 86cm
- E.g. 1x 160cm, 2x 159cm, 4x 158cm
- Correctly geared blades to suit boat type will work directly with a boat where span/spread is suited to the boat

Appendix A – Table of recommended measurements

Club level – “Big blade” – all measurements in centimetres.

Boat	Spread	Outboard	Inboard	Length	Overlap
Men					
2-	87	257	117	374	30
2+	88	256	118	374	30
4-	85	259	115	374	30
4+	86	258	116	374	30
8+	84	260	114	374	30
Women					
2-	86	256	116	372	30
4-	85	257	115	372	30
8+	84	258	114	372	30

Pitch



- Pitch is the angle of the pin from vertical
- There are two planes of movement:
 - Towards the bow or stern (stern pitch)
 - Inwards or outwards (lateral pitch)
- Stern pitch: You need some pitch to hold the oar in position in the water, since the oar is not horizontal when you pull on it, but angled downwards - standard 4° pitch is normal and is achieved via inserts in the gate - this doesn't need changing!!

Pitch cont.



- Stern pitch = less at the catch and finish and more in the middle, giving a good finish, but a poor catch and drive
- Bow pitch = the opposite effect, giving a good catch but poor finish and drive
- Neutral pitch (pin vertical) = giving the same angle throughout the stroke; this will suit most crews
- Lateral pitch - the amount the pin is angled in/out of the boat
 - If you angle the pin outwards, you get more at the catch and less at the finish. $1\frac{1}{2}^\circ$ of outward pitch gives you 5° at the catch, 4° in the middle and $3\frac{1}{2}^\circ$ at the finish, assuming you are using 4° inserts. Ideal, but difficult to achieve!
 - N.B. If the pin is angled inwards, this will have the opposite effect, making the boat difficult to row, so must be avoided at all costs!

Further reading



- If interested, there are lots of articles on the biomechanics of the rowing stroke and how to maximise it for individual athletes
- This is a good starting point:

https://worldrowing.com/wp-content/uploads/2020/12/Level3%E%9E%89Chapter1%E%9E%89IntermediateRigging_English.pdf

Questions?



- If you need guidance/assistance in setting up/implementing ANY aspect covered in this, please ask the coaching team or the DoR