



Junior Selection Q & A

Why do we have a selection camp?

Dragon boat paddling is a strength-power sport, meaning that we need to be able to work against the high resistance of water in order to move our boat fast. We will be testing both strength and power off-water as there are no direct on-water measures available. We will also be filming technique to look at stroke style and compatibility.

Why do we do off water testing?

The off-water tests we chose are the bench press, bench pull, arm crank and beep test. We chose these because they are easy to learn and safe to perform. These fitness tests were used last season and there were no reports of juniors being injured. The 3RM bench press and bench pull test whole body strength, the arm crank test gives an indication of upper body power, and the beep test gives indication of aerobic fitness. These tests align with the Australian Strength and Conditioning Associations (ASCA) Position Statement on Youth Resistance Training (13-18 years old) (available online). For information on the principles behind each test please see the end of this document.

How does the ACT coaching team perform selections?

There are three components of ACT Fire selection:

1. Physical fitness testing
2. On-water filming
3. Attitude

Physical fitness testing

The following tests have been selected to provide the coaching team with information about a junior's upper body strength, upper body power and aerobic fitness:

1. Bench Press – 3 Repetition Maximum (3RM)
 - Lying supine on a bench, using a free-weight barbell
2. Bench Pull – 3 Repetition Maximum (3RM)
 - Lying prone on a bench, using a free-weight barbell
3. Modified Wingate power test – A single effort for 30 seconds
 - Sitting on a chair, pedalling an arm crank ergometer with hands
4. Beep test
 - 20m shuttle run on an indoor basketball court

Each test is explained and demonstrated by qualified strength and conditioning coaches, after a group warm up, prior to starting the testing session. A coach with testing experience and minimum Level 1 ASCA accreditation will be at each station to assist juniors with technique and to spot their 3RM tests.



The way the tests will be run are as follows:

1. Juniors do a general warm up with one of the ASCA coaches
2. Juniors are brought over to each station and the ASCA coach explains the key points of the lift

Progressions for the 3RM tests:

- If a junior has performed the tests before or regularly trains the exercises, they can self-select their starting weight. If the coach has concerns that the weight is too heavy, they will start the junior on a lower weight.
- If a junior has not performed the test before, they are first given a broomstick to practice the motion, and then a light barbell (7.5kg).
- An coach and minimum of two spotters are present always to supervise the lifts, and if the coach determines that, due to instability, it is unsafe for the junior to continue, they will stop the test.
- Each time a set of three repetitions is successfully performed with good technique, the junior can choose to add weight to their bar under the guidance of the supervising coach.
- Juniors have periods of rest in between their lifts.

Modified Wingate power test:

Each junior has the machine set up specifically for them by supervising coaches. Coaches provide verbal encouragement throughout the 30 second effort and record the power reading every 5 seconds to gain an understanding about the maximum and minimum power that a junior can produce.

Beep test:

This test is performed in an air-conditioned basketball court under the supervision of coaches. The guidelines to the test will be explained prior to the test. If any running technique becomes an injury concern, coaches will flag the junior to stop the test.

Body weight, strength, power and aerobic fitness will all be taken into consideration during ACT Fire trials and final crew selection for Nationals. Sweeps and drummers are invited to do the fitness tests alongside their paddling peers, however this is optional. Also optional is the ½ back squat, which is a test within the senior battery. Juniors will have the option to practice the ½ back squat with light weights at the selection camp.

The protocol for the above tests will be explained at ACT Fire trials before each session commences. The testing will be performed in the AIS athlete gym, a space specifically equipped to facilitate fitness testing and in the basketball centre. Juniors should not be concerned if they have not seen or done these tests before, as ample time will be allocated to practicing them and learning the technique at the trials. Videos are on the ACT Fire page of the DBACT website for the 3RM tests if juniors would like to practice them before trials.



DRAGON BOAT AUSTRALIAN CAPITAL TERRITORY

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If juniors have a pre-existing injury or physical limitation, the coaching team will work with them to determine safe test variations; however, it should be noted that ACT representation requires participants to be healthy and injury free to maximise the contribution to the team. If a junior has a significant impediment that prevents them from doing one or more of these benchmarking tests, the coaching team may recommend an injury rehab plan and that they trial the following season.

On water filming

The second part to ACT Fire selections is the on-water filming component at Lotus Bay. Juniors will be split into equal crews and perform multiple 500m races. Full rest will be implemented between races. A speed boat will track alongside to film the paddlers. If coaches have any concerns about injury they will ask that paddler to stop and rest.

The selection process

Firstly, the coaching team watches all paddling footage and writes notes on each paddler. This is done without discussing the paddler so that we each form a separate opinion.

We then transcribe the physical testing scores into a spreadsheet, so that they can be converted to a score that takes body mass into account (kg lifted / kg bodyweight, expressed as a percentage). We then rank everyone from highest % to lowest % in each of the physical tests: bench press, bench pull, back squat tests, max power, fatigue index (max power – min power) and beep test.

We compare our notes from the video footage to the physical testing scores and discuss the results.

In discussing results, we consider both the objective measures (physical testing scores) and subjective measures (stroke style, performance and attitude in/out of the boat) together to make selections.

The fundamental aim of the selection process is to get answers to the following questions;

1. Does this junior have the strength, power and physical capability (in terms of being able to move not restricted by injury or mobility) we believe will allow them to handle the workloads we are planning for state training?
2. Where does this junior sit in relation to their peers (age or gender groups)?
3. Will this junior contribute in a positive way to team culture on and off the water?
4. Does this junior have a stroke style that is compatible with those around them?
5. Will this junior's stroke style require more coaching than we are able to give in state training to be able to fit with the team?
6. Is this junior flexible in where they can be placed in the boat?

We hope this provides more clarity around how selections are run for juniors. The battery was developed with participant safety as the number one priority.

If a junior is unable to attend selections on 12th February or a junior or parent has questions about the camp, they are encouraged to contact the head coach as soon as possible at coach@dbact.com.au.

Email: admin@dbact.com.au | Website: www.dbact.com.au

The trading name of Dragon Boat ACT is Canberra Dragon Boats Association Inc.
ABN: 89 647 128 044, which is a member of the Australian Dragon Boat Federation
(a member organisation of the International Dragon Boat Federation)



Overview of the principles behind the tests

This is a brief overview of why the testing battery has been chosen and what information it provides the coaching team.

The principles behind the tests are based on Newton's second law of motion (**Force = Mass x Acceleration**). We need to apply **Force** to the water to increase the boat speed.

Force = Mass x Acceleration

Force is what we apply to the water with our paddles, **Mass** is the mass of the paddle, **Acceleration** is how fast we apply the **Force** to the water (how quickly we grip at the catch).

When we feel pressure on our blades, this is the **Force** we're applying. As we move through our strokes we keep applying **Force** to the paddle, and our stroke is a certain **Distance**. The combination of applying force over a certain distance is termed **Work**.

Work = Force x Distance

Whilst in the boat, when we say you need to "work hard", we mean you need to grip the water to apply **Force** and you need a good long stroke to get good **Distance** per stroke. But wait... we haven't talked about **Power** yet??

Power = Work / Time

To improve **Power**, we increase the **Work** we do and shorten the **Time** we do the **Work** over. If we take longer to do a stroke, the **Time** is higher, meaning the **Power** is lower. For example, if we want a better race time each person could do any, or all, of the following:

- **Get a heavier paddle** (the trade-off with the increase in work the shoulder muscles would have to do to return the paddle to the catch may not be worth it)
- **Grip the water more** (increase the acceleration of the catch and keep pressure throughout the stroke)
- **Increase the stroke length** (reach further forward with a straight bottom arm)
- **Decrease the time it takes to do each stroke** (often there is a trade-off with length and stroke rate, so it's important to find the balance with the crews we have)

Everything in the above list will increase **Power**, and to build the best crews we need to test the different elements which underpin power.



How does this relate to our testing?

The bench press and bench pull test strength, which is determined as our ability to exert **Force** against a barbell. Remember that **Force = Mass x Acceleration**, so we increase the **Mass** (kg weights) on the bar to determine the **Force** each of us can exert. As we can't test acceleration without expensive pieces of kit, we increase the load on the barbell until acceleration goes down to zero (i.e. you can't finish the third rep).

The arm crank test uses a **set resistance** (selected on a water wheel) and a **set distance** (the circumference of the circle of the crank handles), meaning that the **Work is constant** for everyone. The only difference we can make is how quickly we complete this **Work**. The longer we take to move the crank one rotation, the higher the **Time**, and the lower the **Power**. We take a direct measure of Power (in Watts) every 5 seconds to understand the max power we can do and how it changes throughout the 30 seconds.

The **beep test** is a valid, reliable, economical and time efficient test which gives an indication of our peak Oxygen consumption (**VO₂ peak**) during this particular test. **The measure VO₂ peak should not be confused with VO₂ max.** Put simply, VO₂ peak refers to the highest value of VO₂ (oxygen consumption) attained on a particular exercise test. Different tests illicit different measures of VO₂peak. You could do five different tests and get five different measurements of VO₂peak. In contrast, VO₂max refers to the highest value of VO₂ (oxygen consumption) that is deemed possible by an individual, regardless of the mode of test. VO₂ max tests are typically performed on a treadmill or bike and can take in excess of 20 minutes per person. The participant can fall off the equipment due to sheer exhaustion. Hence we use the safer, more time-efficient method of getting an indication of VO₂peak - the beep test.

We compare scores in the beep test, keeping in mind that it's only an indication of aerobic capacity, not a direct measure. Unfortunately the beep test is currently our best option, as we don't have the equipment or time to perform these graded exercise tests on rowing ergometers, when one person uses one rower and the test can last in 10-20 minutes per person. During selections we keep in mind that we are paddlers, not runners, therefore the beep test is mainly used to compare us to our peers (gender/age), rather than to tell us how 'fit' a paddler is.

This document was prepared by Sally Bromley, ACT Fire head coach, who is currently completing a PhD in injury epidemiology with the AIS. Sally has been involved in several AIS selection camps, holds a Masters in Strength and Conditioning and is a Level 2 ASCA coach.

If you have any questions or concerns with this document or the ACT Fire selection camp, please contact the coaching team directly at coach@dbact.com.au