



On court physical testing and profiling

On-court physical testing plays an important role in helping coaches understand how well an athlete is responding to training. Testing provides objective information that can be used to monitor progress, identify strengths and weaknesses, and guide future training decisions. When used appropriately, testing helps determine whether a training programme is having the desired effect or whether adjustments are needed.

For coaches, testing should not be viewed as a way to judge performance, but rather as a tool to support athlete development. Regular testing allows comparisons over time, helping to highlight improvements in speed, endurance, or movement efficiency, as well as identifying when progress has plateaued or fatigue may be accumulating. When combined with observation and coach feedback, testing can support better-informed decisions around training load and exercise selection.

The following on-court tests are practical, time-efficient, and directly relevant to wheelchair rugby performance.

20 m Sprint Test (5 m, 10 m, and 20 m Splits)

The sprint test is used to assess acceleration and top-end speed, both of which are critical in wheelchair rugby.

5 m and 10 m splits provide insight into initial acceleration and explosive pushing ability.

20 m time reflects the athlete's ability to maintain speed over a longer distance.

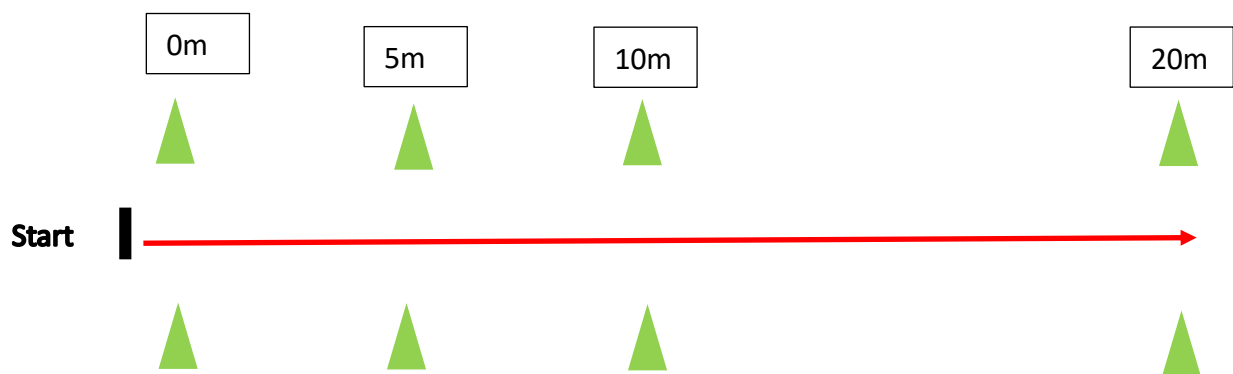
This test helps identify how effectively an athlete can accelerate from a stationary or rolling start and is particularly useful for monitoring changes in speed and power across a training cycle.

Protocol;

- Place timing gates at 0m, 5m, 10m and 20m.
- Individual pairs of timing gates are to be separated by at least 2 meters.
- All timing gates should be set up at knee height (approx. 40cm) or on the floor. Ensure this is the same each time.
- The athlete is to push one continuous 20m sprint as quickly as possible.
- The athlete must start with their castors on the taped line, 5cm behind the first timing gate (Fig 2).
- The athlete will have a maximum of three (3) attempts, separated by a minimum of 3 minutes recovery between each sprint.

All split times to be recorded.

Figure 2. Set up of linear sprint



Time Trial / Aerobic Capacity Test

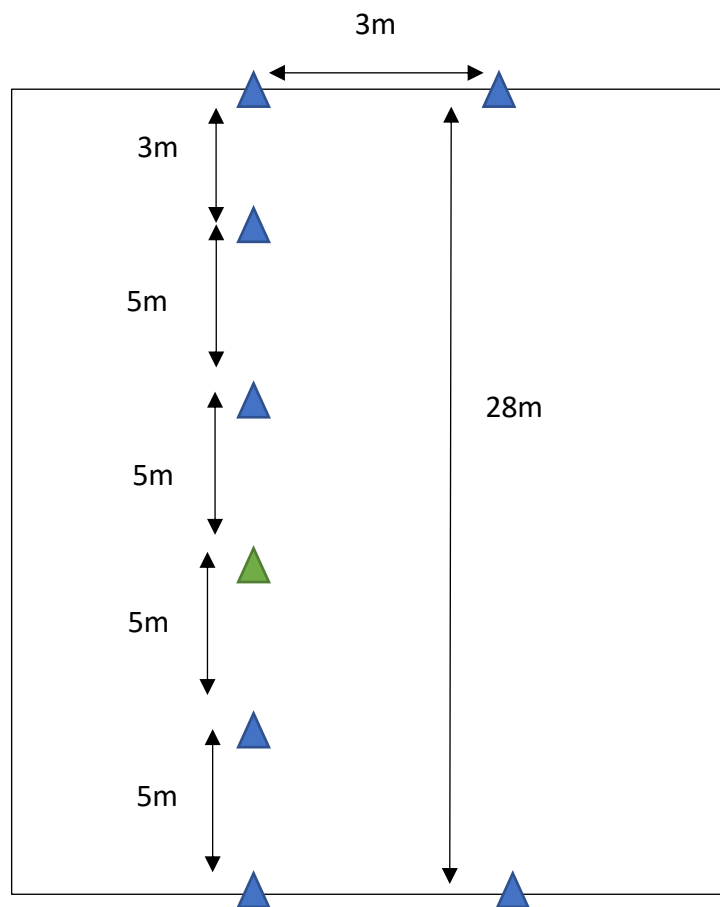
A time-trial-based test provides an indication of an athlete's aerobic capacity and their ability to sustain work over time. While often referred to as maximal aerobic speed (MAS), for coaching purposes this test can be used more simply to assess aerobic fitness and repeat-effort capacity.

This test is useful for:

- Monitoring improvements in cardiovascular fitness
- Guiding aerobic conditioning intensity
- Assessing how well athletes cope with sustained effort

It also provides useful information for planning conditioning sessions outlined below.

Maximal Aerobic Speed (MAS):



5-minute MAS protocol:

1. Player pushes up and down court for 4 minutes, with the intention of completing as much distance as possible in the allocated time.
2. Player must turn left at one end and right at the other, with two wheels (large wheel/caster) crossing the line at either end (like scoring a try).
3. Record how many court lengths each player completed. If they end on an incomplete court length, use cones along the side of the court, separated by 5m, to help calculate total distance (E.G., if a player's last complete court length was at the bottom of the diagram above and the player got to the green cone upon stopping the protocol, that player would have completed an extra 10m).
4. Multiple the amount of court lengths by 28 and add the extra distance (10m in this example) if appropriate.
5. $\text{DISTANCE} / \text{TIME} = \text{SPEED}$ – therefore, divide their total distance by 300 (5 minutes in seconds), to get a predicted maximal aerobic speed value.

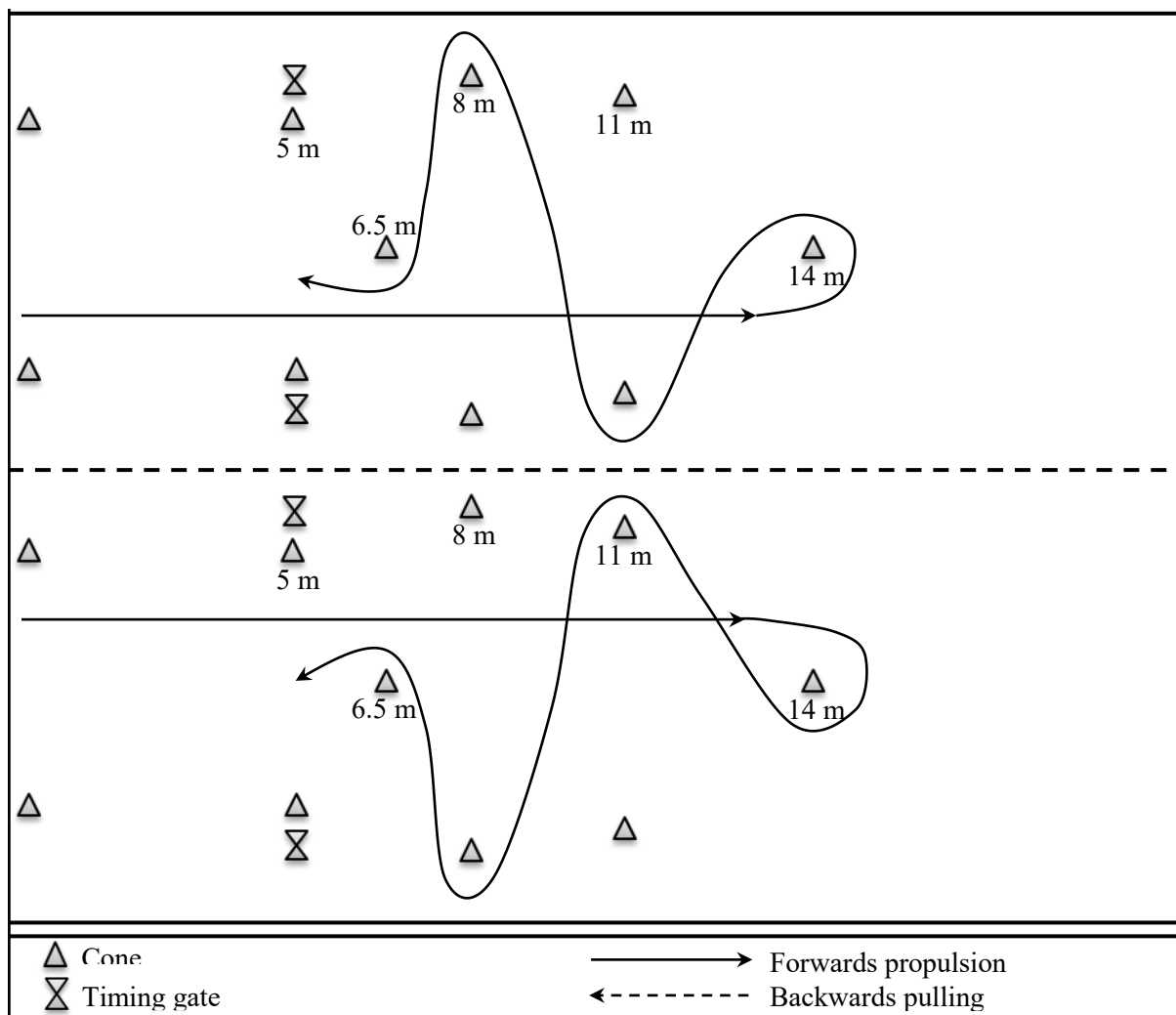
Agility or Change of Direction Test

An agility-based test assesses an athlete's ability to accelerate, decelerate, and change direction efficiently while maintaining control of the wheelchair. This closely reflects the movement demands of wheelchair rugby, including evasion, defensive positioning, and rapid transitions.

Timed change of direction tests help coaches evaluate:

- Chair handling and control
- Movement efficiency
- Coordination under time pressure
- Informs agility

These tests can also highlight asymmetries or movement limitations that may require targeted technical or physical intervention.



- Players would perform 2 trials with a left turn and two with a right turn. Record which way players turn on their first rep, then alternate.

- 3m between timing gates; 4.5 between middle cones and 4 between end cones.

Using Testing Information Effectively

Testing should be:

- Conducted consistently and under similar conditions
- Used to track change over time
- Interpreted alongside observation and athlete feedback

Practical Considerations When Using Timing Equipment

While electronic timing gates provide highly accurate and reliable data, they are not always available due to cost. Coaches can still collect useful and meaningful information using simple equipment such as cones and a stopwatch, provided testing procedures are consistent and well controlled.

To improve reliability when using manual timing:

- Use the same person to time all attempts wherever possible
- Ensure the same start and finish points are used for every test
- Clearly define when timing starts and stops (e.g., first movement of the chair, front axle crossing the line)
- Use the same setup, surface, and distances each time testing is performed

When using a stopwatch, absolute accuracy is less important than consistency over time. As long as testing procedures are repeated in the same way, coaches can still track meaningful changes in performance and identify trends in improvement.

Where possible, results should be recorded and compared only against an athlete's previous performances rather than between athletes as accuracy when using manual timing equipment may vary athlete to athlete.

Dr Thomas O'Brien PhD (he/him)
Lecturer in Applied Disability and Para Sport
School of Sport, Exercise and Health Sciences
Loughborough University



Centre for Para and
Disability Sport Innovation



To protect personal information and reduce environmental impact only print emails where absolutely necessary