

Wheelchair Basketball

Developing a consensus statement on wheelchair basketball format for inclusion in the 2022 Commonwealth Games

PROJECT AIMS

The objective of this project was to identify the optimal format for the sport of wheelchair basketball for inclusion in the 2022 Commonwealth Games.

Currently, wheelchair basketball is a 5 vs. 5 sport. However, the IWBF is exploring smaller sided games (3 vs. 3) using different court layouts.

The Peter Harrison Centre for Disability Sport at Loughborough University was tasked with providing a clear evidence base to make an informed decision about which game format should be put forward for inclusion at the 2022 Commonwealth Games and other events. This evidence base will consider the physical and technical demands on players and also stakeholder perceptions of various formats.

The overall aims are to:

- Adopt a game format that is fast-paced and exciting to watch and play.
- Adopt a game format which can be played in countries that are lacking in numbers, equipment or facilities to compete in the 5 vs. 5 version of the game.
- To work with FIBA to mutually support the inclusion of '3 vs. 3 basketball' at multi-sport competitions.
- To aspire to a second discipline at the Paralympic Games and other IPC events throughout the IPC Zones.



**Loughborough
University**

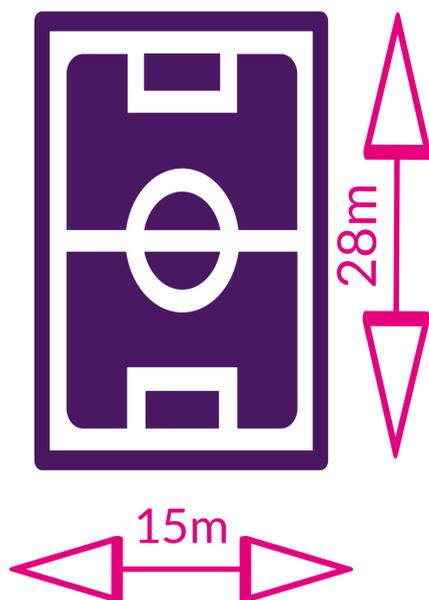
Peter Harrison Centre
for Disability Sport

Research conducted by Prof Vicky Tolfrey, Dr Barry Mason and Dr Andrea Bundon. Funding provided by Loughborough University and the Peter Harrison Centre for Disability Sport. Support provided by British Wheelchair Basketball and the International Wheelchair Basketball Federation.

TOURNAMENT DESIGN

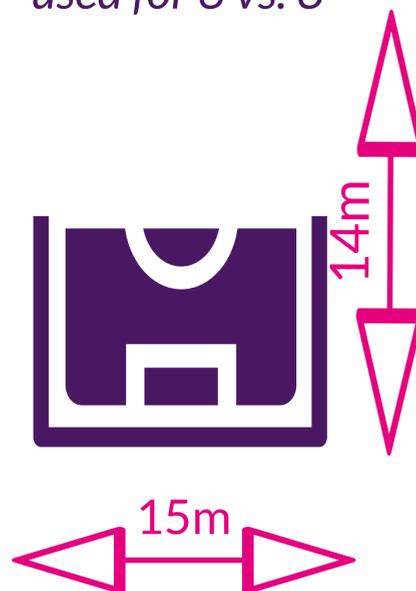
A simulated tournament was held allowing players, coaches and officials to experience three 3 vs. 3 game formats and a standard 5 vs. 5 game.

Full Court (FC)
used for 5 vs. 5
and 3 vs. 3

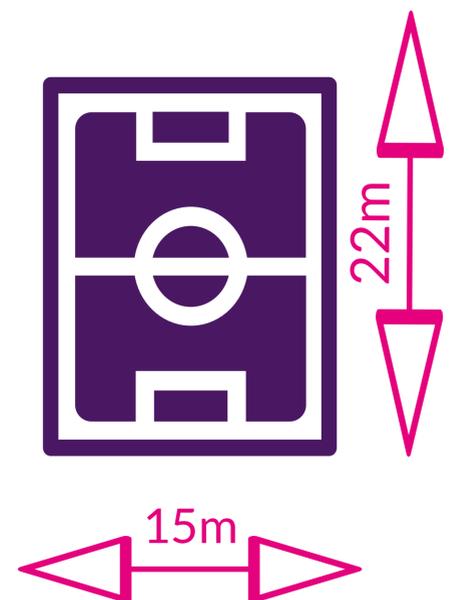


COURT LAYOUTS

Half Court (HC)
used for 3 vs. 3



Modified Length Court
(MOD)
used for 3 vs. 3



GAME FORMAT AND RULES USED IN SIMULATED TOURNAMENT

| 5 vs. 5 Games | | 3 vs. 3 Games |
|------------------|-----------------------------|----------------|
| 10 min. quarters | Duration | 10 min. halves |
| Stop-time | Game clock | Running -time |
| 24 sec. | Shot clock | 18 sec. |
| ✓ | Substitutions | ✗ |
| ✓ | Time outs | ✗ |
| 14 points | Classification points total | 8.5 points |

DATA COLLECTION

Teams of researchers collected data on the physical and technical demands of the game formats during the tournament and perceptions of stakeholders post-tournament.

PHYSICAL DEMANDS

External workload was monitored via an indoor tracking system (ITS) used to measure:

- Relative distance covered
- Peak speed
- Time spent in fixed speed zones

Internal workload was monitored including:

- Mean and peak heart rate (HR)
- Rating of perceived exertion (RPE)

TECHNICAL DEMANDS

All games were filmed and actions coded to describe technical activities relating to:

- Possession (time and passes received)
- Passing (number and type)
- Shooting (number, type, success rate)
- Defensive (forced turnovers, rebounds, blocks)
- Errors (fouls, turnovers, ball handling errors)

PERCEPTIONS

Surveys were conducted with 20 individuals (athletes, coaches, officials) who took part in the tournament.

Semi-structured, qualitative interviews were conducted with 12 individuals from 4 nations (athletes, coaches, officials and classifiers). This included individuals who participated in the mock tournament and others who watched video footage of the event.

FINDINGS

ACTIVITY PROFILES OF THREE 3 VS. 3 FORMATS (indoor tracking system data)

| | Distance covered | Peak speed |
|----------------|--|--|
| FULL COURT |  |  |
| HALF COURT |  |  |
| MODIFIED COURT |  |  |

ACTIVITY PROFILES OF THREE 3 VS. 3 FORMATS (indoor tracking system data)

| | High speed | Moderate speed | Low speed |
|----------------|--|---|---|
| FULL COURT |  |  |  |
| HALF COURT |  |  |  |
| MODIFIED COURT |  |  |  |

NOTE: Baseline measure is activity profile of 5 vs. 5 game



Increase compared to 5 vs. 5



Decrease compared to 5 vs. 5



No significant change compared to 5 vs. 5

FINDINGS

PHYSIOLOGICAL RESPONSE (HR and RPE)

| | HR peak | HR mean | RPE |
|----------------|--|---|---|
| FULL COURT |  |  |  |
| HALF COURT |  |  |  |
| MODIFIED COURT |  |  |  |

TECHNICAL DEMAND (coded video data)

| | Possession | Shots | Rebounds | Forced Turnovers |
|--------------------------|---|---|---|---|
| 3 VS. 3 (ALL FORMATS) |  |  |  |  |
| 5 VS. 5 |  |  |  |  |

NOTE: No observed differences between 3 vs. 3 formats.

FINDINGS

SUPPORT FOR DIFFERENT 3 VS. 3 FORMATS (Surveys and interviews)

| | Personal enjoyment | Spectator appeal | Opportunity for all classes |
|----------------|--|---|---|
| FULL COURT |  |  |  |
| HALF COURT |  |  |  |
| MODIFIED COURT |  |  |  |

ATTITUDES AND BELIEFS ABOUT MOVE TO A 3 VS. 3 FORMAT (Surveys and interviews)

| Promote development of sport | | Promote development of players | | Support for introducing 3 vs. 3 |
|---|---|---|---|---|
| Own nation | Other nations | Own nation | Other nations | |
|  |  |  |  |  |

NOTE: Overwhelmingly those surveyed and interviewed believed there was value to introducing a 3 vs. 3 format but were hesitant about giving full support without knowing final format that would be selected and subsequent rules.

SUMMARY

The overall conclusions of the research team are:

- The 3 vs. 3 formats showed slower speeds (mean, peak and time in high speed zone) than the 5 vs. 5 formats but survey and interview data suggested this could have been due to fatigue of players (because the simulated tournament was held at the end of a training camp) and/or players unfamiliarity with the dimensions of the court.
- The 3 vs. 3 formats showed increases in passes and shots - this was supported by survey and interview data where participants stated that fewer players meant more 'touches' for each player.
- Overwhelmingly participants saw value in introducing a 3 vs. 3 format for the purpose of (1) promoting the development of the sport in more regions (more regions are able to field teams thus creating more local and international competition) and (2) promote the development of individual players (more teams means more opportunities to play and smaller sides allows for more 'touches' for each player).
- Preferred version amongst those who participate in the simulated tournament was the 22m modified court but this needs to be balanced with concerns about the feasibility of implementing this size of court. Full court was also considered a viable options provided duration of game was short to limit fatigue and shot clock was extended.

FUTURE CONSIDERATIONS

The following includes comments and suggestions for areas that require further consideration to successfully and effectively implement a 3 vs. 3 game format.

ALL 3 VS. 3 FORMATS

- Games should be limited to a maximum 20 minutes total.
- Consider 7-8 minute halves with stop time or 10 minutes with running time.
- Reduce number of personal fouls (3 was deemed 'appropriate' for 20 minutes of play). Reduce team fouls accordingly.
- Time outs may not be necessary.
- Backcourt violation may not be necessary.
- 8.5 point classification was generally supported.
- Some thought 9 points would allow for higher paced games and others believed this would exclude some players.
- No consensus on whether substitutions should be allowed during halves or only at half-time.
- Suggested that squad size be 5-6 players.

FULL COURT

- 18s shot clock deemed to be too short - fatigue becomes an issue and does not allow for proper set up of plays.
- Too much space may make it hard to play defence.
- 10 minute halves may be too long.

HALF COURT

- 18s shot clock deemed too long - slows the game down.
- 10 minute halves may be too long because game drags.
- Need to clarify when to clear the ball and clear the key.

MODIFIED COURT

- Court was perceived to be a bit 'wide' and difficult to defend. Consider narrowing in addition to shortening.
- Concerns about safety of moveable baskets.
- Need to clarify dimensions of the key and 3 point line.