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The effect of small-sided game formats on physical and technical performance in wheelchair basketball

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Abstract

Purpose: To examine effects of different small-sided games (SSG) on physical and technical aspects of performance in wheelchair basketball (WB) players. ***Design:*** Observational cohort study. ***Methods:*** Fifteen highly trained WB players participated in a single 5v5 (24-sec shot-clock) match and three 3v3 SSGs (18-sec shot-clock) on a: i) full (FC); ii) half (HC) and; iii) modified length court (MOD). During all formats, player's activity profiles were monitored using an indoor tracking system and inertial measurement units. Physiological responses were monitored via heart rate and rating of perceived exertion. Technical performance i.e. ball handling was monitored using video analysis. Repeated measures ANOVA and effect sizes (ES) were calculated to determine the statistical significance and magnitude of any differences between game formats. ***Results:*** Players covered less distance and reached lower peak speeds during HC ($P \leq 0.0005$; ES $\geq$ very large) compared to all other formats. Greater distances were covered and more time was spent performing moderate and high speed activity ($P \leq 0.008$; ES $\geq$ moderate) during FC compared to all other formats. Game format had little bearing on physiological responses and the only differences in technical performance observed were in relation to 5v5. Players spent more time in possession, took more shots and performed more rebounds in all 3v3 formats compared to 5v5 ($P \leq 0.028$; ES $\geq$ moderate). ***Conclusions:*** Court dimensions affect the activity profiles of WB players during 3v3 SSG, yet had little bearing on technical performance when time pressures (shot-clocks) were constant. These findings have important implications for coaches to understand which SSG format may be most suitable for physically and technically preparing WB players.

Keywords: Activity profiles, physiological demand, video analysis, wheelchair athletes, disability sport

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Introduction

Wheelchair basketball (WB) is a 5v5 team sport characterised as an intermittent, aerobic-based activity interspersed with frequent bouts of high-intensity work that requires high levels of physical conditioning and technical skill.[1,2] A substantial amount of research has explored the activity profiles,[1,3,4] physiological[2,5,6] and technical demands[7-9] of 5v5 WB, yet little has focused on training strategies that may best prepare athletes for the demands of WB.[6,10,11] Small-sided games (SSG) have emerged as one of the most common training strategies employed by coaches from team sports, since they have the ability to develop physical, technical and tactical competencies under competition-specific conditions and can also be used when athlete availability is limited.[12] A limited number of studies have explored the effects of SSG in WB.[6,10,11] However these studies have only considered the physiological effects of SSG with limited reference to 5v5 WB. Subsequently, the impact of SSG upon the activity profiles and technical demands of WB players have yet to be explored. The aforementioned studies have all focused on 4v4 game formats, whereas 3v3 is the more common SSG format within WB, which has its own set of rules and regulations,[13] with a variety of formats played worldwide on different court dimensions. These include a: i) full court (FC) [28 x 15 m]; ii) half court (HC) [14 x 15 m]; iii) modified court (MOD) [22 x 15 m].

Substantial research has explored the physical and technical responses to different court dimensions during able-bodied (AB) 3v3 basketball.[14-16] Increased activity profiles and physiological responses were observed during 3v3 on a full court,[16] whereas the frequency of technical actions performed increased on a half court.[14,15] However, the effects of different SSG formats on physical and technical aspects of performance specific to WB remain unknown. Subsequently the aims of the current study were to compare the activity profiles, physiological and technical demands during three formats of 3v3 WB (FC, HC, MOD) in

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relation to 5v5 WB. It was hypothesised that the physical and technical demands would be inversely related during 3v3 WB, with an elevated physical demand during FC and improved technical performance during HC. The findings from this study will provide coaches with a better understanding of the effects of different SSG in WB and may be used to optimise physical and technical training strategies.

Methods

Fifteen U22 international male wheelchair basketball players (age: 19 ± 2 years; playing experience: 7 ± 3 years; classification range: 1.0 – 4.5) participated in the current study. Ethical approval for the procedures was acquired from the University's local ethical advisory committee and written informed consent was obtained from all players prior to participation. All players participated in four different WB game formats over two days. On day one players competed in a standard 5v5 match, composed of 4 x 10-minute periods with a 24-second shot-clock, a 14-point classification limit and substitutions permitted.[13] Mean playing time for all players during 5v5 was 20:23 ± 06:53 minutes (range: 11:04 – 30:25 minutes). The following day players participated in three different formats of 3v3 on a: i) full court (FC); ii) half court (HC); iii) 22m length court (MOD). All participants were equally inexperienced with all 3v3 formats. Coaches selected 5 balanced teams of 3 players with an 8.5-point classification limit. All teams played 2 x 10-minute periods (to most closely replicate the mean playing time of 5v5) of each format against different teams using a running game-clock and an 18-second shot-clock. No substitutions or timeouts were permitted during the 3v3 game formats, which were scored and officiated. A minimum of 10-minutes rest was ensured between each game to prevent fatigue from influencing performance. Teams and opponents were identical across all 3v3 game formats.

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During all formats, players' activity profiles were monitored using a radio frequency-based indoor tracking system sampling at ~ 8 Hz (Ubisense, Cambridge, UK), which has previously been validated for use within wheelchair court sports.[17,18] Data collection commenced at the beginning of each period and terminated at the end of each period and was only paused during the 5v5 format during any extended stoppages (e.g. timeouts, equipment calls). Since a running clock was used and no timeouts were permitted during the 3v3 formats, data collection was only paused in the event of an equipment call. The activity accumulated during all periods of each format was analysed to determine the relative distance covered ($m \cdot min^{-1}$), peak speed ($m \cdot s^{-1}$) and the relative time spent in 3 arbitrary speed zones: i) low speed activity (LSA) < 1.5 $m \cdot s^{-1}$; ii) moderate speed activity (MSA) 1.5-3.0 $m \cdot s^{-1}$; iii) high speed activity (HSA) > 3.0 $m \cdot s^{-1}$. Inertial measurement units (IMU) (Shimmer3, Shimmer Sensing, Ireland) sampling at 199.8 Hz were attached to the frame of five randomly selected players spanning the range of classifications (1.0, 2.0, 3.0, 3.5 & 4.5) to determine the magnitude of frame rotations and accelerations during each game format. All IMU data was filtered using a 2nd order low-pass Butterworth filter with a cut-off frequency of 25Hz. These sensors have been previously used with wheelchair sports over extended periods and have been shown not drift over these periods.[4] The number of rotations ($n \cdot min^{-1}$) performed were categorised as: i) minor < 15°; moderate 15-165°; severe >165°. Accelerations were quantified as the relative movement time spent in 3 arbitrary zones: i) low acceleration activity (LAA) < 1.0 $m \cdot s^{2}$; ii) moderate acceleration activity (MAA) 1.0-2.5 $m \cdot s^{2}$; iii) high acceleration activity (HAA) > 2.5 $m \cdot s^{2}$.

Heart rate was monitored wirelessly at 1-second intervals (Polar Team Pro System, Polar, Kempele, Finland) during all formats. Peak (HR_{peak}) and mean heart rate (HR_{mean}) were reported for all players and was paused during any breaks in play to align with the tracking data. Immediately after each game format players provided an overall rating of perceived

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exertion (RPE) using the CR-10 scale.[19] Players were familiar with the CR-10 scale and its anchors, as it formed a regular part of their training.

All game formats were recorded using 2 synchronised video cameras (Sony HDR-CX405, Tokyo, Japan) equipped with a wide angle conversion lens (Raynox HD-5050PRO, Tokyo, Japan) and positioned along both baselines. Each camera focused on one half of the court, with a slight overlap to ensure that activities were visible anywhere on court. Video footage was analysed using Dartfish TeamPro Data 6.0 (Fribourg, Switzerland) by two analysts experienced with the software and WB. A number of sport-specific activities were coded for all individuals including possession (time in possession), balls received (number of times a player receives a ball), balls caught (balls caught relative to balls received), passes (number of passes made), long passes (long passes defined as a pass that bisects one or more opponents, made relative to total passes), pass success rate (% of successful passes), shots (number of shots made), three-pointers (number of shots made behind the three-point line), shot success rate (% of successful shots), rebounds (number of defensive and offensive rebounds made), forced turnovers (number of times a player forced a mistake from an opponent) and turnovers (number of times a player turned possession over through an error). To account for differences in playing time between 5v5 and 3v3 formats, resulting from differences in timing (game-clock vs running clock) and rules relating to substitutions and timeouts, technical activities were only analysed when the ball was in play across all formats. Subsequently frequency-based technical actions were expressed as the number of times an activity was performed relative to a fixed time (10-minutes). Each analyst re-coded the activities of two randomly selected 10-minute periods for two players so that intra- and inter-rater reliability could be determined. Intraclass correlation coefficients ≥ 0.96 and ≥ 0.87 were observed for intra- and inter-observer reliability respectively across all variables, which were deemed acceptable based on a similar analyses with WB.[9]

All data were presented as means ± standard deviation (SD). Repeated measures analysis of variance (ANOVA) with a bonferroni correction was performed on all parameters, except data from the inertial measurement units due to a limited sample size (n = 5). Statistical significance was accepted when $P < 0.05$. Cohen's effect sizes (ES) ± 90% CI was calculated to determine the magnitude of any differences in dependent variables between game formats[20] and were categorised as trivial (< 0.2), small (0.2 – 0.6), moderate (0.6 – 1.2), large (1.2 – 2.0) and very large (> 2.0).[21]

Results

Players covered significantly greater distance during FC ($P \leq 0.0005$; ES ≥ large) and reached greater peak speeds during 5v5 ($P \leq 0.020$; ES ≥ moderate) compared to all other formats (Table 1 & 2). Distance covered and peak speeds were significantly lower during HC ($P \leq 0.0005$; ES ≥ very large) compared to all other formats. More time was spent performing MSA and HSA ($P \leq 0.008$; ES ≥ moderate) and less time performing LSA ($P \leq 0.0005$; ES ≥ large) during FC compared to all other formats. Alternatively, more time was spent performing LSA and less time performing MSA and HSA during HC compared to all formats ($P \leq 0.0005$; ES ≥ very large). More time was spent performing MAA during FC and MOD compared to 5v5 and more severe rotations were performed during HC compared to 5v5 and FC (ES ≥ large).

Despite the changes in activity profiles, game format had little bearing on physiological responses (Table 1 & 2). HR_{peak} was significantly higher during 5v5 compared to HC ($P = 0.025$; ES – moderate), whereas HR_{mean} was significantly elevated during FC in relation to HC ($P = 0.001$; ES – moderate). Players also reported a higher RPE during 5v5 and FC compared to HC and MOD ($P \leq 0.048$; ES – moderate).

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No significant or meaningful differences in technical performance were revealed between any of the 3v3 game formats. The only differences in technical performance observed were in relation to 5v5 (Table 3). Players spent more time in possession, took more shots and performed more rebounds in all 3v3 formats compared to 5v5 ($P \leq 0.028$ ES $\geq$ moderate). Players received the ball more often and made more passes during FC and MOD and forced more turnovers during HC compared to 5v5 ($P \leq 0.045$; ES $\geq$ moderate).

INSERT TABLE 1, 2 & 3 HERE

Discussion

The current study was the first to explore both the physical and technical demands of 3v3 SSG in WB and ~~. This study was also the first~~ to compare these demands to~~of these SSG to the demands of~~ 5v5 competition. The findings ~~of the study~~ provide important information about the use of SSG in WB to help coaches optimise physical and technical training strategies. The main findings were that 3v3 SSG variations had a substantial effect on the activity profiles of WB players, yet minimal changes in both physiological responses and technical performance were observed. In fact, technical performance only differed between 3v3 and 5v5 formats and not within 3v3 formats.

Activity profiles were elevated during FC in relation to all other formats. Although peak speed was lower than what was observed during 5v5, the relative distance covered was far greater and players spent less time performing LSA and more time performing MSA and HSA during FC compared to all other formats. Elevated activity profiles were likely attributed to the greater court ratio per player enabled during FC (70 m^2), which has been

observed during SSG in AB sports[16,22,23] and more relatedly, wheelchair rugby.[24] Despite the increased external demands imposed upon players during FC, internal demands did not necessarily follow the same trend with mixed physiological responses revealed. No meaningful differences in either HR_{peak} or HR_{mean} were revealed between FC and other formats, although subjectively players perceived FC to be more demanding than both HC and MOD, yet similar to 5v5. In addition, the increased activity profiles did not ~~seem to have a~~ negatively effect ~~on~~ players' technical performance during 3v3 FC as had been observed during AB basketball.[14,15] Subsequently, in line with the rules adopted by the current study (no substitutions/timeouts, 18-second shot-clock) 3v3 FC could be a favourable SSG for coaches to implement to physically overload players, without impairing technical performance.

In contrast to FC, the reduced court ratio per player associated with HC (35 m^2) led to a reduction in activity profiles, with less distance covered, lower peak speeds reached and more time spent performing LSA and less time performing MSA and HSA compared to all other formats. This corresponds with what has previously been observed during AB basketball, whereby a reduction in external load was revealed during 3v3 matches on a half court compared to both 3v3 and 5v5 on a full court.[16] Alternatively players did perform more severe rotations during HC compared to 5v5 and FC, which was a strategy likely employed to create space on the smaller court. Although the execution of these ~~severe~~ rotations is likely associated with an increased metabolic power, this was not sufficient enough to offset the other activity profiles that were diminished during HC, as physiologically this format was also ~~appeared~~ less demanding. Despite the reduced external and internal demands of HC, minimal benefits in technical performance were revealed. Improvements in the frequency of certain technical activities were only observed in relation to 5v5 and not versus other 3v3 formats, which has been observed in AB basketball.[15] The only additional value to HC from a

technical perspective was that players forced moderately more turnovers compared to both 5v5 and FC. Therefore, although HC may not be an advisable SSG format for coaches wishing to improve WB players physical and ball handling capabilities using the ~~rules and~~ regulations adopted by the current study, this format may still be beneficial for developing players defensive competencies. ~~This in turn could lead to the development of players offensive competencies, as increased pressure could be imposed on opponents, which could prove to be an effective way to train their offensive skills.~~

During MOD activity profiles were all lower in relation to FC, yet higher in relation to HC, which could again be associated to the changes in court ratio per player, with MOD (55 m^2) eliciting more court space per player than HC and less than FC. Unlike other 3v3 formats, MOD appeared to offer the closest representation of the activity profiles observed during 5v5 WB. In particular, the distances covered and the time spent performing MSA were similar between MOD (85.1 ± 4.5 $m \cdot min^{-1}$; 36.7 ± 4.2%) and 5v5 (87.4 $m \cdot min^{-1}$; 38.4 ± 4.1%) respectively, with only small effects reported (Table 2). Similarly, physiological responses were reflective of 5v5 WB, with no meaningful differences in HR measures observed and although players RPE was moderately lower for MOD, 90% CI spanned zero. As with other 3v3 formats, MOD only demonstrated meaningful increases in the frequency of technical activities in relation to 5v5 as opposed to other SSGs. Subsequently, MOD may be an advisable SSG format to implement when coaches are trying to maintain player's physical conditioning without overloading them or during training phases when skill development is valued above physical conditioning. Despite these advantages, MOD may be limited from a logistical perspective, since court dimensions, lines and baskets need repositioning from their standard positions.

The current study has demonstrated that different variations of SSGs can be implemented to affect the physical demands of WB training, which has been largely

attributed to the different court ratios per player across each format. However, since technical measures of performance only varied between 5v5 and SSGs, it would suggest that additional parameters other than court ratio per player may affect technical performance during SSGs. Other than a reduction in player numbers, the key difference between 5v5 and SSG formats was a reduction in shot-clock from 24- to 18-seconds. Shot-clocks were controlled~~kept consistent~~ across all SSGs during the current study to minimise the number of confounding factors that could influence the results. However, shot-clock duration could be a key parameter for future SSG research in WB to consider in order to further affect players physical and technical performance. Rhodes et al.[24] revealed substantial increases in the activity profiles of wheelchair rugby players when shot-clock duration was reduced during 3v3 SSGs. Although this study failed to account for any effects on technical performance, ~~it is envisaged that~~ a reduction in shot-clock duration may place further emphasis on technical skill development, especially within the confined court space of HC. ~~Future investigations may also benefit from a slightly l~~Larger sample sizes would also be preferable in future so that distinctions could be made between athletes of different classification and to ensure that the effects of SSG formats on performance are similar for all classes. The current study accounted for this to an extent by reducing the maximum classification limit from 14- (5v5) to 8.5-points (3v3) to prevent the more impaired (lower classification) players from being excluded. A larger sample size would have also been favourable for the IMU data, where it was only possible to monitor five players. Subsequently few meaningful effects were observed for the rotation and acceleration data between game formats. However, the methods adopted for collecting and analysing this data was novel and may lay the foundations for future studies to develop when quantifying mobility performance in wheelchair sports. Minimal changes in physiological demand were also observed between game formats despite clear changes in activity profiles, which may be a limitation of the HR-based methods used.

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Previous studies have reported similar findings during SSG,[23,25] which could be attributed to the large individual variability in HR observed for players. It could also be due to the intermittent nature of WB, where frequent high-intensity efforts are performed, which could lead to an underestimation of HR.[25] Subsequently, future investigations may benefit from the use of blood lactate measurements to assess the physiological demands of SSG, as Kennet et al.[24] revealed less individual variability within this measure during intermittent team sports.

Practical Applications

- Coaches would benefit from implementing 3v3 SSG on a full court, when the principal objective of training is to physically overload WB players, whilst maintaining sports-specificity.
- 3v3 SSG on a modified length court could be implemented by coaching staff to maintain physical fitness levels specific to the demands of competition, since this format shared the most physical similarities to 5v5 WB.
- The only additional benefit of 3v3 on half a court was that players performed more severe rotations and forced more turnovers in relation to other SSGs. Therefore, in its current format HC could be recommended to improve wheelchair handling skills and defensive aspects of WB performance.
- Modifying court dimensions and subsequently the court ratio per player seemed to have a clear effect on activity profiles during WB. However, only a reduction in player number from 5v5 to 3v3 impacted upon players technical skills. In order to manipulate technical performance within 3v3 SSG, further modifications to shot-clock durations are advised.

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Conclusions

Modifying the court dimensions of 3v3 SSGs directly influences the activity profiles and physiological responses of highly trained WB players, which can be elevated during FC and reduced during HC, mainly as a result of the different court ratios per player. Alternatively, court dimensions had less of an impact upon technical performance during SSGs, as the majority of meaningful differences existed between all 3v3 formats and 5v5. Subsequently, a reduction in player number and differences in shot-clock restrictions likely contribute to differences in technical performance. These findings have important implications for WB coaches with regards to which SSG format may be best implemented at various stages of the season.

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Table 1 Mean (SD) performance measures during each of the game formats

	5v5	3v3		
		FC	HC	MOD
Activity profiles				
Relative distance ($m \cdot min^{-1}$)	87.4 (4.1)	97.5 (6.1)	68.6 (5.7)	85.1 (4.5)
Peak speed ($m \cdot s^{-1}$)	4.69 (0.31)	4.36 (0.31)	3.33 (0.30)	4.13 (0.35)
LSA (% time)	56.4 (3.8)	49.7 (5.4)	73.8 (5.8)	59.7 (4.1)
MSA (% time)	38.4 (4.1)	42.5 (5.1)	25.7 (5.8)	36.7 (4.2)
HSA (% time)	5.1 (1.4)	7.6 (2.7)	0.3 (0.3)	3.4 (1.5)
LAA (% time)	62.7 (3.4)	55.0 (4.7)	59.5 (4.5)	56.5 (5.0)
MAA (% time)	23.0 (0.8)	26.2 (2.1)	25.0 (1.7)	25.5 (1.8)
HAA (% time)	14.2 (3.4)	18.8 (3.0)	15.4 (3.1)	18.0 (3.3)
Minor rotations ($n \cdot min^{-1}$)	31.5 (6.6)	31.3 (6.0)	24.9 (3.6)	28.4 (4.3)
Moderate rotations ($n \cdot min^{-1}$)	25.6 (2.2)	27.3 (3.5)	25.6 (4.1)	27.2 (5.0)
Severe rotations ($n \cdot min^{-1}$)	5.4 (1.0)	5.2 (0.5)	6.9 (0.5)	6.0 (0.8)
Physiology				
HR_{peak} ($beats \cdot min^{-1}$)	183 (11)	178 (15)	173 (10)	181 (13)
HR_{mean} ($beats \cdot min^{-1}$)	152 (11)	155 (14)	146 (12)	152 (15)
RPE (AU)	5.4 (1.1)	5.5 (1.2)	4.4 (1.1)	4.4 (1.4)
Technical				
Possession (s)	46.3 (30.2)	76.9 (38.8)	81.0 (42.1)	69.9 (32.5)
Balls received (n/10-min)	10.1 (4.7)	13.4 (4.5)	12.2 (4.4)	14.0 (4.5)
Balls caught (%)	97.9 (5.9)	97.4 (4.7)	96.4 (3.9)	97.6 (3.2)
Passes (n/10-min)	9.9 (4.4)	14.4 (4.6)	12.0 (3.6)	14.1 (4.4)
Long passes (%)	37.1 (21.8)	39.0 (15.7)	47.6 (18.8)	41.4 (16.9)
Pass success rate (%)	96.8 (4.8)	95.2 (4.6)	93.6 (6.7)	96.4 (5.8)
Shots (n/10-min)	3.7 (2.4)	6.2 (2.8)	6.8 (3.5)	7.2 (3.3)
Three pointers (n/10-min)	0.2 (0.4)	0.6 (0.9)	0.3 (0.7)	0.3 (0.7)
Shot success rate (%)	52.8 (24.7)	40.7 (19.6)	37.3 (20.0)	42.3 (17.6)
Rebounds (n/10-min)	1.6 (1.2)	2.7 (1.7)	3.5 (1.9)	3.4 (2.1)
Forced turnovers (n/10-min)	0.3 (0.4)	0.4 (0.4)	1.0 (1.1)	0.8 (0.9)
Turnovers (n/10-min)	0.2 (0.5)	0.2 (0.3)	0.4 (0.4)	0.4 (0.7)

Table 2 Differences in physical performance between game formats [ES (± 90% CI)].

	ANOVA	5 v 5 vs. FC	5 v 5 vs. HC	5 v 5 vs. MOD	FC vs. HC	FC vs. MOD	HC vs. MOD
Activity profiles							
Relative distance	<0.0005	2.0** (0.9, 3.0)	3.8** (2.4, 5.2)	0.5 (-0.3, 1.4)	4.9** (3.2, 6.6)	2.3** (1.2, 3.4)	3.2** (1.9, 4.5)
Peak speed	<0.0005	1.1* (0.2, 2.0)	4.5** (2.9, 6.0)	1.7* (0.7, 2.7)	3.4** (2.1, 4.7)	0.7 (-0.2, 1.6)	2.5** (1.3, 3.6)
LSA	<0.0005	1.4** (0.5, 2.4)	3.6** (2.2, 4.9)	0.8* (-0.1, 1.7)	4.3** (2.8, 5.9)	2.0** (1.0, 3.1)	2.8** (1.6, 4.0)
MSA	<0.0005	0.9** (0, 1.8)	2.5** (1.4, 3.7)	0.4 (-0.5, 1.3)	3.1** (1.8, 4.3)	1.2** (0.3, 2.2)	2.2** (1.1, 3.2)
HSA	<0.0005	1.2** (0.2, 2.1)	4.7** (3.1, 6.4)	1.2* (0.3, 2.1)	3.8** (2.4, 5.2)	1.9** (0.9, 3.0)	2.9** (1.7, 4.1)
LAA	-	1.9 (0.1, 3.6)	0.8 (-0.7, 2.3)	1.5 (-0.2, 3.1)	1.1 (-0.5, 2.7)	0.3 (-1.2, 1.8)	0.6 (-0.9, 2.1)
MAA	-	2.0 (0.2, 3.8)	1.5 (-0.2, 3.2)	1.8 (0.1, 3.5)	0.6 (-0.9, 2.1)	0.4 (-1.1, 1.8)	0.3 (-1.2, 1.8)
HAA	-	1.4 (-0.2, 3.1)	0.4 (-1.1, 1.9)	1.1 (-0.5, 2.7)	1.1 (-0.5, 2.7)	0.3 (-1.2, 1.7)	0.8 (-0.7, 2.3)
Minor rotations	-	0.0 (-1.4, 1.5)	1.2 (-0.4, 2.9)	0.6 (-0.9, 2.1)	1.3 (-0.3, 2.9)	0.6 (-0.9, 2.9)	0.9 (-0.7, 2.4)
Moderate rotations	-	0.6 (-0.9, 2.1)	0 (-1.4, 1.5)	0.4 (-1.1, 1.9)	0.5 (-1.0, 1.9)	0 (-1.4, 1.5)	0.4 (-1.1, 1.8)
Severe rotations	-	0.3 (-1.2, 1.7)	1.9 (0.1, 3.7)	0.7 (-0.8, 2.2)	3.4 (1.1, 5.7)	1.2 (-0.4, 2.8)	1.3 (-0.3, 3.0)
Physiology							
HR_{peak}	0.016	0.4 (-0.5, 1.2)	1.0* (0.1, 1.9)	0.2 (-0.7, 1.0)	0.4 (-0.5, 1.3)	0.2 (-0.6, 1.1)	0.7 (-0.2, 1.6)
HR_{mean}	0.033	0.2 (-0.6, 1.1)	0.5 (-0.3, 1.4)	0 (-0.9, 0.9)	0.7** (-0.2, 1.6)	0.2 (-0.7, 1.1)	0.4 (-0.4, 1.3)
RPE	<0.0005	0.1 (-0.8, 0.9)	0.9* (0, 1.8)	0.8* (-0.1, 1.7)	1.0* (0, 1.9)	0.8** (0, 1.7)	0 (-0.9, 0.9)

Key: - no statistical analysis performed due to small sample size (n = 5); denotes a statistically significant difference at * $P < 0.05$; ** $P < 0.01$.

Table 3 Differences in technical performance between game formats [ES (± 90% CI)].

	ANOVA	5 v 5 vs. FC	5 v 5 vs. HC	5 v 5 vs. MOD	FC vs. HC	FC vs. MOD	HC vs. MOD
Possessions	<0.0005	0.9** (0, 1.8)	1.0** (0.1, 1.8)	0.8* (-0.1, 1.6)	0.1 (-0.8, 1.0)	0.2 (-0.7, 1.1)	0.3 (-0.6, 1.2)
Balls received	0.008	0.7* (-0.2, 1.6)	0.5 (-0.4, 1.3)	0.9* (0, 1.7)	0.3 (-0.6, 1.1)	0.1 (-0.7, 1.0)	0.4 (-0.5, 1.3)
Balls caught	0.830	0.1 (-0.8, 0.9)	0.3 (-0.6, 1.2)	0.1 (-0.8, 0.9)	0.2 (-0.6, 1.1)	0.1 (-0.8, 0.9)	0.3 (-0.5, 1.2)
Passes	<0.0005	1.0* (0.1, 1.9)	0.5 (-0.3, 1.4)	1.0* (0.1, 1.9)	0.6 (-0.3, 1.5)	0.1 (-0.8, 0.9)	0.6 (-0.3, 1.5)
Long passes	0.067	0.1 (-0.8, 1.0)	0.5 (-0.4, 1.4)	0.2 (-0.6, 1.1)	0.5 (-0.4, 1.4)	0.2 (-0.7, 1.0)	0.4 (-0.5, 1.2)
Pass success rate	0.477	0.3 (-0.5, 1.2)	0.6 (-0.3, 1.4)	0.1 (-0.8, 0.9)	0.3 (-0.6, 1.1)	0.2 (-0.6, 1.1)	0.5 (-0.4, 1.3)
Shots	<0.0005	1.0** (0.1, 1.9)	1.0** (0.1, 1.9)	1.2** (0.3, 2.1)	0.2 (-0.7, 1.0)	0.3 (-0.5, 1.2)	0.1 (-0.7, 1.0)
Three pointers	0.137	0.6 (-0.3, 1.4)	0.2 (-0.7, 1.0)	0.2 (-0.7, 1.0)	0.4 (-0.5, 1.2)	0.4 (-0.5, 1.2)	0 (-0.9, 0.9)
Shot success rate	0.139	0.5 (-0.3, 1.4)	0.7 (-0.2, 1.6)	0.5 (-0.4, 1.4)	0.2 (-0.7, 1.0)	0.1 (-0.8, 0.9)	0.3 (-0.6, 1.1)
Rebounds	0.002	0.8* (-0.1, 1.6)	1.2** (0.3, 2.1)	1.1* (0.2, 2.0)	0.4 (-0.4, 1.3)	0.4 (-0.5, 1.2)	0.1 (-0.8, 1.0)
Forced turnovers	0.048	0.3 (-0.6, 1.1)	0.9* (0, 1.7)	0.7 (-0.2, 1.6)	0.7 (-0.2, 1.6)	0.6 (-0.3, 1.4)	0.2 (-0.7, 1.1)
Turnovers	0.781	0 (-0.9, 0.9)	0.4 (-0.4, 1.3)	0.3 (-0.5, 1.2)	0.6 (-0.3, 1.4)	0.4 (-0.5, 1.2)	0 (-0.9, 0.9)

Key: denotes a statistically significant difference at * $P < 0.05$; ** $P < 0.01$.