

Possessions in girls' high school and international basketball

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Abstract:

Introduction: Previous research has highlighted the importance of fast breaks in men's basketball, yet there is a need for further investigation into women's basketball, particularly at junior levels. The purpose of this study was to compare fast breaks and other possessions between girls' high school and international basketball teams.

Material and methods: Data from 28 Taiwanese high school matches and 34 international matches were analyzed. The type, preceding event, start location, first action, and outcome of possessions were recorded using a purpose-built spreadsheet system. Most variables were not normally distributed so non-parametric procedures were used to compare high school and international matches as well as winning and losing teams. **Results:** High school matches featured significantly more fast breaks ($p < 0.001$) and other possessions ($p = 0.031$) than international matches. However, international teams scored on a significantly higher proportion of fast breaks ($p = 0.030$) and other possessions ($p < 0.001$). At both levels, winning teams played significantly more fast breaks than losing teams ($p \leq 0.008$) and significantly fewer other possessions ($p \leq 0.016$). A significantly greater proportion of high school teams' other possessions followed steals ($p < 0.001$) and inbounds ($p = 0.009$). However, a significantly lower proportion of high school teams' other possessions followed opposition scores ($p < 0.001$). There were significant differences between high school and international matches for the percentage of other possessions commencing with different first actions ($p \leq 0.004$). There were significant differences between winning and losing teams for the court zones where fast breaks ($p \leq 0.012$) and other possessions ($p \leq 0.022$) commenced during high school matches. **Conclusions:** The type and outcome of possessions differ between girls' high school and women's international basketball. Differing aspects of possessions distinguish winning and losing teams between these two levels of basketball. Coaches of female high school players should be aware of these differences between high school and international basketball.

Key Words: fast breaks, tactics, opposition quality effect, performance analysis, female players.

Introduction

Performance indicators for invasive team games typically include variables about possession of the ball (Hughes & Bartlett, 2001). Winning matches not only involves converting scoring opportunities from possessions but also preventing scores from opposition possessions. Type of possession can be classified according to where the possession commenced (McGuckin et al., 2020), patterns of play during the possession (Ridgewell, 2011), pace of passing (O'Donoghue & Beckley, 2022), areas of the playing surface entered during the possession (Clemente et al., 2013), and types of ball contact during the possession (Courel-Ibáñez et al., 2016; Dipple et al., 2022). Some types of possession lead to scores more often than others. Successful teams may use these possession types more frequently than less successful teams (Alves et al., 2019). Furthermore, the conversion rate of some possession types may distinguish successful and unsuccessful teams while teams have similar conversion rates for other possession types (Stöckl & Morgan, 2013). Analyzing possessions can be argued to be a higher priority than analyzing physical aspects which are similar between winning and losing teams in basketball (Fox et al., 2021).

Many characteristics of possessions in invasive team games are particularly important in basketball. The success of basketball possessions depends on the ability of both the team in possession and the opponents (Fujii et al., 2015). Research has found that fast breaks are important in basketball (Matulaitis & Bietkis, 2021). A fast break can occur where a team loses the ball and has not made the transition from offensive play to defensive play quickly enough. Further evidence regarding the importance of fast breaks has been discovered in several studies that have identified relevant key performance indicators relating to this aspect of match play (Cárdenas et al., 2015; Conte et al., 2017; Conte & Lukonaitiene, 2018; Lan & Liu, 2019). Knowledge of any differences between junior and international basketball is important for players aspiring to compete at higher levels of the sport. The level of basketball of interest to the current study is Taiwanese girls' high school basketball. This is relevant because basketball is the second most popular sport in Taiwan after baseball. High school basketball has been

neglected by academic research. There is also a greater volume of research published about men's basketball than women's basketball with some studies comparing women's and men's matches (Lan & Liu, 2019). Recent research into women's basketball has discovered factors distinguishing high, mid and low performing players (Courel-Ibáñez et al., 2025). However, more research is needed into collective variables and team performance in junior levels of female basketball. There is a need to determine the areas of performance that distinguish between winning and losing teams within junior matches. This has been at senior levels of the game, for example research has been done in the WNBA (Deng et al., 2024).

Research into professional basketball is often facilitated by the availability of "box score" statistics from large numbers of matches within leagues and international tournaments. There are advantages to using data from secondary sources, especially where the validity and reliability of variables have been established. However, a disadvantage of using such data is that the variables are limited to those provided by the secondary source. Therefore, investigating high school basketball provides the opportunity for researchers to develop systems to gather and analyze specific variables of interest. This is important because previous research has found differences between fast breaks in women's and men's basketball (Lan & Liu, 2019).

The purpose of the current investigation was to compare possessions within female Taiwanese high school basketball (HBL) and women's international basketball. The study also compares winning and losing teams in matches between teams of different quality at these two levels of basketball. The research uses an observational approach where the frequency of possessions and percentage of possessions leading to scores are analyzed. The areas to be compared between these performances include locations and actions taken at the start of possessions. This is done for two types of possessions: fast breaks and other possessions.

Material & methods

Matches

A total of 62 basketball matches were analyzed in this investigation. There were 28 HBL matches for under-18 girls from the 2022-23 school year. The 34 international matches were 16 matches from the qualifying tournament for the 2022 women's Basketball World Cup and 18 matches from the 2022 women's Asia Cup tournament. Drawn matches were excluded from the study. However, one HBL match went to overtime was included. Teams were classified as top half or bottom half depending on their finishing position within the given tournament. The HBL matches involved 8 teams with the 4 top half teams being those teams who reached the semi-finals of the tournament. Teams in the international tournaments were classed as top half if they finished in the first two places in their group. All matches between top half and bottom half teams were won by the top half team at both HBL and international levels. Video recordings of all matches were available for open public viewing. However, video files could not be downloaded for analysis using video tagging software. Therefore, a spreadsheet system was developed to comply with the terms and conditions of the videos which did not permit the videos to be observed outside the streaming platforms. Ethical approval for analyzing match videos using the spreadsheet system was approved by the Research Ethics Committee of the School of Sport and Health Sciences at Cardiff Metropolitan University.

Data collection

A special-purpose data collection spreadsheet was developed for basketball possessions to be recorded while observing video recordings of matches. Data were entered using drop-down boxes before being processed using pivot tables and related functions. The following variables were collected about possessions:

- Type of possession: possessions were classified as being a "fast break" or "other" possession using guidance given to system operators. A fast break is where the defending team has not set up their defence at the start of the attacking team's possession. This gives a high chance of successfully completing the attack within 6 seconds. A fast break was recorded where a team clearly appeared to be attempting to take such an opportunity.
- Outcome of a possession: this was whether the possession resulted in scoring points or not.
- The event that started the possession: this was classified as an opposition score, a defensive rebound, a steal, an inbound, or "other". An inbound is any restart situation where the team throws the ball in from the side-line or baseline.
- The location of the start of the possession: this was classified with respect to baselines, free throw lines and the middle line. B-F represents the defensive most area from a team's own backline to the free throw line they are defending, F-M is the area of their own half from the free throw line they are defending to the middle line, M-F is the area of the opponent's half from the middle line to the free throw line, and F-B is the forward most area of the court from the free throw line defended by the opponents to the opponent's baseline.
- The disposition of the teams at the time of ball transition: this represents the numerical superiority of the attacking team at the transition. Specifically, this is derived from the number of attackers who are further forward than the ball location, and the number of opposing defenders in the same area of the court. This is classed as "superior" if the attacking team has more attackers than opposing defenders in this area, "inferior" if the attacking team has fewer attackers, and "even" if each team has the same

number of players in this area at the time of ball transition.

- The first event performed within the possession: this is classified as a dribble, pass, shot, short dribble followed by a pass, or short dribble followed by a shot.

In addition to these variables, the team in possession, the quarter of the match and game clock time at the start of each possession were also entered.

Reliability

The classification of possession type as fast break or other type of possession had an element of subjectivity requiring a good knowledge of basketball. Therefore, it was necessary for data to be collected by an operator with basketball experience. It was also necessary to demonstrate that the process was reliable using intra- and inter-operator agreement studies. The system was developed using an iterative process of amending the data collection spreadsheet, refining definitions of variables and evaluating reliability. Two operators participated in the reliability study. One of the operators was the lead author of this study, who collected the data for the intra-operator agreement test. Both operators were qualified basketball coaches with at least three years of experience. During the inter-operator agreement study of each version of the system, the operators independently used the system to record match events. The kappa statistic (Cohen, 1960) represented the strength of intra- and inter-operator agreement. This required the possessions recorded during each observation to be matched so that corresponding variables from each observation could be cross-tabulated. Kappa values of 0.6 or greater were interpreted as a good strength of agreement (Altman, 1991).

The first version of the system was not sufficiently reliable for scientific research with many errors resulting from differences in when possessions were deemed to commence. The operators discussed the process and agreed on clearer guidance on when possessions commenced. In the second version of the system, a possession was deemed to commence at the point where a team took control of the ball. There was an improved strength of inter-operator agreement but there were still some variables where intra- and inter-operator agreement were not acceptable with kappa values of less than 0.4. These variables were speed of decision, accuracy of decision, and level of risk in the first action of a possession. These variables were removed from the third version of the system. It was anticipated that the lighter data collection load would result in greater intra- and inter-operator agreement for the remaining variables. The strength of intra-operator agreement was very good for type of possession ($k = 0.891$), start event ($k = 0.849$), first action of the possession ($k = 0.869$), location ($k = 0.919$), and outcome ($k = 1.000$), and good for disposition of the teams ($k = 0.706$). An improved level of inter-operator agreement was also achieved in the third version of the system. Type of possession ($k = 0.826$) and outcome ($k = 1.000$) showed very good inter-operator agreement. Start event of a possession ($k = 0.734$), first action of the possession ($k = 0.715$) and location of the start of a possession ($k = 0.688$) all had a good strength of inter-operator agreement. Disposition of the teams had a moderate strength of inter-operator agreement ($k = 0.424$) and was, therefore, excluded from the study.

Statistical analysis

Shapiro Wilk tests revealed that most frequency and percentage conversion variables were not normally distributed ($p < 0.05$). Therefore, non-parametric tests were applied for all inferential analyses with medians, lower and upper quartiles being used as descriptive statistics. HBL and international matches were compared using Mann Whitney U tests. The threshold for significance was set at $p < 0.05$ for these tests. Within each level of basketball, Wilcoxon tests were used to compare the winning and losing teams within matches. The threshold for significance in these tests was set at $p < 0.025$ to reduce the risk of Type I Error inflation because each variable was tested using two Wilcoxon tests. The threshold for significance was set at $p < 0.017$ when Mann Whitney U tests compared HBL and international matches separately for matches between two top half teams, matches between a top half and bottom half team, and matches between two bottom half teams. Similarly, the threshold for significance was set at $p < 0.008$ when Wilcoxon tests were used to compare winning and losing teams for the six combinations of level and relative quality of the teams.

Results

There were significantly more fast breaks ($p < 0.001$, $d = 0.82$) and other possessions ($p = 0.031$, $d = 0.032$) in HBL matches than international matches. Table 1 shows that there were significantly more fast breaks in HBL matches than international matches when top half teams played each other and when top half teams played against bottom half teams. However, there were no significant differences between HBL and international levels for the number of other possessions when considering matches between teams of different quality.

In HBL basketball, winning teams had significantly more fast breaks ($p = 0.008$, $d = 0.60$) and significantly fewer other possessions ($p = 0.016$, $d = -0.54$) than losing teams. Similarly, winning teams in international matches had significantly more fast breaks ($p = 0.004$, $d = 0.64$) and significantly fewer other possessions ($p < 0.001$, $d = 0.86$) than losing teams. Table 1 shows that there were no significant differences

between winning and losing teams for the number of fast breaks or other possessions for matches between different qualities of team at either level.

Table 1 New. Type of possessions (Lower quartile : Median : Upper quartile).

Possession type	High school basketball (HBL)				International basketball				Level comparisons	
	Winners	Losers	Wilcoxon p	Cohen's d	Winners	Losers	Wilcoxon p	Cohen's d	MWU p	Cohen's d
<u>Top defeats Top</u>										
Fast break	16.5 : 21.5 : 23.5	7.5 : 9.5 : 13.0	0.063	0.91	5.5 : 7.0 : 8.8	3.8 : 5.5 : 6.0	0.182	0.56	0.005	0.92
Other	63.3 : 65.5 : 71.5	72.0 : 75.0 : 78.0	0.090	-0.81	63.3 : 66.0 : 70.8	68.8 : 70.0 : 71.0	0.141	-0.61	0.398	0.29
<u>Top defeats Bottom</u>										
Fast break	10.8 : 17.0 : 21.0	7.0 : 12.5 : 16.0	0.038	0.64	5.0 : 8.0 : 12.0	2.5 : 6.0 : 7.5	0.047	0.54	<0.001	0.82
Other	64.0 : 67.0 : 70.3	67.8 : 70.0 : 76.0	0.073	-0.55	61.5 : 65.0 : 67.5	62.0 : 66.0 : 71.5	0.150	-0.39	0.073	0.36
<u>Bottom defeats Bottom</u>										
Fast break	8.0 : 15.0 : 17.5	6.8 : 10.5 : 16.5	0.833	0.14	4.0 : 9.0 : 14.0	7.0 : 8.0 : 10.0	0.798	0.14	0.150	0.50
Other	61.8 : 67.0 : 72.3	65.3 : 67.0 : 68.8	0.833	-0.14	59.0 : 66.0 : 68.5	62.0 : 65.0 : 68.0	0.734	0.18	0.350	0.33

Teams scored from a significantly greater percentage of fast breaks ($p = 0.030$, $d = 0.32$) and other possessions ($p < 0.001$, $d = 0.82$) in international matches than in HBL matches. Winning teams scored from a significantly greater percentage of fast breaks than losing teams in HBL matches ($p = 0.004$, $d = 0.64$) but not in international matches ($p = 0.246$, $d = 0.24$). Winning teams scored from a significantly greater percentage of other possessions than losing teams in both HBL ($p < 0.001$, $d = 0.86$) and international matches ($p < 0.001$, $d = 0.93$).

Table 2 shows that there was no significant effect of level within matches between different qualities of team. Furthermore, there were no significant difference between winning and losing teams for the percentage of fast breaks that led to scores when matches between different qualities of team were considered separately. However, winning teams scored from a significantly greater percentage of other possessions than losing teams when top half teams played bottom half teams in HBL and international matches. The percentage of other possessions that led to scores was also significantly higher in international matches than HBL matches when top half teams played each other and when top half teams played bottom half teams.

Table 2 New. Outcome of possessions (Lower quartile : Median : Upper quartile).

Possession type	High school basketball (HBL)				International basketball				Level comparisons	
	Winners	Losers	Wilcoxon p	Cohen's d	Winners	Losers	Wilcoxon p	Cohen's d	MWU p	Cohen's d
<u>Top defeats Top</u>										
Fast break	51.8 : 58.6 : 61.9	30.8 : 33.3 : 38.3	0.094	0.81	49.9 : 50.0 : 65.2	45.8 : 55.0 : 66.7	1.000	0.00	0.228	0.42
Other	34.9 : 38.3 : 43.9	26.9 : 30.4 : 34.4	0.156	0.71	45.0 : 47.7 : 49.3	38.5 : 40.1 : 45.6	0.078	0.72	0.003	0.92
<u>Top defeats Bottom</u>										
Fast break	55.3 : 62.5 : 70.9	37.3 : 42.5 : 50.0	0.011	0.71	50.0 : 66.7 : 80.0	37.5 : 58.6 : 66.7	0.237	0.33	0.082	0.35
Other	35.5 : 40.3 : 45.1	27.5 : 30.8 : 35.0	0.001	0.97	43.4 : 50.0 : 55.1	32.5 : 36.4 : 40.2	<0.001	0.97	<0.001	0.78
<u>Bottom defeats Bottom</u>										
Fast break	41.7 : 50.0 : 60.7	43.2 : 50.0 : 54.2	1.000	0.07	43.8 : 50.0 : 72.2	41.0 : 50.0 : 71.0	0.578	0.29	0.445	0.28
Other	33.9 : 36.4 : 38.6	23.8 : 28.0 : 32.7	0.156	0.71	41.6 : 45.8 : 50.2	33.8 : 36.7 : 40.3	0.016	1.00	0.022	0.76

No significant differences were found between HBL and international matches for the percentage of fast breaks initiated in various ways, either across the entire sample ($p \geq 0.082$, $d \leq 0.21$) or when matches were grouped based on the relative quality of the teams ($p \geq 0.036$, $d \leq 0.52$). In HBL matches, losing teams had a significantly higher percentage of fast breaks starting from opposition scores ($p = 0.014$, $d = -0.63$) and inbounds ($p = 0.019$, $d = -0.86$) compared to winning teams.

However, in international matches, there were no significant differences in the percentage of any fast break initiation event ($p \geq 0.107$, $d \leq 0.60$). Table 3 also indicates no significant differences between winning and losing teams for the proportion of fast breaks following any initial event type within HBL or international matches between teams of different quality ($p \geq 0.017$, $d \leq 0.91$).

The percentage of other possessions beginning after opposition scores was significantly higher in international matches than HBL matches ($p < 0.001$, $d = 0.63$). This difference was also significant in games between top and bottom half teams ($p = 0.012$, $d = 0.50$), and in matches involving two bottom-half teams ($p = 0.004$, $d = 0.98$). Conversely, HBL matches showed higher percentages of other possessions starting after steals ($p < 0.001$, $d = 0.53$), inbounds ($p = 0.009$, $d = 0.39$), and other events ($p = 0.016$, $d = 0.36$) than international matches. Similarly, HBL matches between top and bottom half teams had a significantly greater percentage of possessions starting after steals than international matches ($p < 0.001$, $d = 0.68$).

Winning teams initiated a significantly greater proportion of other possessions following rebounds than losing teams in both HBL ($p = 0.002$, $d = 0.67$) and international matches ($p = 0.001$, $d = 0.65$). In contrast, losing teams began a significantly greater proportion of possessions after opposition scores than winning teams in both HBL ($p < 0.001$, $d = -0.86$) and international matches ($p < 0.001$, $d = -0.82$).

Table 3 shows that these significant differences were also present in matches between top and bottom half teams ($p \leq 0.001$, $d \geq 0.84$), but not in matches between either two top half teams ($p \geq 0.156$, $d \leq 0.71$) or two bottom half teams ($p \geq 0.047$, $d \leq 0.86$).

Table 3 New. Events that start possessions (Lower quartile : Median : Upper quartile).

Possession type	High school basketball (HBL)				International basketball				Level comparisons	
	Winners	Losers	Wilcoxon p	Cohen's d	Winners	Losers	Wilcoxon p	Cohen's d	MWU p	Cohen's d
FAST BREAK										
Top defeats Top										
Opposition score	1.1 : 4.4 : 6.2	0.0 : 7.2 : 32.8	0.201	-0.80	0.0 : 0.0 : 0.0	0.0 : 0.0 : 3.6	0.423	-0.67	0.301	0.33
Rebound	34.3 : 37.5 : 43.5	44.7 : 52.8 : 56.7	0.438	-0.43	38.2 : 56.3 : 64.4	18.8 : 30.9 : 41.6	0.250	0.50	0.852	0.08
Steal	46.0 : 50.5 : 60.2	20.5 : 39.5 : 43.3	0.156	0.71	17.8 : 42.1 : 59.4	47.8 : 66.7 : 81.3	0.250	-0.50	1.000	0.00
Inbound	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.321	0.17
Other	0.8 : 3.8 : 6.2	0.0 : 0.0 : 10.7	0.855	-0.20	0.0 : 0.0 : 4.2	0.0 : 0.0 : 0.0	0.371	1.00	0.353	0.29
Top defeats Bottom										
Opposition score	0.0 : 0.0 : 6.1	0.0 : 9.8 : 19.1	0.033	-0.68	0.0 : 0.0 : 3.9	0.0 : 4.6 : 16.1	0.109	-0.56	0.480	0.14
Rebound	27.3 : 39.6 : 50.8	24.4 : 50.0 : 58.5	0.842	-0.07	26.8 : 44.4 : 50.0	27.1 : 46.5 : 65.9	0.343	-0.27	0.817	0.05
Steal	38.9 : 52.8 : 58.7	21.6 : 30.6 : 51.8	0.130	0.44	39.1 : 50.0 : 67.5	14.9 : 33.3 : 48.2	0.039	0.60	0.573	0.12
Inbound	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	-0.91	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	0.433	0.00	0.036	0.36
Other	0.0 : 1.9 : 6.1	0.0 : 0.0 : 0.0	0.080	0.72	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	0.590	0.33	0.197	0.23
Bottom defeats Bottom										
Opposition score	0.0 : 0.4 : 2.5	0.0 : 0.0 : 3.38	0.789	0.33	0.0 : 0.0 : 11.8	0.0 : 0.0 : 10.1	1.000	0.07	0.123	0.52
Rebound	34.3 : 43.8 : 62.5	51.1 : 57.8 : 65.3	0.599	-0.29	11.1 : 37.5 : 55.5	43.8 : 54.5 : 61.2	0.090	-0.75	0.567	0.21
Steal	21.4 : 48.4 : 62.1	27.1 : 37.1 : 47.7	0.563	0.33	20.9 : 50.0 : 83.3	16.1 : 33.3 : 47.8	0.208	0.62	0.945	0.05
Inbound	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	-0.33	0.210	0.29
Other	0.0 : 2.8 : 6.7	0.0 : 0.0 : 6.2	1.000	-0.10	0.0 : 0.0 : 0.0	0.0 : 0.0 : 11.8	0.181	-1.00	0.763	0.12
OTHER										
Top defeats Top										
Opposition score	32.0 : 32.8 : 38.8	40.2 : 44.0 : 51.1	0.156	-0.71	41.3 : 45.2 : 48.6	45.5 : 48.5 : 50.9	0.313	-0.44	0.028	0.73
Rebound	29.0 : 32.7 : 41.3	24.9 : 29.5 : 29.5	0.313	0.52	28.1 : 31.5 : 34.5	24.7 : 27.0 : 32.7	0.641	0.22	0.155	0.48
Steal	4.0 : 8.2 : 10.2	5.2 : 5.8 : 7.1	1.000	-0.05	2.7 : 3.6 : 5.2	1.5 : 3.6 : 5.0	0.742	-0.17	0.038	0.69
Inbound	16.8 : 18.2 : 20.0	14.6 : 18.6 : 21.7	0.563	0.33	12.2 : 14.9 : 18.5	13.0 : 15.4 : 18.5	0.866	0.11	0.332	0.33
Other	3.9 : 4.6 : 4.8	2.7 : 2.9 : 5.5	1.000	-0.05	2.9 : 3.2 : 4.7	2.8 : 3.6 : 4.7	0.461	-0.33	0.399	0.29
Top defeats Bottom										
Opposition score	32.4 : 35.1 : 40.5	43.0 : 47.8 : 50.1	<0.001	-0.96	35.4 : 41.5 : 44.6	45.0 : 50.8 : 59.0	<0.001	-0.87	0.012	0.50
Rebound	30.1 : 33.8 : 36.7	22.4 : 24.6 : 29.9	<0.001	0.97	31.4 : 34.2 : 38.9	19.9 : 27.4 : 31.1	0.001	0.84	0.778	0.06
Steal	4.2 : 4.5 : 4.9	3.8 : 4.5 : 7.1	0.365	-0.33	3.1 : 4.6 : 7.6	2.5 : 3.1 : 6.3	0.049	0.52	<0.001	0.69
Inbound	15.4 : 17.6 : 20.3	15.8 : 17.1 : 20.9	0.959	-0.02	12.8 : 15.8 : 18.9	12.1 : 18.1 : 19.5	0.984	-0.01	0.253	0.23
Other	4.2 : 5.6 : 8.1	2.4 : 4.8 : 6.2	0.059	0.54	3.0 : 3.7 : 5.4	2.1 : 3.1 : 4.3	0.286	0.29	0.043	0.40
Bottom defeats Bottom										
Opposition score	31.9 : 34.0 : 38.1	38.9 : 42.8 : 43.9	0.094	-0.81	38.0 : 40.9 : 43.4	45.2 : 51.7 : 59.1	0.047	-0.86	0.004	0.976
Rebound	26.7 : 30.0 : 36.5	18.3 : 27.5 : 33.9	0.438	0.43	24.9 : 34.7 : 40.1	19.4 : 20.8 : 30.4	0.219	0.57	1.000	0.000
Steal	4.2 : 4.5 : 4.9	3.8 : 4.5 : 6.3	0.365	-0.33	4.9 : 7.0 : 7.6	2.5 : 3.1 : 6.3	0.688	0.21	0.520	0.238
Inbound	20.1 : 26.0 : 27.9	14.0 : 19.8 : 25.6	0.438	0.43	8.1 : 18.4 : 24.9	9.9 : 14.1 : 18.3	1.000	0.00	0.022	0.786
Other	1.9 : 3.4 : 6.0	4.4 : 4.9 : 5.7	0.688	-0.24	1.7 : 3.0 : 6.1	1.7 : 3.0 : 5.7	0.813	0.14	0.220	0.429

There were no significant differences between HBL and international matches for the percentage of fast breaks initiated from different court zones ($p \geq 0.422$, $d \leq 0.12$). Similarly, no significant differences were found between the HBL and international matches for court zones where fast breaks began in games involving teams of differing quality ($p \geq 0.032$, $d \leq 0.37$). In HBL matches, winning teams initiated a significantly higher percentage of fast breaks in the F-B zone ($p = 0.006$, $d = 0.87$) and a significantly lower percentage in the B-F zone ($p = 0.012$, $d = -0.56$) than losing teams. No significant differences were found between winning and losing teams for the start zones of possessions in international matches ($p \geq 0.092$, $d \leq 0.47$). Table 4 also show that when matches were grouped by relative team quality, there were no significant differences in the court zones from which fast breaks began at either HBL ($p \geq 0.063$, $d \leq 1.00$) or international level ($p \geq 0.014$, $d \leq 1.00$).

Similarly, no significant differences were found between HBL and international matches in the zones where other possessions were initiated ($p \geq 0.137$, $d \leq 0.22$), including games involving teams of differing quality ($p \geq 0.227$, $d \leq 0.24$). Within HBL matches, winning teams had a significantly higher percentage of possessions starting in the M-F zone ($p = 0.008$, $d = 0.56$) and a significantly lower percentage in the B-F zone ($p = 0.022$, $d = -0.49$) than losing teams. Table 4 shows these differences were significant in matches between top and bottom half teams but not in games involving two top half teams or two bottom half teams. No significant differences were found between winning and losing teams in international matches for the zones where other possessions began ($p \geq 0.168$, $d \leq 0.42$).

Table 4 New. Location of start of possessions (Lower quartile : Median : Upper quartile).

Possession type	High school basketball (HBL)				International basketball				Level comparisons	
	Winners	Losers	Wilcoxon p	Cohen's d	Winners	Losers	Wilcoxon p	Cohen's d	MWU p	Cohen's d
FAST BREAK										
Top defeats Top										
B-F	50.8 : 55.2 : 61.2	62.5 : 70.7 : 76.2	0.094	-0.81	37.5 : 55.0 : 66.7	41.7 : 58.4 : 73.6	0.742	-0.17	0.698	0.15
F-M	36.6 : 37.5 : 39.4	13.3 : 23.9 : 28.4	0.063	0.91	33.3 : 41.7 : 50.0	0.0 : 18.4 : 41.6	0.261	0.47	0.755	0.13
M-F	1.6 : 6.5 : 11.9	0.0 : 5.0 : 10.8	0.787	0.20	0.0 : 0.0 : 1.7	0.0 : 8.4 : 25.9	0.106	0.87	0.600	0.19
F-B	0.0 : 0.0 : 4.69	0.0 : 0.0 : 0.0	0.371	1.00	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	-0.33	1.000	0.02
Top defeats Bottom										
B-F	39.9 : 49.6 : 57.2	53.4 : 58.5 : 82.6	0.025	-0.63	43.8 : 58.3 : 64.6	50.0 : 64.6 : 85.1	0.122	-0.42	0.679	0.09
F-M	26.3 : 34.0 : 41.1	12.5 : 30.0 : 42.3	0.252	-0.34	16.0 : 25.0 : 40.8	3.6 : 34.8 : 42.9	0.679	-0.13	0.476	0.15
M-F	0.0 : 9.3 : 20.0	0.0 : 6.3 : 12.9	0.162	0.45	6.4 : 12.5 : 25.0	0.0 : 0.0 : 6.8	0.014	0.78	0.572	0.12
F-B	0.0 : 5.0 : 8.5	0.0 : 0.0 : 0.0	0.008	0.96	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	0.789	0.33	0.032	0.37
Bottom defeats Bottom										
B-F	51.8 : 61.9 : 79.2	51.1 : 60.6 : 72.9	1.000	-0.07	41.5 : 50.0 : 63.9	47.8 : 62.5 : 70.8	0.402	-0.43	0.150	0.50
F-M	16.7 : 34.5 : 37.1	13.9 : 23.6 : 31.2	0.688	0.24	18.1 : 33.3 : 38.5	20.9 : 25.0 : 30.3	0.834	0.14	0.836	0.10
M-F	1.4 : 6.4 : 11.2	4.8 : 11.1 : 16.7	0.178	-0.73	0.5 : 5.6 : 11.1	0.0 : 16.7 : 20.2	0.675	-0.25	0.566	0.21
F-B	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.8 : 3.3 : 11.8	0.0 : 0.0 : 0.0	0.100	1.00	0.130	0.50
OTHER										
Top defeats Top										
B-F	68.8 : 70.8 : 74.9	69.0 : 75.2 : 78.2	0.563	-0.33	64.7 : 66.9 : 68.6	66.6 : 72.3 : 74.1	0.023	-0.89	0.345	0.33
F-M	19.5 : 23.2 : 26.7	14.7 : 22.8 : 27.8	0.438	0.43	25.7 : 32.8 : 33.6	21.9 : 23.0 : 26.1	0.195	0.56	0.282	0.38
M-F	3.1 : 3.4 : 4.0	2.9 : 4.0 : 4.4	1.000	0.05	1.1 : 1.6 : 3.9	2.5 : 3.6 : 5.1	0.844	-0.11	0.796	0.10
F-B	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	-0.33	0.0 : 0.0 : 0.4	0.0 : 0.0 : 0.0	0.371	1.00	0.808	0.08
Top defeats Bottom										
B-F	63.0 : 68.7 : 74.1	72.2 : 77.8 : 81.2	0.003	-0.79	62.5 : 72.2 : 75.0	63.5 : 73.8 : 76.2	0.651	-0.13	0.289	0.21
F-M	20.7 : 25.0 : 30.4	15.5 : 18.0 : 24.7	0.034	0.60	21.5 : 23.9 : 30.5	19.7 : 26.2 : 28.9	0.768	0.08	0.227	0.34
M-F	3.8 : 5.7 : 7.1	1.6 : 3.0 : 4.6	0.001	0.87	2.9 : 4.6 : 6.4	1.7 : 3.0 : 7.9	0.441	0.21	0.830	0.05
F-B	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	-0.07	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	0.281	0.60	1.000	0.00
Bottom defeats Bottom										
B-F	70.0 : 74.5 : 78.9	71.1 : 73.3 : 74.2	0.313	0.52	61.5 : 71.4 : 76.0	64.6 : 76.8 : 77.8	0.688	-0.21	0.731	0.14
F-M	18.8 : 21.9 : 25.7	22.3 : 23.1 : 25.1	0.563	-0.33	17.9 : 20.4 : 30.3	17.9 : 20.8 : 28.3	0.813	0.14	0.731	0.14
M-F	2.0 : 2.7 : 3.8	1.4 : 2.3 : 4.6	1.000	-0.05	3.5 : 5.9 : 11.1	1.9 : 2.8 : 6.6	0.688	0.21	0.099	0.57
F-B	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.0 : 0.0 : 0.0	0.0 : 0.0 : 1.4	0.854	-0.20	0.139	0.45

There were no significant differences between HBL and international matches for the percentage of fast breaks that began with any type of first action ($p \geq 0.073$, $d \leq 0.27$). Similarly, no significant differences were found between HBL and international matches for first actions of fast breaks in games involving teams of varying quality ($p \geq 0.220$, $d \leq 0.42$). In HBL matches, winning teams began fast breaks with a shot significantly more than losing teams ($p = 0.014$, $d = 1.00$). However, losing teams started significantly more fast breaks with a dribble ($p = 0.022$, $d = -0.49$). At the international level, there were no significant differences between winning and losing teams for the first action of fast breaks ($p \geq 0.061$, $|d| \leq 0.39$). Table 5 shows that when matches were grouped by relative quality of teams, there were no significant differences in the first action of fast breaks between winning and losing teams in either HBL ($p \geq 0.058$, $|d| \leq 1.00$) or international matches ($p \geq 0.156$, $|d| \leq 0.67$). Dribbling was used as the first action of a significantly higher percentage of other possessions in international matches than in HBL matches ($p < 0.001$, $d = 0.63$). However, passes ($p = 0.004$, $d = 0.43$) and short dribbles followed by a pass ($p < 0.001$, $d = 0.63$) were more common as the first action in of other possessions in HBL than international matches. These differences were also found in matches between top and bottom half teams ($p \leq 0.009$, $d \geq 0.52$). Furthermore, in HBL matches between two bottom half teams, short dribble followed by a pass occurred more frequently than in equivalent international matches ($p = 0.005$, $d = 0.95$). Within HBL matches, winning teams used a short dribble followed by a pass as the first action of other possessions significantly less than losing teams ($p = 0.013$, $d = -0.54$). At the international level, there were no significant differences between winning and losing teams for the first action of other possessions ($p \geq 0.272$, $|d| \leq 0.60$). Table 5 also shows no significant differences for the type of first action between winning and losing teams when matches were grouped by team quality in either HBL ($p \geq 0.031$, $|d| \leq 1.00$) or international matches ($p \geq 0.156$, $|d| \leq 1.00$).

Table 5 New. First action of the possessions (Lower quartile : Median : Upper quartile).

Possession type	High school basketball (HBL)				International basketball				Level comparisons	
	Winners	Losers	Wilcoxonp	Cohen's d	Winners	Losers	Wilcoxonp	Cohen's d	NWUp	Cohen's d
FAST BREAK										
<u>Top defeats Top</u>										
Dribble	31.6 : 47.6 : 57.4	45.8 : 53.5 : 59.3	0.563	-0.33	37.2 : 48.3 : 68.8	48.2 : 63.4 : 87.5	0.529	-0.33	0.518	0.23
Pass	40.2 : 43.9 : 47.4	31.5 : 40.0 : 51.7	0.787	0.20	22.9 : 31.3 : 46.6	0.0 : 30.9 : 42.5	0.156	0.64	0.220	0.42
Shot	0.0 : 0.0 : 2.3	0.0 : 0.0 : 0.0	0.371	1.00	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.530	0.17
Short dribble and pass	5.8 : 13.0 : 22.0	0.0 : 2.8 : 8.9	0.313	0.52	0.0 : 14.6 : 19.9	0.0 : 0.0 : 4.2	0.352	-0.43	0.560	0.21
Short dribble and shot	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	1.000	0.00
<u>Top defeats Bottom</u>										
Dribble	39.5 : 44.4 : 47.4	39.2 : 59.0 : 69.1	0.117	-0.46	40.0 : 50.0 : 58.3	38.9 : 50.0 : 71.2	0.632	-0.13	0.380	0.18
Pass	34.3 : 38.8 : 46.9	26.5 : 32.3 : 48	0.562	0.18	25.0 : 33.3 : 43.9	14.3 : 31.6 : 48.2	0.368	0.25	0.304	0.21
Shot	0.0 : 0.0 : 4.2	0.0 : 0.0 : 0.0	0.058	1.00	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	0.423	0.67	0.485	0.11
Short dribble and pass	6.39 : 10.8 : 16.8	0.0 : 6.3 : 12.9	0.222	0.37	0.0 : 11.1 : 19.4	0.0 : 7.2 : 16.7	0.798	-0.08	0.690	0.08
Short dribble and shot	0.0 : 0.0 : 4.9	0.0 : 0.0 : 0.0	0.673	0.21	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	0.361	0.60	0.398	0.14
<u>Bottom defeats Bottom</u>										
Dribble	33.3 : 41.7 : 50.0	41.1 : 43.0 : 67.3	0.063	-0.91	41.7 : 50.0 : 59.0	50.0 : 54.5 : 64.6	0.529	-0.33	0.628	0.19
Pass	40.3 : 47.2 : 50.0	29.0 : 41.3 : 43.7	0.106	0.87	32.3 : 50.0 : 50.0	20.9 : 25.0 : 32.4	0.156	0.64	0.391	0.31
Shot	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	1.00	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.355	0.17
Short dribble and pass	5.7 : 11.5 : 16.7	2.8 : 13.9 : 17.8	0.438	0.43	0.0 : 0.0 : 9.7	8.4 : 16.7 : 23.6	0.352	-0.43	1.000	0.02
Short dribble and shot	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.0 : 0.0 : 3.1	0.0 : 0.0 : 4.6	1.000	0.00	0.101	0.43
OTHER										
<u>Top defeats Top</u>										
Dribble	58.3 : 63.3 : 65.2	39.5 : 41.5 : 45.0	0.313	0.52	63.8 : 68.6 : 77.2	59.4 : 70.6 : 74.5	0.742	0.16	0.029	0.71
Pass	30.4 : 34.7 : 40.5	19.0 : 26.0 : 35.3	1.000	0.05	22.5 : 27.0 : 28.6	23.3 : 27.3 : 35.7	0.461	-0.33	0.033	0.71
Shot	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.470	0.13
Short dribble and pass	1.4 : 1.6 : 1.8	3.0 : 3.5 : 8.5	0.031	-1.00	1.1 : 2.4 : 5.2	1.6 : 2.8 : 4.7	1.000	-0.05	0.518	0.23
Short dribble and shot	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.312	0.17
<u>Top defeats Bottom</u>										
Dribble	56.6 : 61.3 : 65.4	50.6 : 55.5 : 65.3	0.495	0.21	65.9 : 68.5 : 72.8	66.7 : 71.2 : 76.8	0.182	-0.36	<0.001	0.76
Pass	27.9 : 32.1 : 37.6	26.8 : 35.1 : 45.2	0.940	0.03	25.2 : 27.8 : 30.8	19.6 : 26.6 : 29.4	0.220	0.33	0.009	0.52
Shot	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	0.174	-1.00	0.453	0.09
Short dribble and pass	3.9 : 5.3 : 7.3	4.3 : 4.8 : 10.9	0.049	-0.57	1.5 : 2.8 : 3.5	1.5 : 3.0 : 4.9	0.897	0.04	<0.001	0.70
Short dribble and shot	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.934	0.01
<u>Bottom defeats Bottom</u>										
Dribble	55.8 : 62.0 : 64.7	52.4 : 59.8 : 68.1	0.833	-0.14	62.0 : 65.1 : 68.8	66.7 : 67.2 : 75.2	0.156	-0.64	0.445	0.29
Pass	29.2 : 31.1 : 34.1	25.0 : 34.3 : 38.0	0.563	0.33	25.9 : 31.0 : 32.5	22.8 : 31.0 : 32.3	0.469	0.36	0.945	0.05
Shot	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	1.000	0.02
Short dribble and pass	4.8 : 5.2 : 9.3	4.7 : 6.9 : 11.2	0.688	0.24	2.2 : 3.2 : 5.3	0.0 : 0.0 : 1.5	0.156	0.64	0.005	0.95
Short dribble and shot	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.0 : 0.0 : 0.0	0.0 : 0.0 : 0.0	1.000	0.00	0.440	0.14

Discussion

The purpose of the current investigation was to compare girls' high school basketball in Taiwan with women's international basketball. This has generated knowledge about the following areas of female basketball performance that will be discussed. Firstly, there are differences between high school and international levels. Secondly, there are areas of performance that distinguish winning and losing teams within both levels. Thirdly, there are areas of performance that distinguish winning and losing performances at one level but not the other. Finally, the effect of team and opposition quality are discussed.

Significantly more possessions resulted in scores at international level than high school level; this was the case for both fast breaks and other possessions. However, a similarity between high school and international level was that a higher percentage of fast breaks led to scores than other possessions. Basketball coaches recognize that it is important to consider long term player development when coaching at junior levels (Collet et al., 2019). Given that fast breaks are a more productive way of gaining points than other possessions in senior

international women's basketball, the greater use of fast breaks at high school level may be beneficial to long-term player development.

Possession changes were more frequent in high school basketball than international basketball which decreases the percentage of possessions leading to scores. The significantly lower scoring rate from other possessions in high school basketball presents a dilemma about the type of offence to be used. In NBA basketball, stronger teams use an "outside" offence while weaker teams tend to use an inside offence (Gou & Zhang, 2022). Long term development requires young players to use some offensive tactics that are relevant to the senior game even if these may not be as successful as alternative tactics during junior levels. On the other hand, players need to develop the ability to make tactical decisions based on the relative advantages and disadvantages of options that are open to them. This can result in players using tactical options that are more successful for junior players. There was a difference between high school and international matches for the events preceding other possessions. This is associated with the greater ability of international teams to score from other possessions observed in the current study. By contrast, a significantly greater percentage of other possessions commenced after steals, inbounds and other events at high school level. Previous research has found that steals are important in junior boys' basketball (Dezman et al., 2002). Man-to-man defending in the half court area helps teams take more steals (Oliver, 2004). The current study suggests that players need to reduce the number of steals taken by opponents as players progress to higher levels of basketball.

There was also a difference between high school and international levels for the first action taken during other possessions. International teams dribbled the ball as the first action of a significantly higher percentage of these possessions than high school teams. However, high school teams passed the ball or took a short dribble followed by a pass as the first action of a significantly greater percentage of these possessions than international teams. This contradicts previous research that has suggested better teams pass more and dribble less during ball possessions (Stavropoulos & Foundalis, 2005). This difference may be explained by the different methods used in the two studies; The current study restricted dribbles to those occurring as the first action of possessions and counted shorter dribbles followed by shots or passes as separate actions. Closer inspection of Table 5 shows that the percentage of other possessions commencing with a dribble or a pass is higher in international basketball than high school basketball; this was the case irrespective of the relative quality of the teams. The lower variety of first actions of other possessions in international matches contradicts previous research that suggests higher skilled teams play unpredictably to defeat defenders (Hobbs et al., 2018).

The second area of discussion is the significant differences between winning and losing teams that were found in both high school and international matches. Winning teams had significantly more fast breaks than losing teams and fewer other possessions than losing teams. These findings are consistent with previous research which has found that higher performing teams in six top European basketball leagues have a higher scoring efficiency (Alonso-Pérez-Chao et al., 2025). Winning teams, at both levels, commenced a significantly greater percentage of other possessions after rebounds and a significantly lower percentage of other possessions after opposition scores than losing teams. Some unsuccessful possessions for losing teams may involve missed shots and defensive rebounds for the eventual winning teams. Previous research into Eurobasket performances has found that winning teams make significantly more defensive rebounds than losing teams (Csatáljay et al., 2009). Teams may reduce the number of defensive rebounds their opponents take by having a better shooting rate and by taking more offensive rebound opportunities. If more offensive players participate in rebounding, they can increase the chance of an offensive rebound by boxing out defenders (Csatáljay et al., 2017).

The third area of discussion concentrates on variables that distinguish winning and losing teams at one level but not the other. All such significant differences were found in high school basketball but not at international level. Winning teams scored from a significantly greater percentage of fast breaks than losing teams in high school basketball (59.6% v 41.5%), but this was not significant at international level. This may reflect a greater range in ability at high school level than at international level where all players need to be sufficiently skilled to be selected. The teams that eventually win high school games may be encouraged to make more fast breaks than losing teams by their higher scoring rate from fast breaks. This greater number of fast breaks by winning teams agrees with previous research into under 16 boys' basketball (Ortega et al., 2007).

A significantly greater percentage of fast breaks occurred after inbounds and opposition scores for losing teams than winning teams in high school matches. The winning teams in high school matches may celebrate scores more than their international counterparts. This may result in the eventual losing teams taking advantage of a lapse in defensive focus by the eventual winning teams in order to commence a fast break. The greater percentage of fast breaks commencing with inbounds for losing teams in high school matches may result from the eventual winning teams opting to commit fouls to interrupt opponents' possessions.

The court zones where possessions commenced differed between winning and losing teams in high school matches. During fast breaks and other possessions, losing teams commenced a significantly greater percentage of possessions in the defensive-most zone (B-F). This reflects winning teams' greater ability to take the ball closer to the basket (Gómez Ruano et al., 2008). Winning teams started a significantly greater percentage of fast breaks in the F-B zone and a significantly greater percentage of other possessions in the M-F zone; both of these zones are in the opposition's half of the court. This may be explained by losing teams losing the ball in

their own half of the court. Previous research supports the idea of attacking behaviour being influenced by the action of opposing defenders (Cordovil et al., 2009; Sampaio et al., 2016; Esteves et al.; 2021).

The first actions of fast breaks in high school basketball significantly differed between winning and losing teams with winning teams taking shots as the first action in a significantly greater percentage of fast breaks than losing teams. Practitioners would typically advise using a fast break opportunity to rapidly move towards a better shooting location before taking a shot. Indeed, previous research into fast breaks does not include shooting as an initial action (Cárdenas et al., 2015; Conte et al., 2017). Another explanation for taking a shot as the first action when there is a fast break opportunity may be the context of the situation. For instance, a shot may be the best tactical option late in the game depending on the score. Such decision making ability is important in high pressure situations in basketball (Gutiérrez-Santiago et al., 2011). Losing teams dribbled the ball as the first action of a significantly higher percentage of fast breaks than winning teams in high school matches. This may be due to players at this level not recognizing passing opportunities when they receive the ball. Visual gaze can help female basketball players make quicker decisions due to having greater information about momentary situations (van Maarseveen et al., 2017).

The final part of the discussion is about the relative qualities of the teams within matches. Within high school and international levels, there are matches between top half and bottom half teams as well as matches between teams of similar quality. The findings that high school matches involve significantly more fast breaks than international matches and that international teams score from a significantly greater percentage of other possessions than high school teams were also found in matches between two top half teams and matches between top half and bottom half teams but not in matches between two bottom half teams. It should be noted however that there were still moderate effect sizes for playing level effect in matches between two bottom half teams despite this not being significant.

Within both high school and international levels, winning teams scored from a significantly greater percentage of other possessions than losing teams in matches between top and bottom half teams but not in matches between teams of similar quality. Analyzing team and opposition quality did not result in any changes in the direction of differences for the whole sample of 62 matches. This agrees with previous basketball research addressing relative quality of teams (Canuto and Almeida, 2022).

Tables 3 to 5 show that all of the significant differences for start event, start location and first action of possessions within different types of match are for other possessions and not for fast breaks. These tables also show that the majority of these differences are in matches between top half and bottom half teams. The lack of difference in matches between teams of similar quality may be due to the broad groupings of teams within each competition. The only other significant differences persisting in different types of match were within matches between two bottom half teams where there were two significant differences between high school and international games. Firstly, a significantly greater percentage of other possessions commenced after opposition scores in international matches than in high school matches. Secondly, a short dribble followed by a pass was the first action of a significantly greater percentage of other possessions in high school matches than in international matches. These differences were consistent with findings derived from the full sample of matches.

There are limitations to the current investigation, for example decision making variables and relative team disposition at the start of possessions were excluded due to insufficient reliability. Experimental research has demonstrated the importance of decision making in basketball (Rösch et al. 2021). Therefore, decision making during basketball performance is a priority area for future research. A further limitation was that variables were restricted to activity at the start of possessions and the outcome of possessions. There are other important variables within possessions that may distinguish high school and international basketball such as pre-shot activity (Bustamante-Sánchez et al., 2022; 2024; Patterson et al., 2024).

Conclusions

In conclusion, the current research has found that there were more fast breaks in female high school basketball than women's international basketball, but that the conversion rate of fast breaks and other possessions was lower in high school basketball. A greater number of other possessions commenced with steals in high school basketball than in international matches. Other significant differences between the two levels were for start event of possessions, location of the start of possessions and first action within possessions. Some of these variables also distinguished between winning and losing performances. The findings contribute to theoretical knowledge about the effect of situational variables on sports performance. Level of competition, team and opposition quality all influence basketball performance. These findings also have practical application in basketball preparation. These results may be useful to coaches of girls' high school teams to understand areas requiring improvement as players progress towards senior levels of the game.

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