

Four Rs for tactical awareness: Applying game performance assessment in net/wall games

Introduction

This article will explain how a teaching games for understanding approach advocated by Thorpe, Bunker, & Almond (1986) has led to the development of a tactical framework and player decision-making model for teaching net/wall games. Drawing on Hopper (1998) work on the “principles of play,” positioning for consistency, placement and spin/power, and the tactical awareness components space, force and time developed by Hopper & Bell (2000), this paper will suggest how students can be taught to read game play and make more sophisticated tactical decisions based on the four R elements of READ, RESPOND, REACT and RECOVER. The paper will suggest how Griffin, Mitchell, & Oslin's (1997) game performance assessment inventory (GPAI) can be adapted to suit the demands of providing authentic assessment for net/wall games. Sample recording sheets, with student comments, will be presented to show how students can learn to assess game performance as they learn to play games with more tactical awareness.

Backdrop to games teaching

A key premise of the article is that learners of a game need tactical awareness about what to do in the play of a game in order to learn how to perform the skills of the game. As noted by Griffin et. al., (1997), “the aim of a tactical approach is to improve students’ game performance, which involves combining tactical awareness and skill execution.” (p. 8). Such tactical awareness for game performance is indicated by players learning how to move off-the-ball in order to select and execute an appropriate on-the-ball skill. The difficulty in teaching games is enabling learners to respond to the play of a game, a game form for which they have the pre-requisite skills to play.

In this paper I will focus on the net/wall games category, however many of the concepts developed here will apply to the other game categories suggested by Ellis (1983) and Werner, Thorpe and Bunker (1996). To help students learn to play games I suggest the following conditions:

1. Rules are to facilitate game play. In other words, adult rules of games should only be used with students if they help the students play the game better.
2. The rules and structure of the game should be adjusted by the players to make the outcome of the game uncertain. If a game is played and the score is one-sided the players are given the task of changing the game so that in the subsequent game the losing player, using appropriate tactics, would have a chance of winning.
3. If a game does not work, either the game rules/structure should be modified, type of skill being use modified (i.e., catch instead of volley in tennis) or the skills that enable the players to play the game should be practiced.

These conditions create the potential context from which students can experience play as a phenomenon that takes them outside of the seriousness of life, into a serious/not serious play world where the outcome of the game is uncertain and there is an infinite potential for to and fro within finite play space (Hopper, 1996). To realize play, students need to learn

how to modify the complexity of the game to make it playable, and students need to be taught how to make decisions that cause the game to be played.

Modifying complexity and game play progression

A game form refers to a game based on the primary rules or aim of the game. As succinctly stated by Griffin et al., (1997) for net/wall games the primary rule is to “propel the object into the *play* space so that the opponent is unable to make a return” (italic added). With this aim in mind a game should be developed that learners can play and modify based on their abilities. To do this learners need to be taught how the complexity of a game can be simplified or extended using the factors, (1) area of play, (2) number of players, (3) equipment, (4) object, and (5) rules, conditions and tactical problems (Siedentop & Tannehill, 2000). In addition, game players should be given a choice of how to play the game. I offer three levels of game play:

1. Play to co-operate. In this game form players play the game to keep the ball going and get a feel for the play area, equipment, ball and rules. Co-operative play allows players to adjust the game form to suit their individual abilities. For example, a less skilled player could have a smaller area to guard compared to a more skilled player.
2. Play to compete. In this game form players play to challenge each other but not to win points. Typically the game form has been agreed upon through co-operative play and now the players send the ball to the spaces making their respective opponent move more vigorously.
3. Play to score. In this game form the players agree on a scoring system and how to start, restart and win a game. They then play trying to win the game based on the scoring system and previously develop game rules. Typically the game can be played to find a winner. If the score is not close, the game can be played again with the players agreeing on how to adjust the play area or conditions of play in order to make the score closer.

Teaching Game performance: The 4 R model

From the backdrop of modifying complexity and three levels of game play students can be taught how to read the play of a game. Reading a game is a complex process even when the game structures and rules are simplified. To understand this complexity and in consultation with Smith (2000) I have developed the 4 R's model shown in Figure 1. The model creates a framework that enables students to learn how to scan a game to read appropriate cues to then take action. The model indicates the following process:

1. When a point starts, players have to READ the situation to decide where they should locate themselves within the play area.
2. As players learn to recognize cues they RESPOND with the appropriate movement to relocate themselves to select the appropriate on-the-ball skill for the situation.
3. As the ball enters the player's play area, the player REACTs to the force, spin and direction of the ball adjusting to execute the appropriate on-the-ball skill.
4. After skill execution the player RECOVERs with the appropriate off-the-ball movement to set up for the READ phase once again.

Insert Figure 1: Anatomy of a game performance about here

The model offers a framework that teachers can use to help develop a schema for game play that learners can progressively develop as they become more tactically aware and physically skilful. The following example will combine Hopper's (1998) principles of play for net/wall games (i.e., positioning for consistency and placement) with tactical awareness components of space (where to go and where to send ball), force (how to apply, how much,

how direct) and time (when increased, when reduced) to show how the 4 R's model structures learners' ability to be effective game performers.

Castle game to Area defend game: Net/wall lead-ups

In Hopper and Bell (2000) the Castle game was described in detail and was used as a lead-up game that can progress toward tennis. For this paper I will use the same game but show how it could progress towards volleyball. To develop consistency before playing the Castle game students should be given the introductory task of tossing the ball up above their heads (height for time) to hit a small target on the floor then catching the ball after it bounces to immediately send again. Positioning for consistency can be taught by getting the students to move to the other side of the target before the ball bounces, turning to face the target so that they set-up to toss again. The ability of students to "Read" where their own toss will go and "Respond" with suitable movement is the first application of the 4 R's model. The read/respond elements elicit side-stepping movements that get children learning to move laterally with a push-off action of the outside foot. This anticipatory movement to the expected bounce of the ball creates time for students to "React" to the ball with the appropriate catching or striking skill, then "Recover" with lateral movement to "Read" and continue the cycle. Key tactical ideas for the students to realize is that the higher they send the ball the more time they have to re-locate to the bounce of the ball, and that they need to regulate the amount of force they apply on the ball and where they apply force on the ball to control the ball's flight path, distance and direction.

After appropriate refinements for practicing movement skill and catching/sending skills the students can be put in pairs to play the Castle game. The aim of the Castle game is to get a tossed or struck ball to hit a cone (the castle) as shown in Figure 2 in order to score a point. To initially play the game, three rules are needed: (1) the ball must be sent up above head height; (2) the ball must bounce once between hits (if cone not hit); and (3) the ball must be sent alternately. The students can decide how to start and re-start the game, what happens when the castle is hit and what happens when any of the three rules are broken. With young children (8 years of age) it is usually best to start with a toss/catch sending method. However, as students progress, the skill of catch then self-toss to strike with a forehand or overhead pass can be used, then gradually students can learn to strike with no catch when ready.

Insert Figure 2: Castle game being played in a badminton court about here

When playing the Castle game students have a tendency to send the ball then stand and watch their partners receive and send the ball. To address this lack of movement the following tactical awareness questions can be asked: "Where should you go after you have sent a ball?" The question stimulates the students to "Read" the situation. The question focuses the learners on considering their "Recover" positioning after they send the ball based on where their ball is going and where their partner will send the ball. As teachers we want players to understand that they should go opposite their partners, in line with the target, then adjust as their opponents send the ball. In Figure 2 it can be seen that the green player (top left of court) has not learned how to "Read" the situation and "Respond" by relocating behind the cone opposite his opponent's target area, however the blue players (bottom right) have learned to create this positioning relationship with the receiving player positioned behind the anticipated target for the sent ball before her partner has sent the ball. Often students, who have learned to recover to a suitable base position, and then adjust as their opponent sends the ball, need practice on how to use the time they have created. It is at this point where students are most receptive to learning the appropriate on-the-ball skill. Cues like "wide base", "flat surface area" to strike the ball

and “let the ball drop” are often needed to be practiced in drill-like activities, and in time more specific cues associated with hip direction and hand positions will be needed. Learning to “React” appropriately to the ball leads to more meaningful skill practice because when students return to the Castle game they will create the situation where they are maximizing their chances to succeed.

The Castle game focuses upon positioning for consistency. In reality the players do not hit the castle too often (small target) but in trying they keep the ball going resulting in lots of player movement off the ball. In Fig 3 the “Keep-Up” game played in a quarter of a badminton court (quadrant) focuses upon ball placement and player positioning. The aim of the “Keep-up” game is to get the tossed or stuck ball to land in the badminton quadrant more often than the opponent. To play the game the following rules are needed: (1) the ball must be sent above head height; (2) the player must briefly step outside the quadrant after the ball is sent; and (3) the ball must be sent alternately. Rule (2) is used to get students moving out of the way of their opponent and to get them thinking about seeing and then covering space where opponent will send the ball. If players are catching then sending a ball at “hot potato” rule may be added (ball must be sent as soon as caught) to prevent holding onto the ball and faking.

Insert Figure 3: Keep-up game in a badminton quadrant about here

The keep-up game can initially be introduced with a one bounce rule or with players allowed to catch then toss the ball. Players can have different conditions based on their ability, because the condition is that the game score must be close. One player could be allowed to catch the ball the other is not, or one player could be allowed to let the ball bounce while the other is not. If a no-bounce rule is used then initially a lighter, slower flying ball is suggested to give students time to locate and use the space. In Fig 3 the blue players are playing with a one-bounce rule, whereas the green players are playing with no-bounce. In the green game the positioning becomes more focused within the quadrant whereas in the blue game the positioning is more around the outside of the quadrant space to reflect the bounce path of the ball.

As with the Castle game, key questions to ask students are, “Where should you send the ball?”, and “Where should you go after stepping outside the quadrant?” With more space to cover and attack these questions get students thinking about hitting the ball towards the spaces and off-the-ball movement to cover the largest space available to their opponents. As with the Castle game students need to “Recover” quickly to relocate themselves within the space to be attacked as well as “Read” where their opponents will most likely hit the ball. As they read they “Respond” to the body language of their opponents before they “React” to their opponent’s shot, to then “Recover” once again. Two other key ideas include applying enough force to get the ball above the player’s head accurately towards an area of the court, and creating time for his/her own recovery and set-up for the next shot. If a player learns to vary the height of the ball this can disrupt the opponent’s play. Also, trying to keep the ball low will reduce the opponent’s time to respond but is risky based on the above-head rule. The intent of sending the ball, with control, to open spaces leads to a perceived need for how to be accurate and in control with the sending skill, thus skill practice becomes meaningful.

In two quadrants a game of 2 on 2 can be developed with the additional rule of three touches for each team. This game structure leads to players learning to “Read” where their partner is located and where the opposition are located. Then they “Respond” with cover movements made to adapt to both partner’s and opponents’ positions and ball placement. In time this game can be develop to a 2 v 2 game over an area of play divided into

quadrants by a space where the ball cannot go or over a net. To focus on rallying the ball into a space and working as a team I avoid allowing players to hit down until they can keep the ball going in four or more exchanges across the divide. The serve rule can gradually be developed. As spike and smash skills are integrated into the game the net becomes an important feature of the game and more refined skills are needed with the principle of positioning for spin/power developed from the consistency and placement foundation (Hopper and Bell, 2000).

Net/Wall game performance assessment based on the 4 R's

Drawing on Griffin's et al., (1997) game performance assessment instrument (GPAI) the final section of this paper will show how assessment can enable students to cement their understanding of the 4 Rs. The GPAI is based on authentic assessment principles, in that it assesses all components of game performance rather than just one or two. Authentic assessment of game performance means observing what players do off the ball as well as on-the-ball. Griffin et al., (1997) developed seven components for the GPAI. These components work very well for invasion and fielding/run-scoring games. For net/wall games I have adapted six of the components to reflect the 4Rs model as shown in Figure 4. The challenge in assessing tactical play in net/wall games is that the rapid exchange of shots means that there is little time to make an assessment before the next shot has to be assessed. Only in volleyball with the increased number of players and three touches for each team is there time to make an assessment as advocated by Griffin et al. (1997).

Insert Figure 4: Six components adapted from Griffin et al. (1997) GPAI about here

The adapted GPAI assesses how learners apply the 4R's model, and creates a record of how learners develop their personal game performances. In Figure 5 the 4 R's model has been adapted to include the GPAI components. Until players are taught in teams the support criteria will not be used. The GPAI criteria complements the 4 R's model creating a means of assessing tactical awareness and reinforcing the learning of game performance.

Insert Figure 5: Four R's model indicating the link to the GPAI criteria about here

I have piloted the GPAI in badminton, tennis and beach volleyball classes for adolescent children and adults. The level of writing skills needed should make the system adaptable to younger children, however I recommend that assessment should build with one component done at a time, building to all six being done near the end of a unit of instruction. The students work in pairs, one assessing the other. Figure 6 shows the rating criteria I use to introduce the idea of assessing individual components of game performance. In Figure 7 there are two levels of the GPAI sheets. Level I focuses on watching a whole point then assessing using the rating scheme in Fig 6 (more suitable for first time users and novice players). Level II focuses on rating each shot in the rally. The totals in Level II represent a percentage score of appropriate action ("√") divided by the sum of inappropriate action ("X) plus appropriate action ("√"), then multiplied 100%. Level II assessment requires that the game being played needs to be more like the adult version of the game with longer intervals of time between shots. In both levels I and II a batching system of assessment is used where generally only one component is focused upon at one time. Adjust and skill execution are so close together when playing a point that it is usually possible to do both at the same time.

Insert Figure 6: Skill execution criteria and game performance criteria... about here

Insert Figure 7: Sample GPAI forms for Net/Wall games about here

By assessing their peers I have found that students learn to appreciate the 4 R's and realize how to improve their own game play as they give informed feedback to their peers.

As indicated by the recording sheets the batching method of assessing allows students to assess each component in sets of three for level I and sets of five for level II. The shaded areas indicate the preferred order to assess. After each batch the assessor gives feedback to the player based on what they have recorded. If the player is able to get over half marks (3 out of 5 on rating scheme or above 50% on the percentage score) then the assessor moves on to the next component, otherwise after feedback the assessor repeats the same component in the next lighter shaded area and so on. Some form of practice or game modification may be needed to help the player achieve this success.

Students report new insights on their game play from using the adapted GPAI with the 4 R's model. The following selected extracts from student's learning logs reflect these insights:

About GPAI assessment process

- "It's a learning environment for both the player and coder, it also prepares you to become a better coach or teacher."
- "Students realise that they are evaluated not in comparison to others, but rather in terms of individual improvement and not just skill performance."

Learning about Base

- "As a beginner I was unaware of my poor base. As soon as Kevin pointed it out there was an immediate improvement."
- "Since the first GPAI feedback session I can hear my coder reminding me to establish a good base by moving back and to the middle, allowing me to select more shots."

Learning Decisions Making

- "Before this class I never read the opponent's response to my hit; I would just react. By figuring out whether the opponent is hitting forward or on their back foot I can stay at the baseline or move forward. This is making the game a lot easier and I'm winning a lot more points."

Learning to Cover and Adjust

- My coder pointed out that I read where the ball is going but I do not react quickly enough to be in a good position to make a high percentage shot...he suggested a split-step movement...I will apply his suggestion.
- Reviewing my GPAI form I was relieved to see that my base and decision-making were excellent...my game falls apart in the cover, adjust and skill execution portions. The reason is due to "split-stepping" being a new idea to me.

Conclusion

The 4 R's model creates a framework for students to grasp the tactical complexity of playing net/wall games. The model can also be applied to other game categories with a focus on READ and RESPOND elements until the ball is in the players area of play. The GPAI works well to reinforce and diagnose tactical play that creates a foundation for skill practice. In my experience students become more focused on improving skills when they can play a game. The challenge for the teacher is to create games that students can play, then teach students to play with tactical intelligence as they learn to modify games to make play happen. It should not be the most skilful player that always wins a game. When the rules and structure of the game have been modified to make the result uncertain, the player that plays with the most tactical awareness should win the game.

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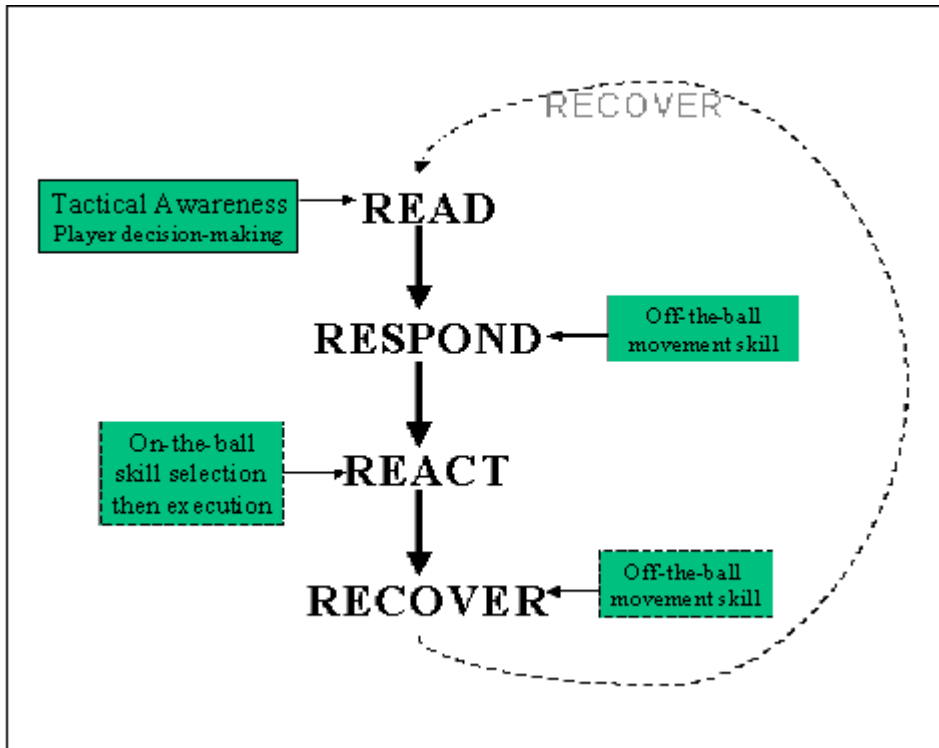


Figure 1: Anatomy of a game performance

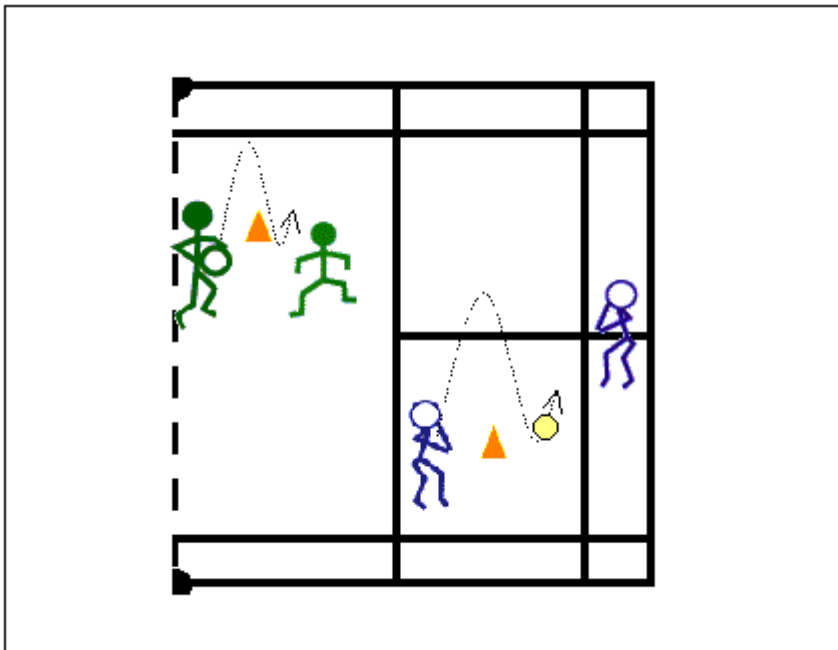


Figure 2: Castle game being played in a badminton court.

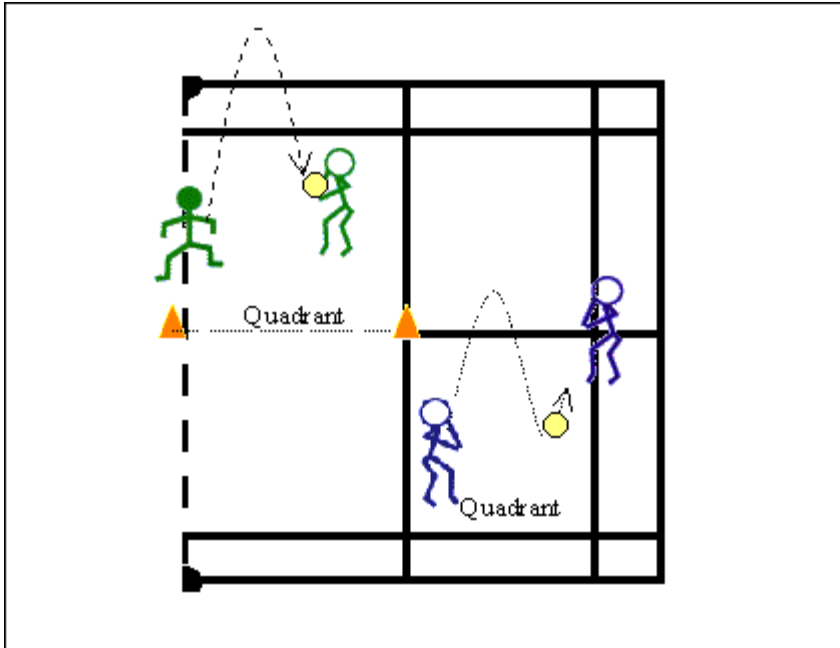


Figure 3: Keep-up game in a badminton quadrant

Game Performance Components

1. Base – Recover to position behind or attacking opponent's target area.
2. Decision Making - Read with anticipatory movement of moving-back to protect play area to then press/defend or moving-in to attack opponent's response.
3. Cover – Respond with quick split-step preparation as opponent strikes the ball
4. Adjust – React to ball with weight-shift movement into shot execution.
5. Shot execution - Efficient performance of selected shot
6. Support - Respond to partner receiving the ball by moving to a position to receive a pass/shot.

Figure 4: Criteria for six components adapted from Griffin et al. (1997) GPAI

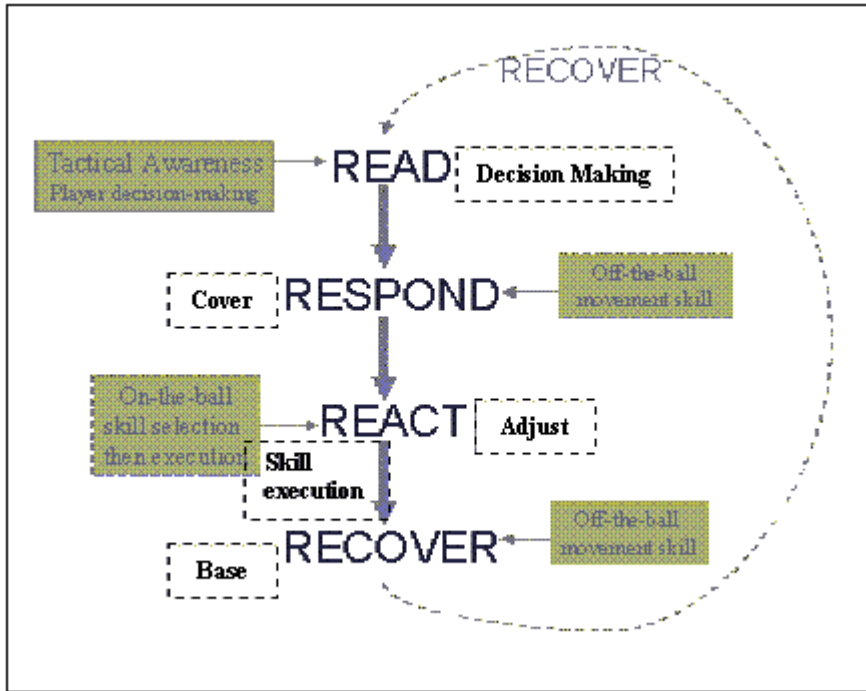


Figure 5: Four R's model indicating the link to the GPAI criteria

Skill Execution Criteria	
Rating	Criteria
5	Showed effective tactical awareness by selecting and executing appropriate on-the-ball skill for the situation in the rally.
4	Showed good tactical awareness by selecting and mostly executing appropriate on-the-ball skill for the situation in the rally.
3	Showed tactical awareness by attempting the appropriate on-the-ball skill but ineffective execution due to poor positioning and/or shot preparation.
2	Showed inconsistent tactical awareness, at times attempting an inappropriate on-the-ball skill for the situation in the rally.
1	Showed a lack of tactical awareness with poor on-the-ball skill selection, erratic execution and inappropriate court positioning.
Game Performance Criteria	
Rating	Criteria
5	Effective selection and execution of appropriate off-the-ball movement skill for the GPAI component.
4	Generally good selection and execution of appropriate off-the-ball movement skill for the GPAI component.
3	Not consistent selection and execution of appropriate off-the-ball movement skill for the GPAI component.
2	Uncertain selection and execution of off-the-ball movement skill for the GPAI component.
1	Not involved in the play of the game.

Figure 6: Skill execution criteria and game performance criteria for rating point

Level I - GPAI rating format

Point	Won (✓) or Lost (X)		Base	Decisio	Cover	Adjust	Skill Execution
	W	L					
1	✓		4				
2	✓		5				
3	✓		5				
4	X			4			
5	X			4			
6	✓			4			
7	X					3	
8	X					3	
9	X					2	
10	✓					4	
11	X					3	
12	✓					4	
13	X					4	3
14	✓					4	4
15	X					3	3
Total	W	L	(Mode Score)	(Mode Score)	(Mode Score)	(Mode Score)	(Mode Score)
	7	8	5	4	3	4	3

Level II - GPAI scoring format

Shot	Won (✓) or Lost (X) Points		Base X or ✓	Decision X or ✓	Cover X or ✓	Adjust X or ✓	Skill Execution X or ✓					
	W	L										
1			✓									
2	✓		✓									
3	✓		✓									
4			✓									
5				✓								
6	✓			✓								
7	X			X								
8				✓								
9	X				X							
10	✓				X							
11					✓							
12	X				✓							
13					X	✓						
14					✓	X						
15	X				✓	X						
16					✓	✓						
17	✓					✓	✓					
18						X	X					
19						X	✓					
20	✓					✓	✓					
Total	W	L	4	0	3	1	5	3	4	4	3	1
	6	4	100%		75%		62.5%		50%		75%	

Key: “✓” Appropriate response. “X” Inappropriate response

Figure 7: Sample GPAI forms for Net/Wall games

Four R's for tactical awareness: Applying game performance assessment in net/wall games

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