

Assessment for Learning in Physical Education and Sport: Practical Tools and Strategies

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Abstract. Integrating assessments for learning in physical education and sport coaching lessons have positive impact in teaching and learning. Students perform better in terms of skills, are more on-task, and have higher response rates. The inclusion of assessment for learning tasks in physical education and sport coaching lessons provide structure and focus, thus helping teachers deliver lessons more effectively. This article aims to share some assessment for learning tools and strategies teachers and coaches can use when teaching and assessing game play: (1) Hit map for net-barrier games; (2) Heat map for territorial/invasion games; and (3) Statistical count tools for games. Such peer-assessment tools can be used to provide teachers and coaches with data evidence for students' and athletes' learning, and at the same time, allow them to receive individual feedback on their game performance, thereby promoting ownership and self-direc. This article also shares some considerations to note when implementing peer-assessment tools.

Keywords: assessing game play performance, games concept assessment, physical education assessment

1 Introduction

Assessment for learning plays an integral role in assuring high quality teaching and learning in physical education. According to International Association for Physical Education in Higher Education, AIESEP's position statement on assessment in physical education [1] assessment should (1) guide and support the learning process of students; (2) inform teachers about the effectiveness on their teaching; (3) determine whether students can progress to the next learning progression; and (4) provide evidence of student learning.

Several studies have shown positive impact of integrating assessment for learning in physical education lessons. Not only students performed better in terms of skills [2], [3], [4], [5], the inclusion of formative assessment in physical education lessons provides structure and focus, thus helping teachers deliver lessons more effectively [6], [7]. Students also tend to be more on task and have a higher response rate when formative assessment is incorporated into lessons [8]. Assessment for learning can be applied to coaching context too. Players can use data collected to analyse their own performance and take steps to improve their performance based on the evidence collected. This article aims to introduce 3 different peer assessment for learning tools that teachers and coaches can use to enhance teaching and learning.

2. Assessment for Learning Tools

Most assessments for team sports are conducted in closed skills environment. Assessment of game play are usually done using a games rubric. Games rubric are usually subjective and difficult to assess, and usually used for summative reporting. Thus, it does not really help player reflect on their performance for improvement. Thus, 3 assessment for learning tools that would help players and teachers/coaches in their teaching and learning will be introduced. They are: hitmap in a net-barrier game; dribbling heatmap in a territorial invasion game, and statistical count tools. These tools can be used to measure and evaluate game play during physical education lessons, and coaching sessions, for students and athletes to reflect on their game performance.

2.1 Hitmap for net-barrier games

Hitmaps are visual representation of where the players placed their shots / balls during a game. In a badminton game, it could show where the players placed the shuttle, and if the players can return the shuttle successfully. In a volleyball game, it could show where the players receive the volleyball and where the players send the volleyball to. In order to create a hitmap, the peer observer first needs to draw out the playing area of the sport. Examples of players's badminton hitmaps and explanation of how to interpret them are shown in **figure 1**. During the game, the observe marks on the hitmap with an (O) on the spot where the player was able to return the shuttle, and (X) on the spot where the player was unable to return the shuttle. At the end of the game, the players would look at their own hitmap to reflect on the areas they managed to return the shuttle, and the areas they were unable to return the shuttle. Teachers and coaches would also be able to determine from the hitmap if the students have good space coverage.

Another use of the hitmap is for players to reflect on the placement of their shots. By looking at their opponent's hitmap, players can reflect on whether they use a variety of shots during game play, and send the shuttle to the corners of the court. If players can send the shuttle to the back of the court, we can assume that players can execute an overhead clear or an underhand lift. If players can send the shuttle to the front of the court near the net, we can assume that players can execute a net shot or a drop shot.

Teacher can coaches can use this tool to be aware of students' or players' performance, and manage the class better. They can determine the types of shots students / players were using, by looking at the players' hitmap, and give feedback, and make informed decisions about future instruction.

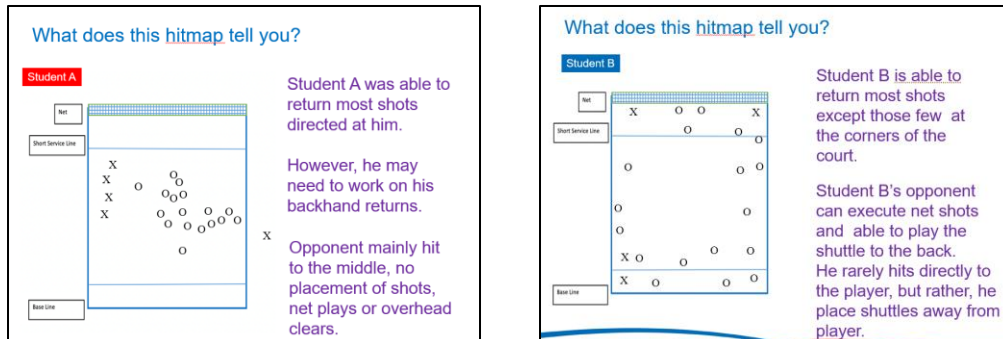


Fig. 1 Examples of players' hitmaps and how to interpret them

2.2 Dribbling heatmap for territorial-invasion games

Heatmaps are traditionally used as a data visualization technique to show a certain phenomenon over a geographical space. The heatmap can be used to record different data for different lessons, depending on the lesson focus. In territorial-invasion game, we can use heatmap to represent where players run or where the players managed to dribble the ball. In this example shown in **figure 2**, we will focus on where players dribble the ball in a floorball game.

To prepare the heatmap, observers first have to draw out the perimeter and the goalposts of the playing area. Then, the observer will observe his/her assigned player (note only observe 1 player) during the game and trace out the pathway of the player when the player has possession (dribbling) of the ball. At the end of the gameplay, the player can reflect on how well he/she has dribbled the ball. A long pathway (or line) would show that the player dribbles the ball successfully over some distance. If the pathway (or line) is crooked and long, we can assume that the player was dribbling past defenders. If the pathway was a straight line, we can assume that the player was dribbling down a clear path towards the goal with no defenders. If there were no lines, or the lines were very short, the player probably did not dribble the ball at all during the game. Such information gives teachers and coaches an idea about how their students / athletes were playing in the game, especially if the session objective was to demonstrate the ability to dribble the ball past defenders.

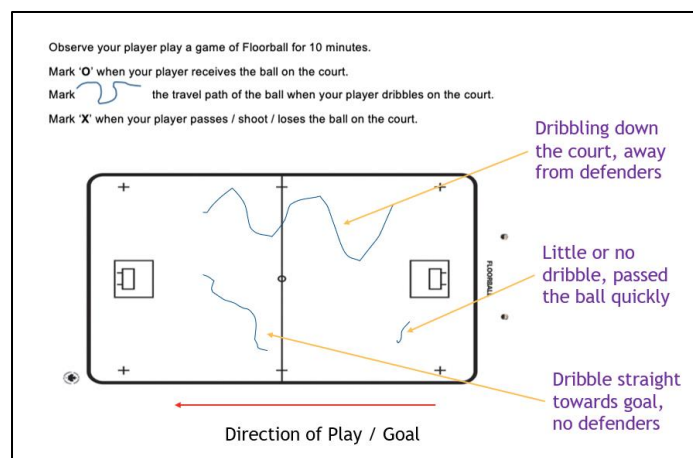


Fig. 2. Floorball dribbling heatmap and how to interpret them

2.3 Statistical count tool

Statistical count tools help players, coaches and teachers know how well the players played and contributed to the game. With a statistical count tool, observers can record the players performance during game play, thus providing teachers and coaches with a set of assessment data to make judgement about the players' game performance. The type of statistical data collected depends on the objective of the lesson. Data could include the number of successful and unsuccessful passes, number of received passes, attempts at the goal, number of interceptions, number of different types of shots used (e.g. overhead clears, smashes, dropshot, etc). Such data document a player's contribution to the team during gameplay. An example of a statistical count tool in a basketball game, is shown in **Figure 3**. Figure 3 also explains how to interpret the data collected.

Teachers and coaches can get the team to analyze and reflect on every player's contribution to the team. For example, in the basketball game, Player A made ten successful passes, Player B made eleven successful passes, and Player C made only one. As a team, the players would look at the data and decide on their improvement goal. Player A and B would make sure in the next game, they would try to pass to Player C, and Player C would have to level up his game. Such statistical count tool would allow students to take ownership of their own learning, and set their performance goals, thereby promoting self-directed learning. Teachers and coaches could use such tool to give evidence-based feedback which are less subjective and more meaningful.

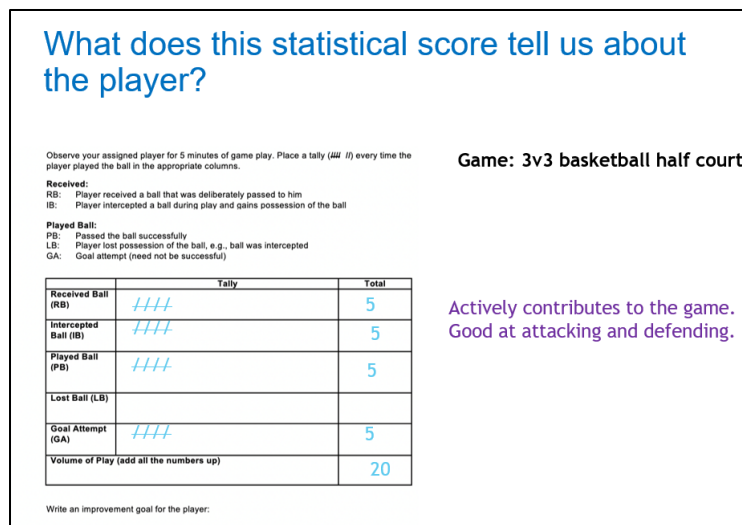


Fig. 3. Example of statistical count and how to interpret the results

3. Discussion

There are some considerations for coaches and teachers to bear in mind when designing and implementing these assessment for learning tools [9]:

- a) Recorders should observe only 1 player at a time. This is to provide accurate recording of the game play, and make the data reliable.
- b) Recorders should record not more than 3 actions at a time. Teachers and coaches should decide the actions to record based on the lesson objectives.
- c) Recorders should observe only actions that are quantifiable and easy to observed. Do not get observers to record quality of a skill, or unmeasurable outcomes like providing off-the-ball support during the game.
- d) Ensure the safety of the observes by placing them at a spot that allows them to observe the game play safely, and at the same time not interfering with the game.

4. Conclusion

Teachers and coaches are often faced with large class sizes. In physical education and sport settings, students tend to be disengaged when the teacher or coach was not looking. By implementing assessment for learning tools, not only it helps teachers and coaches resolve the lack of space issues (since half the class would be assessing the game play), it helps also by allowing students to receive individual feedback on their game performance. Furthermore, teachers and coaches have a set of assessment data and evidence to decide if the students / players have achieved the learning outcomes and make informed decisions on their next progression. Students are also more engaged when assessment for learning tools are integrated

into lessons [8]. With all these benefits, teachers and coaches are encouraged to try out some of these tools to enhance the quality of their physical education and coaching sessions.

References

- [1] Association Internationale des Écoles Supérieures d'Éducation Physique (AIESEP). (2020). *Position statement on physical education assessment*. <https://aiesep.org/wpcontent/uploads/2020/06/AIESEP-Position-Statement-on-PE-Assessment-FINAL1.pdf>
- [2] Crouch, D., Ward, P., & Patrick, C. (1997). Effects of peer-mediated accountability on task accomplishment during volleyball drills in elementary physical education. *Journal of Teaching in Physical Education*, 17(1), 26–39. <https://doi.org/10.1123/jtpe.17.1.26>
- [3] Holt, J., Kinchin, G., & Clark, G. (2012). Effects of peer-assessed feedback, goal setting and group contingency on performance and learning by 10-12 year old academy soccer players. *Physical Education & Sport Pedagogy*, 17(3), 231–250. <https://doi.org/10.1080/17408989.2012.690568>
- [4] Johnson, M., & Ward, P. (2001). Effects of class-wide peer tutoring on correct performance of striking skills in 3rd grade physical education. *Journal of Teaching in Physical Education*, 20(3), 247–263. <https://doi.org/10.1123/jtpe.20.3.247>
- [5] Ward, P., Crouch, D., & Patrick, C. (1998). Effects of peer-mediated accountability on opportunities to respond and correct skill performance by elementary school children in physical education. *Journal of Behavioral Education*, 8(1), 103–114. <https://doi.org/10.1023/A:1022868808642>
- [6] Chróinín, D., & Cosgrave, C. (2013). Implementing formative assessment in primary physical education: teachers' perspective and experiences. *Physical Education & Sport Pedagogy*, 18(2), 219–233. <https://doi.org/10.1080/17408989.2012.666787>
- [7] MacPhail, A., & Halbert, J. (2010). We had to do intelligent thinking during recent PE': Students' and teachers' experiences of assessment for learning in post-primary physical education. *Assessment in Education: Principles, Policy & Practice*, 17(1), 23–29. <https://doi.org/10.1080/09695940903565412>
- [8] Chng, L., & Lund, J. (2018). The impact of formative assessment on the success and response rate in a sixth-grade physical education badminton unit. *International Journal of Kinesiology in Higher Education*, 3(1), 12–22. <https://doi.org/10.1080/24711616.2018.1509680>
- [9] Chng L. & Lund J. (2021). Assessment for Learning in Physical Education: Practical Tools and Strategies to Enhance Learning of Games, *Journal of Physical Education, Recreation & Dance*, 92(7), 31-38, DOI: 10.1080/07303084.2021.1948464