

Need analysis of basketball tactical instrument: A literature review

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Abstract

This study was conducted to analyse the need for a basketball tactical knowledge instrument. This study used a literature study or literature review, analysing 8 scientific journals which were published in Scopus-indexed publications and published no later than 2015 and most recently 2023. This study was conducted by making analyses and conclusions on journals related to research objectives. Several studies which were analysed in this study show the importance of tactical skills in basketball and the strengths and weaknesses of previous existing tactical skill instruments. It can be concluded that an accurate and easy-to-use instrument to measure tactical knowledge is needed. A practical instrument which related to game performance and can adjust all levels of basketball play is an important aspect of tactical knowledge identification and players' development. This study is expected to be the foundation for future research related to instruments that can measure the tactical ability of basketball athletes without restrictions on age and level of play.

Keywords: Need Analysis; Basketball; Instrument; Literature Review.

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INTRODUCTION

Basketball is a team sport that requires complex skills and has a different character from other team sports. The popular and worldwide team sport using a ball known as basketball has special structural and functional characteristics that distinguish it from other team sports (Jelaska et al., 2012). The game of basketball contains several main components that must be possessed by every athlete consisting of physical, technical, and tactical components.

In general, team sports have high variability and uncertainty (Aquino et al., 2016). As a team sport, basketball is very dynamic, so there are many possibilities for changes to occur in attack and defence. Basketball athletes are required to make decisions very quickly depending on the changing situation that occurs on the court. Decision-making is an important skill for basketball players who intend to improve both individually and for teams' success (Rösch et al., 2021). Furthermore, (Eppel et al., 2023) stated that decision making is considered one of the most important aspects for winning a basketball game. Tactical skills are defined as knowledge of in-game adaptations and decision-making (Elferink-Gemser et al., 2010). Without good tactical skills, athletes will have difficulties adapting to changes that can occur at any time.

Tactical knowledge is one of the core components that must be possessed by basketball athletes, in addition to the physical and technical components. Without the ability to quickly understand situations and make the right decisions, basketball players will often make fundamental mistakes, especially in match situations. Tactical knowledge is the ability to understand what must be done in interacting with team members, opponents, the ball, and empty space, and is able to carry out what is known so as to produce unpredictable results (Aquino et al., 2016). Furthermore, tactical knowledge refers to the decision-making process and choices made when athletes interact with dynamically changing circumstances from unpredictable situations (Ramos et al., 2020).

Tactical knowledge is formed through the process of training and experience in matches. Tactics are a mindset about how to apply techniques that have been mastered in playing and winning against opponents (Santosa, 2018). The basketball techniques that have been previously trained are applied through trainings in the form of game simulations or matches. According to Catarino et al., tactical knowledge does not just appear to be used, but must be studied, developed, and assessed (Catarino et al., 2017). Furthermore, Saborido et al. emphasized that measurements should not only be made to measure technical ability, but also needed an instrument to measure tactical knowledge (Otero-

Saborido et al., 2015). Measurements must be precise, reliable, and as objective as possible, and the results must be expressed in numerical form indicating the quantity of properties or attributes being measured (Saputro & Siswantoyo, 2018). To assess the development of athletes' tactical abilities, a valid and reliable instrument is needed, therefore a specific instrument is needed to measure the tactical abilities of basketball athletes.

METHOD

This study used a literature study or literature review, which was conducted to analyse the need for a basketball tactical knowledge instrument. The literature used in this research is 8 scientific journals published no later than 2015 and most recently 2023 accessed through Bing and Google. The journal quartile criteria were examined using Scimago Journal and Country Rank. The search for data sources used a combination of the keywords: basketball instruments and tactical knowledge.

This study was conducted by making analyses and conclusions on journals related to research objectives. In the search procedure for scientific journals which are the source of data in this study, there are criteria included and excluded which can be seen in the table below.

Table 1. Data Source Criteria

Included	Excluded
Published between 2015-2023	Published before 2015
Published in Scopus indexed publications	Using languages other than English
Focus on basketball tactical knowledge and the instrument	Cannot be cited using Mendeley
	Public full text is not available

DISCUSSION

Table 2 shows the literature used in this study to identify the need for a basketball tactical knowledge instrument. This table contains the title along with the author of the article, the journal where the article was published, the journal with quartile criteria, and the analyses and conclusions drawn by the author in the article.

Tabel 2. List of Literature

Titles	Journal	Analyses and Conclusions
Specific features of 3X3 basketball: factor analysis of the key performance indicators and their impact on game performance in the elite leagues (Andrianova et al., 2022)	Journal of Physical Education and Sport (JPES) (Q3)	This study highlights the importance of long shots in winning basketball games and improves understanding of how teams prepare offensively to defeat their opponents. Coaches should pay more attention to practicing shooting beyond the arc when defenders are distracted or in uncomfortable situations. Need to increase boxing training and fighting around the rebound ball. The pace and complexity of training should be as close to the match situation as possible. To achieve optimal results, good decision-making skills are necessary to minimize turnover.
Analysing tactical knowledge through team sport assessment procedure/TSAP: a case study in basketball (Catarino et al., 2017)	SPORT TK: Revista Euroamericana de Ciencias Del Deporte (Q3)	TSAP has been widely used in many sporting and academic contexts and its validity has been examined to bridge the gap between theory and practice. The results of this study support the connection between research and training contexts, demonstrating that the TSAP is a valid and reliable tool for assessing offensive elements of basketball and that it is easy to use. used by coaches, teachers, researchers, and athletes. However, its usefulness in comprehensive, high-level analysis of game elements is limited due to the complexity of basketball and the variety of situations that need to be evaluated.
Student precision and reliability of the team sport assessment in basketball: a primary education case study (Otero-Saborido et al., 2015)	South African Journal for Research in Sport, Physical Education and Recreation (Q4)	From the perspective of the physical education teacher, the problem is that this is a very complex process involving many tasks, making the TSAP impractical as a physical education teacher evaluation tool or for grading pupil. This multitude of tasks means that it is impossible to recommend the use of a particular scientific tool in elementary school. Computer automation of most of these processes could make their integration into educational processes possible.
An analysis of the basketball learning and performance assessment tool to determine performance	Frontiers in Psychology (Q2)	The review's findings support inter-rater reliability and establish diagnostic validity—but only for those variables. Consequently, the findings show that competitive youth basketball players have not yet used this tool in its current version. This emphasizes how crucial it

Titles	Journal	Analyses and Conclusions
variations in male youth basketball players based on playing position and selection status (Rösch et al., 2022)		is to maximize BALPAI to assess competitive young basketball players' performance in a valid and trustworthy manner. Future research ought to investigate applying stricter, position-specific criteria when utilizing the tool for developing and finding talent.
Throughout the course of a season, young female basketball athletes' declarative tactical knowledge was evaluated both objectively and subjectively (DA SILVA et al., 2023)	Journal of Physical Education and Sport (JPES) (Q3)	The study's findings indicate that many female basketball players and coaches for the U14 and U17 teams overestimate the DTK level in subjective evaluations in preference to objective evaluations. This emphasizes even more that coaches and athletes are unable to ascertain an athlete's true DTK level, which is a crucial component of tactical skill evaluation. To enhance and further stimulate the athlete's tactical skills, the application of DTK's numerous objective and subjective assessment tools must also be carried out in various training and competition scenarios. These tools are used as a form of assessment, monitoring, and control of the process.
creating and approving an instrument for basketball learning and performance evaluation (BALPAI) (Ibáñez et al., 2019)	Frontiers in Psychology (Q2)	It can be difficult to assess basketball performance and learning because there are so many different parts and components in these tools. This procedure can concentrate on one, two, or more items at once. It not only makes it easier for students to focus on the material they need to learn, but it also makes assessment easier for coaches and teachers. To better use and recognize play behaviours, which can be highly subjective, teachers and coaches must also go through a period of training before using BALPAI.
Youth basketball players' decision-making abilities: a diagnostic and external validation of a video-based assessment (Rösch et al., 2021)	International Journal of Environmental Research and Public Health (Q2)	Previous studies assessing decision-making in basketball and many other youths team sports have frequently encountered the issue of a small overall sample size owing to sampling criteria. Based on professional judgment, appropriate successful options were predetermined in this study. However, the technical proficiency of the practitioner and contextual factors that are not usually represented in the laboratory play a role in the successful

Titles	Journal	Analyses and Conclusions
		implementation of a decision. The inability to integrate perception and action is a common drawback of video evaluation without explicit feedback. Mann et al. discovered that participants performed better when they completed a specific response, and that simplified movements most likely did not reflect cognitive motor expertise. Significant discrimination between performance levels was observed in this study, even though feedback was provided verbally following button pressing. This highlights the value of assessing decision-making.
Collective behavior in basketball: A systematic review (Courel-Ibáñez et al., 2017)	International Journal of Performance Analysis in Sport (Q1)	We discovered a dearth of longitudinal designs and a dearth of studies examining tactical conduct from a sophisticated, dynamic, and all-encompassing standpoint. Additionally, there aren't many reports on how game context affects basketball tactic performance.

In general, the literatures in table 2 indicate the importance of tactical performance and a need for instruments that can be used to measure the tactical knowledge of basketball athletes. While (Andrianova et al., 2022) stated that good decision-making skills are needed to achieve maximum results, (Courel-Ibáñez et al., 2017) argue that reports about the influences of game context in basketball tactical performance are sparse. This shows that although tactical knowledge is needed in the game of basketball, there are only few studies that conduct in-depth analysis of the implementation of training like the match situation that aims to improve the tactical performance of athletes. However, this opens opportunities to conduct research and assessment of the tactical performance of basketball athletes using a valid and reliable instrument.

Catarino et al., (2017) and Otero-Saborido et al., (2015) used Team Sport Assessment Procedure (TSAP) as the basketball assessment tool. TSAP has been used in some previous study for team sports such as soccer, water polo, handball, etc (Hong, 2018; Junior et al., 2020; Perazzetti et al., 2023). Catarino et al., stated that the results of their study demonstrating that the

TSAP is a valid and reliable tool, but its usefulness in full and high-level analysis of elements of play is limited, due to the complexity of basketball and the many situations it occurs to assess. It implies that TSAP can be used to assess tactical knowledge but does not cover the range of high-level plays that may occur because basketball is very dynamic. Meanwhile Otero-Saborido et al., stated that TSAP is impractical as an assessment tool because it is a very complex process involving multiple tasks. Therefore, a practical instrument which can adjust all levels of basketball plays is needed.

There are several studies that used basketball learning and performance assessment instrument (BALPAI) as the instrument to assess tactical knowledge. [Rösch et al., \(2022\)](#) shows that the instrument is not yet applicable to competitive basketball and can be optimized by adding some criteria. Furthermore, [\(Ibáñez et al., 2019\)](#) stated that BALPAI assessment are complicated because it contains many items and components. Moreover, before the assessors can implement the instrument, they must undergo a training period, which means it takes time for the assessor to be proficient to use the instrument.

Another study by [\(DA SILVA et al., 2023\)](#) shows that most of the coaches and athletes overestimate Declarative Tactical Knowledge (DTK) level. Thus, coaches and athletes were clearly found to have difficulty acknowledging tactical potential, important construct in the assessment of tactical ability. Furthermore, Silva et al., stated that the application of different instruments must also be performed in different situations of training and competition. Meanwhile, [\(Rösch et al., 2021\)](#) stated that there was a common limitation of video-based assessments without a specific response. Although [\(Balafoutas et al., 2019\)](#) claim that methodological issues with diagnostic tools and sports data have been resolved by incorporating external validity and adequate control into the assessment's development, they contend that this does not answer the question of whether the assessments' measures are connected to players' performances in games.

Several studies which were analysed in this study show that an accurate and easy to use instrument to measure tactical knowledge is needed. For best results, it is very important to provide fast and accurate information on the data collection process through tests and measurements (Yusfi et al., 2022). Therefore, a practical tactical knowledge instrument which related to game performance and can adjust all levels of basketball plays is an important aspect for tactical knowledge identification and players' development.

CONCLUSION

Basketball is a very dynamic team sport, so there are many possibilities for changes to occur. Tactical knowledge does not just appear to be used, but must be studied, developed, and assessed. While tactical knowledge is important to be analysed, there are only few studies that conduct in-depth analysis of the implementation of training like the match situation that aims to improve the tactical performance of athletes. This opens opportunities to conduct research and assessment of the tactical performance of basketball athletes using a valid and reliable instrument. Several studies, which were analysed, show the importance of tactical performance, and the strengths and weaknesses of previous existing tactical skill instruments. It can be concluded that an accurate and easy to use instrument to measure tactical knowledge is needed. A practical instrument which related to game performance and can adjust all levels of basketball plays is an important aspect for tactical knowledge identification and players' development.

AUTHOR'S CONTRIBUTION

Soleh Solahuddin: Conceptualization, Methodology, Writing - Original Draft.

Iman Sulaiman: Writing - Review & Editing, Formal analysis. **Bambang**

Kridasuwarmo: Writing - Review & Editing, Investigation. **Samsudin:** Writing

- Review & Editing, Investigation. **Tengku Fadilah Tengku Kamalden:** Writing - Review & Editing, Investigation.

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