Qualitative Performance Monitoring In Artistic Team Pencak Silat Category

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ABSTRACT

Background: Pencak silat has been admitted as a branch of sport and projected to be officially competed in multievent sport games, hence the call integrating sport science in pencak silat has been conducted by pencak silat scholars and practitioners. This research bracgrounded from the lack of reference for analyzing the performance of pencak silat athletes in the artistic category, include team category. This study aims to develop a form to monitor the performance mastery and development of synchronised movements in pencak silat athletes in the artistic team category. By using the forms, coaches can monitor movement errors in athletes, evaluate them, and make improvements so that athletes can make progress in each training session to achieve top performance.

Methods: This study employs a descriptive qualitative research method, analyzing the data of 3 (three) pencak silat team category who have participated in three championships from July to December 2024, resulting in nine documentation sets. The documentation then used as a starting point to develop[a permormance monitoring tables contained 12 points in team category movements.

Results: the results of this study is a form to assess the progress of synchronicity and accuracy of time, rhythm, and refinement of movements in the team category. upon careful development, the forms could be used as a tools helping the coaches in monitoring progression in pencak silat team category.

Conclusions: , the forms could be used as a tools helping the coaches in monitoring progression in pencak silat team category.

Keywords: pencak silat; artistic category; jurus beregu; team category; performance analysis; training progression; training monitoring; performance tracking

1. Background

Indonesian traditional martial art that has become an integral component of the nation's cultural heritage is Pencak Silat, which deemed as one of the Indonesian ancestors' legacies that must be perpetually safeguarded (Maryono, 1994). Pencak Silat is a product of Indonesian culture that is designed to preserve, protect, and uphold its independence and integrity within the natural environment in order to achieve harmony in life (Maryono, 1994). Recently in modern society, Pencak Silat is a multidimensional practice that incorporates four distinct dimensions, each of which has a rich and diverse nature and application: 1) It is a sport that improves health and vigor; 2) It is a self-defense discipline that safeguards humans from harm; 3) It is also a mental-spiritual method of training that fortifies character; and 4) It is an art form that involves movements that can be accompanied by music (Rahayuni, 2025; Rahayuni, 2014). Every one of these dimensions provides its practitioners with distinctive advantages and experiences.

From being only a traditional martial art to becoming an officially competitive sport, pencak silat has experienced tremendous growth over time. Pencak silat now more methodically regulated with the creation of match rules and scoring system, a significant shift took place.

Championships in pencak silat have been regulated by PERSILAT and in Indonesia, by IPSI (Ikatan pencak silat Indonesia) strategy (IPSI, 2023). In Pencak Silat competitions, there are four primary categories stated in regulation book: creative solo, individual, pairs, and team. However, most of pencak silat practitioners and scholars divided in to 2 (two) categories: Match (tanding) and Artistic (Seni/Jurus) (IPSI, 2023). Match and Artistic are the two primary categories that are the subject of contention in competitive pencak silat. Match category (tanding) when two pencak silat athlete practitioners from distinct backgrounds engage in a fight, employing a variety of techniques and moves to employ principles of defense and attack, including parrying, evading, hitting, and attacking the target, as well as knocking down the opponent, with the aim to get the highest score. The Artistic (Seni/Jurus) category in pencak silat is when two pencak silat athlete exhibit a blend of speed, energy, and strength, while simultaneously preserving elements of grace, rhythm, and balance in a series of pencak silat movements (Jurus). The Jurus category, also referred to as the Art category, emphasizes the aesthetic and precise execution of pencak silat techniques and movements, demonstrating an appreciation for aesthetics and stamina (IPSI, 2023). This is demonstrated individually, in pairs, or as a team.

The team category is a category in pencak silat that is competed in by teams of three people from the same team (IPSI, 2023). The pencak silat practitioners demonstrate standard moves as specified in the pencak silat rules regarding standard team moves. The movements are performed correctly, steadily, with full spirit, and in unison . According to Khotimah et al. (2022), the team category in pencak silat involves empty-hand techniques or techniques without weapons, based on the IPSI regulations (Khotimah et al., 2022). This means that the team category in pencak silat consists of a team performing standardized movements as stipulated in the IPSI regulations for 2024. The evaluation of this category consists of several aspects, including movement memorization, where each team member must memorize and perform the movements in the correct order; spirit, meaning each team must demonstrate high enthusiasm and energy; stamina, where each team must have good physical endurance as physical endurance is one of the evaluation aspects (Khotimah et al., 2022; Nugroho, 2020); and stability, where each team must demonstrate harmony and stability in every movement performed (Rosad, 2015). The Team jurus or Jurus Beregu, are series of pencak silat movements comprising 12 series of movements (jurus), with the overall number of micro mkovements consisted of 100 movements. And must performed within a duration of 3 minutes (Indratno & Rahayuni, 2009; IPSI, 2023; Khotimah et al., 2022; Nugroho, 2020).

Progression of performance in pencak silat artistic category means a perfect and correct mastery of basic techniques, including striking skills, straight (depan) kicking skills, side kicking skills (Tendangan T), and curved kicking (sirkel) or scythe (sabit) kicking skills (Hariyadi, 2010; Rahayuni, 2014). Mastery of movements in the team category is not only about the refinememt of the movements themselves but also requires synchronicity of rhythm between partners (Khotimah et al., 2022; Putri Dwi Oktavianingrum & Kurniati Rahayuni, 2025). These mastery is important in the evaluation of pencak silat athletes in the artistic category, where judges assess the sequence of movements and the accuracy of movements. Movements must be performed simultaneously, otherwise it will reduce the score. To achieve perfect score, the team must performs 12 jurus (100 movements) within the duration of 3 minutes, with stable movements, clear and regular movement rhythm, no tempo delays exceeding the tolerance at certain intervals, maintaining prime physical condition, no signs of lost of breath, movements must not be held for more than 4 seconds; if a movement exceeds 4 seconds, points will be deducted (IPSI, 2023).

Over time, pencak silat has also evolved from traditional to modern forms. Hence performance analysis of an athlete should be a mandatory task for a coach (Moch. Yunus et al., 2024; Oktavianingrum & Rahayuni, 2025). The purpose of performance analysis is also to guide a coach in designing training programs tailored to the needs of each athlete. Furthermore, data is collected and observations are made regarding the progress of each training session to determine whether the athletes are improving their mastery and skill in movements or, conversely, experiencing a decline. Additionally, to prevent coaches from facing difficulties in monitoring the development or decline experienced by athletes, it is rare to find coaches who have performance analysis and movement development data for their athletes, as coaches tend to focus solely on the training process itself

(Yudi Rachman et al., 2023). The judge form based on standard rules and regulations of PERSILAT could be used as a reference, however, the standard judge do not give space for more detailed anaysis of the movement itsef, hence relying only the PERSILAT or IPSI standardized forms of judgement could not provide a more detailed reference to monitor team's athlete progress. This is because there are no previous references or studies on how to analyze performance in team category, because there have been none forms or tools developed to help analysing performance for the team category. Another way to find equitable solutions that promote improvements and modifications to work processes is to create monitoring tools, such as structured forms or evaluation templates (Angga et al., 2020). In the context of performance-based sports like Pencak Silat, which have recently seen increased integration with sports science, such techniques are crucial. By routinely tracking crucial factors like timing, movement execution, and technical errors, coaches and analysts can gain useful insights that lead to more fair, data-driven evaluations and targeted interventions (Moch. Yunus et al., 2024; Salsabilla Navia Eka Putri et al., 2024). These forms not only promote transparency but also make it easier for players and coaching staff to establish measurable improvement goals. However, research on performance analysis in the artistic pencak silat category, even within the team category, is still limited. Therefore, the research study to develop a forms to monitor performance analysis of athletes' mastery and progress in Pencak Silat team category needs to be conducted.

2. Methods

This research began with examination of video recordings of championships in which pencak silat athletes have competed in the team category. The sample criteria for this study consisted of team athletes who had competed in three championships between July and December 2024. Three pairs of team athletes from East Java, two pairs of male athletes, and one pair of female athletes were the data sources. This yielded 9 (nine) documentation files, which were subsequently analyzed for each move. The researcher analyzed 108 movements, as each documentation contained 12 (twelve) moves (Oktavianingrum & Rahayuni, 2025). Interviews, documentation, and observation comprised the research instruments employed in this investigation. This study uses a descriptive analysis research method with a qualitative descriptive research type, mixed with research and development approach.

Qualitative research is descriptive in nature and uses analytical tools to answer research questions on how suppose a tool to monitor performance in team category should be developed (Waruwu, 2024).The management of qualitative research data must be handled properly so that researchers can find answers to the research questions posed. Results of these observations taking the form of detailed descriptions of situations, events, interactions, and behaviors observed in the field using documentary materials and recordings (Huberman & Miles, 1992). However, in this research, we mixed qualitative research with othjer research develompment framewoirk, ADDIE (Analysis, Design, Development, Implementation and Evaluation) . In the first stage, Qualitative research is used to analyse video recordings of championships in which pencak silat athletes have competed in the team category that has mentioned above, then the process of moinitoring the movements in each jurus lead to the second stage of research from the perspective of 1) time consistency; 2) the accuracy, synchronicity and refinement of movements; and 3) errors of movements. The socond stage of the study, using ADDIE Approcah, is the process to develop the forms to analyse progress of team category.

The secod stage of research used the ADDIE method. ADDIE has the following stages: Analysis, Design, Development, Implementation and Evaluation). All of these stages are taken after the qualitative analysis finished, which is used to prevent errors. All ADDIE stages were not used in their entirety due to time and funding limitations for this development research; instead, only 3 stages of Analysis, Design, and Development conducted in this research in order to develop the form. The researcher then conduct a Focus geoup discussion to determine which form was suitable for use. The validators also provided suggestions and criticism for product refinement if there were any deficiencies or modifications.

3. Results

Research Results 1: Qualitative analysis of the team performance

The researchers used a documentation method on three teams of pencak silat athletes who had participated in pencak silat championships in team category from July to December 2024. To ensure anonymity, the team coded as team A, team B, and team C; and the championship they followed named as Championship 1, Championship 2, and Championship 3. Data sources were obtained from three pairs of team athletes from East Java, two pairs of male athletes and one pair of female athletes, resulting in nine documentation records. These data were analyzed for each components of scoring based on IPSI Pencak silat regulations. Each documentation record contained 12 series of movements (jurus), and the researchers analyzed a total of 108 series of movements from the three teams. The analysis of these techniques yielded the following results: 1) Timing and time duration of performance: 1a) Team A: based on the analysis of the timing of the moves from the three championships they participated in, shows that the timing of the first move (1-6) is still inconsistent, as each of the moves 1-6 differs by more than 3 seconds. Meanwhile, in the second move (7-12), the timing of each movement is more consistent, as the demonstration times for each movement are nearly the same, with differences of less than 3 seconds across the three championships. 1b) Team B: Based on the analysis of performance time data from the three championships participated in, the timing of techniques 1-9 is still inconsistent, as seen from the difference in timing between each technique 1-9, which is more than three seconds. Meanwhile, for techniques 9-12, the performance timing is consistent. 1c) Team C, based on the analysis of performance time data for team techniques in the three championships participated in, the time for each move is almost consistent for moves 2, 3, 4, 5, 6, 7, 9, 10, 11, and 12, with only moves 1 and 8 being inconsistent, with the time difference between the two moves exceeding 3 seconds (Oktavianingrum & Rahayuni, 2025).

Based on the time graphs of teams A, B, and C, it can be concluded that team A's time consistency is 50% or still half a move, while team B's time consistency is still 25%, and team C's time consistency is 80%. On the field, athletes are required to maintain consistent timing for each move, with the timing for moves 1-12 being the same. This consistency might influenced by the training process; the longer the team athletes participate in the training program, the more consistent their timing will be for each move. Team A athletes have been training for a year, Team B athletes have been trainig for six months, while Team C athletes are advanced athletes who have been training together for two years and competing regularly (Oktavianingrum & Rahayuni, 2025).

The second analysis is related with the accuracy, synchronicity and refinement of movements. The analysis yielded results as follows: 2) analysis of team movement performance and development: 2a) Team A: From the motion error analysis graph of Team A from the first championship, there were many motion errors. In the second championship, motion errors began to decrease, but there were still several errors in moves 4, 11, and 12. In Championship 3, movement errors continued to decrease. The conclusion from the analysis of movement errors from Championship 1 to Championship 3 shows a decline in movement errors, indicating progress in each training session. Team A made improvements in each dominant movement error in this category, which included coordination and synchronization of movements during intervals and in some techniques, as well as inconsistent starting positions, which affected subsequent movements. 2b) Team B: From the motion error analysis graph of Team B from the first championship in the initial stage, there were few motion errors. In the second championship, the number of motion errors increased, and in the third championship, the number of motion errors increased further. From the first to the third championship, there has been no progress in movement development, and movement errors have actually increased. This indicates that Team B has not focused on improving their movements in each technique. The dominant movement errors in this category are related to coordination and synchronization of movements during intervals and in some techniques, inconsistent initial postures, and inconsistent facial expressions. 2C) Team C: From the analysis of movement errors by Team C in the first championship, there were quite a few movement errors. In the second championship, there

was a slight decrease in movement errors in the final moves. In the third championship, there was an increase in movement errors in the initial moves and a decrease in movement errors in the final moves. From Championships 1 to 3, there has been no progress in movement development, meaning Team C has not focused on improving movements in each technique. From Championships 1, 2, and 3, movement errors did not decrease but instead increased and remained the same as in previous championships. Overall, it is possible that the dominant movement errors in this team category are related to the coordination and synchronization of movements during intervals or slow-paced movements, inconsistent starting positions before moving a specified technique, and inconsistent facial expressions (Oktavianingrum & Rahayuni, 2025).

The third analysis related to Errors of movements: 3a) Team A: Team A is repeated corrections of starting positions and re-enacting points where movements are less synchronized, followed by imagery training to help practitioners focus more on performing team techniques, and training the timer from techniques 7 to 12 to ensure greater consistency. 3B) Team B: from the first to the third championships, there has been no progress in movement development, and movement errors have increased, indicating that Team B has not focused on improving movements in each technique. Observing Team B's group movements, many movements are not synchronized in the hand positions, with dominant lack of synchronization in the hands during intervals, and inconsistent foot positions (step patterns), leading to errors in subsequent movements. The dominant movement errors in this team category are related to coordination and synchronization during intervals and in some techniques, inconsistent starting hand positions, and inconsistent facial expressions. Based on the analysis of Team B, the training model proposed involves practicing each technique to achieve greater consistency, retraining the stance patterns of the athletes while paying attention to the step patterns, repeating movements that are not synchronized, conducting dry runs with imagery, and training the rhythm to distinguish between techniques and intervals. 3c) Team C: Team C's perspective, they have not focused on improving movements in each technique. From Championships 1, 2, and 3, their movement errors have not decreased but have increased and are the same as in the previous championships (Oktavianingrum & Rahayuni, 2025).

From the perpectives of progression principle in training, to be able to execute a specific techniques each athlete must dedicated themselves to training deliberately. All athletes in this research performs a training program 3 to 9 times per week, yet the perfection of the movements not achieving expectations. This means that conducting movement evaluations to ensure the movements are ingrained in the athletes is essential, and this research revealed that there have been no specific tools to help coaches in the team category to conduct evaluation. Especially when team athletes participate in multiple events, it is better for them to evaluate their movements at each event they attend, meaning that at each event, the team athletes adjust some of their movements for improvements (Moch. Yunus et al., 2024; Putri et al., 2024). Because if movements are not evaluated and improved, they will become monotonous and there will be no performance enhancement.

Research results 2: Developing the forms

From the 1st study, it is cognizant that a specific tools aid to aid performance progress in team category of pencak silat is needed. Then, the stages of the ADDIE model applied in the second study. Results of study one act as the results of need analysis. Then the researchers found out that the design of performance monitoring progress that has been used to analyse performance of the athletes could be beneficial for coaches to be developed further to be a formality of performance progress monitoring. All research members and coaches involved in the study one agreed that the specific forms could be used as a performance analysis tools. To ensure the product is accessible for all coaches, the forms made with a very simple tabulation using Microsofr Excel, in which could be applied in the Google spread sheet as well.

The product is in a forms consist of columns consist of five columns: The first column, "No," or indicating number, is used to sequentially number each table entry. This facilitates the organization of the data and makes it simpler to refer to particular rows when conducting analysis or discussion. Then the second column indicating the official name of the tournament or event in which the athlete or team competed: "Championship Name (Nama

Kejuaraan)." This makes it possible to connect the data to a particular setting, like a regional, national, or worldwide competition. The third column is "Series of Movements (Jurus)," describes the particular movement or set of movements the athlete performs. These are frequently standardized and given names or numbers in disciplines like traditional sports or martial arts. By noting the name or movement type here, coaches or assessors can easily determine what was being done. The duration of each movement sequence is intended to be recorded in the fourth column, "Performance Time (Waktu Penampilan per Jurus)." Depending on how long and complex the performance is, this could be measured in minutes or seconds. Keeping an eye on this period is crucial for evaluating endurance, refinement of movements and accuracy,

Finally, details about any mistakes or departures from the optimal movement execution are recorded in the fifth column, "Motion Error Analysis with Time Reference (Analisis Kesalahan Gerak dengan Acuan Waktu)." This column is especially helpful because it contains time references, which enable coaches or evaluators to determine the precise moment the error happened. For instance, one could observe that a balance error happened at 00:45 seconds or that a posture was incorrect at 00:24 seconds. With this forms, for performance improvement and targeted feedback, this information is essential. Coaches could be also modified the forms to suit their needs.

Table 1. Design of the forms

Date: Team: Team Name : ...			
No	Championship Name (Nama Kejuaraan)	Series Of Movements (Jurus)	Performance Time (Waktu Penampilan Per Jurus)	Motion Error Analysis With Time Reference (Analisis Kesalahan Gerak Dengan Acuan Waktu)
		1		
		2		
		3		
		4		
		5		
		6		
		7		
		8		
		9		
		10		
		11		
		12		

The digital version with examples could be accessed in
https://docs.google.com/spreadsheets/d/12XbisvhBnObS2LcSPIkG_CuHsWTszu9k/edit?usp=sharing&ouid=1107938973249 47937293&rtpof=true&sd=true

The figure below is an example of how the forms could be used to assist monitoring of performance upon a team.

Figure 1. Example of a used form

4. Discussion

Performance assessment is a measurement conducted on various activities within an training organization's value chain. The results of a proper measurements tols or form of monitoring can be used as feedback, providing information about achievement, plan implementation, and the organization's needs for adjustments and control (Salsabilla Navia Eka Putri et al., 2024). A performance measurement system is crucial for determining an organization's success in achieving its goals, both long-term and short-term, as defined in a strategy (Mujahid & Subekti, 2021). It would be impossible for an a team who has to lack access to information related to evidence or tools for measuring progression of their athletes's performance (Cahyati & Adelia, 2024). The problem wioth performance analysis to monitor athlete's progres is there is a rarity of studies regarding performance analysis in pencak silat, leaving coaches and pencak silat silat scholars sporadically and conducting research separately on monitoring athlete's progress. The alternative way to find equitable solutions that can lead to modifications and improvements in work processes is designisng a form to help monitoring progress, especially in the sports that has been recently integrated within sports science such as pencak silat.

Creating monitoring tools like structured forms or evaluation is a method to identify fair solutions that encourage changes and enhancements as expected throug a set of procedures. Such tools are essential in the context of performance-based sports like Pencak Silat, which has recently seen having an increased integration with sports science. Coaches and analysts can obtain practical insights that result in more equitable, data-driven assessments and focused interventions by methodically monitoring important variables like timing, movement execution, and technical errors. In addition to encouraging openness, these forms facilitate the development of quantifiable improvement objectives between coaching staff and athletes.

5. Conclusion

Recent research has emphasized the importance of structured monitoring systems in combat sports (Chaabene et al., 2018; Kordi et al., 2009). For instance, a series study has been highlighted the value of biomechanical analysis and performance profiling in Pencak Silat to enhance technical execution and lower the risk of injury (Doewes et al., 2022; Irawan et al., 2021; Karo-Karo et al., 2023). Their study demonstrates how incorporating scientific principles into sports that have historically relied on skill can improve training results and athlete growth (Rahayuni, 2014). Hence, practitioners can close the gap between evidence-based practice and conventional

coaching methods by using monitoring forms that record performance metrics in real time, which will make the sport more progressive, inclusive, and egalitarian.

6. Acknowledgements

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