ISSN : 2527-9580 (print)
ISSN : 2579-7662 (online)

Jendela Olahraga
Volume 10, No. 01, January 2025, pp. 61-70
DOI: http://dx.doi.org/10.26877/jo.v10i1.21111

Utilizing GPAI for Korfball Game Analysis

Rafli Hakim Syaputra [1], Masayu Rizka Risjanna [2], Alen Rismayadi [3]

[123] Study Program of Sport Physical Coaching, Faculty of Sport and Health Education, Faculty of Physical Education and Health, Universitas Pendidikan Indonesia, Indonesia
syaputrahakim@upi.edu [1], masayurizka@upi.edu [2], rismayadialen@upi.edu [3]*
* corresponding author

ARTICLE INFO

Article history
Received 2024-12-01
Revised 2024-12-30
Accepted 2025-01-02

Keywords
Korfball
Game Analysis
GPAI

ABSTRACT

This study aims to determine and analyze the playing performance of the Indonesian national korfball team in the 2022 Asia-Oceania Korfball Championship event. Single Event Asia-Oceania Korfball Championship is a Korfball competition played by the Oceania National team, organized by the Asia-Oceania Korfball Federation and the International Korfball Federation (IKF). In this study, the data measurement technique is quantitative. The sample in this study is the Indonesian korfball national team totaling 12 players, the sample technique used is purposive sampling technique. Data taken from video tape Single Event Asia-Oceania Korfball Championship 2022 on youtube, the Indonesian National Team against the Philippines National Team. The instrument used as a means of evaluating team playing performance is the Game Performance Assessment Instrument (GPAI) including researchers using the assessment components with Skill Execution, Decision Making, Support, and Guard or Mark. The results of the research show that the four components are needed in the game of korfball. If the athlete can contribute to the four components of the assessment then the athlete has a good playing performance.

INTRODUCTION

The game of korfball is a sport played with hands on a rectangular field where two mixed teams try to shoot the ball into the korf (basket) of the opposing team. The main characteristic of this sport is that it uses complex movements, namely cooperative play, a combination of walking, running and jumping, as well as elements of strength, speed, accuracy, flexibility, balance, gender equality, the right to protect possession of the ball and score goals from 360°(IKF, 2022). Korfball is the only sport that involves a combination of male and female players in one team. Even though it is played by a combination of men and women, in the rules of the game men must against men, women must against women.

The Asia-Oceania Korfball Championship is a Korfball competition played by Oceania National teams, organized by the Asia-Oceania Korfball Federation and the International Korfball Federation (IKF). The International Korfball Federation (IKF) has been organizing continuous events for decades. The first IKF Asia-Oceania Korfball Championship took place in Jakarta, Indonesia in 1990 (IKF, 2019). In the 2022 IKF Asia-Oceania championship match, match statistics or game reports are not displayed on the videotape. The need for this to be shown as a way to analyze and evaluate player or team performance is match statistics (De Rose, 2004).

Study of team habits in a match will be important for each coach to determine the abilities that his team must improve and understand the strengths of other teams, so that with these related studies the coach understands the strengths and weaknesses they have (Hidayatullah, 2020). In a match there are factors that influence the outcome of the match, performance analysis is an important role to obtain data on match results to produce data on the strengths and weaknesses of player and team performance, so that a coach can see the development of each player and team's performance. That way the trainer can provide appropriate training portions of what needs to be improved, corrected and evaluated for each exercise that will be given (Anam & Wicaksono, 2022). With statistical data, we can analyze the match that will take place and can predict the final result of the match, namely win, draw or lose (Isriwanto, 2022). In the Korfball sport there is no specific instrument for assessing team playing performance and in Indonesia Korfball competition is still minimal so it is difficult to analyze team playing performance assessments.

Game Performance Assessment Instrument (GPAI) Oslin et al., (1998) was developed to measure game performance behavior that shows tactical understanding, as well as the ability to play to solve tactical problems by selecting and applying appropriate skills. Aryanto et al., (2020) argue that there are two advantages of using GPAI, namely to evaluate a person's ability in sports, such as (a) GPAI is easily adapted for various types of sports, physical activities, and (b) GPAI has the ability to measure skills in processing the ball, but also skills without controlling the ball (measuring offensive and defensive). For example, in an invasion, a teacher, trainer, or researcher only chooses to assess the components in GPAI, namely, Base, Adjust, Decision Making, Skill Execution, Support, Cover, and Guard/Mark.

Based on the description above, the researcher wants to know how the match results of the Indonesian National Korfball Team in the 2022 Asia-Oceania Korfball Championship Single Event are described using the Game Performance Assessment Instrument (GPAI).

METHOD

This research used descriptive methods with quantitave approach which aims to describe the situation objectively using numbers. The data examined is data obtained from the video tape of the 2022

Asia-Oceania Korfball Championship Single Event match in Pattaya, Thailand between Indonesian Korfball National Team's match against the Philippine National Korfball Team.

The instrument used as a means to evaluate game performance is the Game Performance Assessment Instrument (GPAI) which was created by Mitchell, Griffin, and Oslin (1995) in (Memmert & Harvey, 2008). Which is translated into Indonesian as the Instrumen Penilaian Penampilan Bermain (IPPB) (Aziz & Darajat, 2021). Researchers took four assessment components, namely 1) Skill Execution, 2) Decision Making, 3) Support, and 3) Guard/Mark. The four assessment components are taken based on expert interviews (coaches and athletes) and based on the needs of korfball.

RESULTS AND DISCUSSION

Results

Data was taken from 9 samples of assessment results from four components which have the criteria of shooting, passing, receiving from the components of carrying out skills (Skill Execution) and making decisions (Decision Making) while guarding or following the opponent's movements (Guard Or Mark) has the criteria of the situation of guarding the opponent by the ball and keeping the opponent without the ball and the component of providing support (Support) has the criteria of providing support to fellow teammates.

Table 1. Game perfomance assesment results

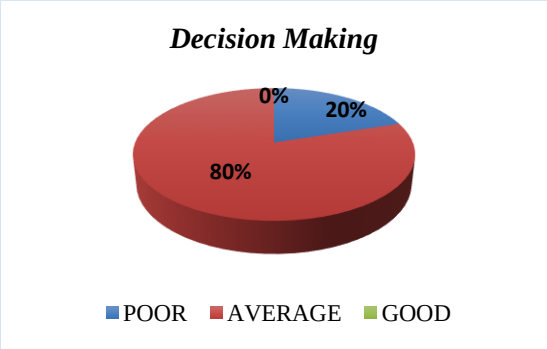
Initials	*Game Performance*	
	Index	**%**
AT	2,7	2,7%
JN	3,0	3,0%
MT	2,6	2,6%
JR	2,8	2,8%
RK	2,8	2,8%
MS	3,0	3,0%
IS	2,9	2,9%
RR	3,2	3,2%
MR	3,1	3,1%

Based on table 1 above, the results of the performance assessment of nine athletes from the Indonesian Korfball National Team who competed against the Philippine National Team. From this data, the performance assessment results for each player, AT has a performance of 2.7%, JN has a performance of 3%, MT has a performance of 2.6%, JR has a performance of 2.8%, RK has a performance of 2.8%, MS has a performance of 3%, IS has a performance of 2.9%, RR has a performance of 3.2%, MR has a performance of 3.1%. In the performance assessment results table, the one with the highest percentage is RR with a percentage of 3.2% and the lowest percentage is MT with a percentage of 2.6%.

The following is an overview of the four assessment components:

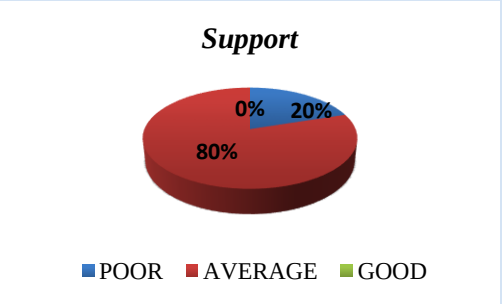
Picture 1. Skill execution components chart

Based on Picture 1 above, the Skill Execution components are 10% in the poor category, 80% in the quite good category, and 10% in the good category. The frequency distribution is 2 athletes in the poor category, 6 athletes in the quite good category, and 1 athlete in the good category.



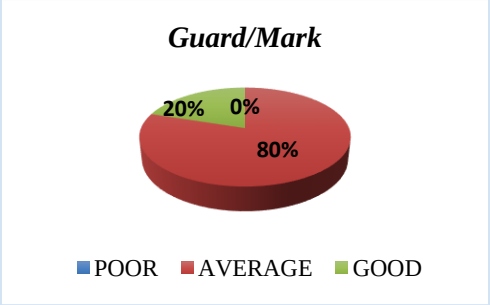
Picture 2. Decision making component chart

Based on Picture 2 above, the Decision Making components are 20% in the poor category, 80% in the quite good category, and 0% in the good category. The frequency distribution is 1 athlete in the poor category, 7 athletes in the quite good category, and 1 athlete in the good category.



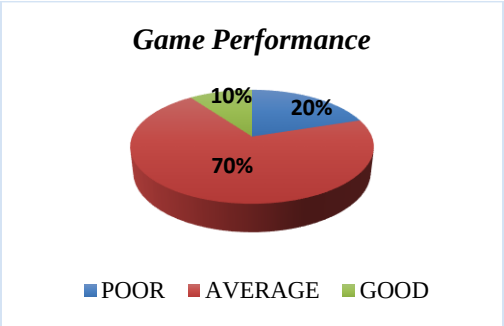
Picture 3. Support component chart

Based on Picture 3 above, the Support components are 20% in the poor category, 80% in the quite good category, and 0% in the good category. The frequency distribution is 2 athletes in the poor category, 7 athletes in the quite good category, and 0 athletes in the good category.



Picture 4. Guard/mark component chart

Based on Picture 4 above, the Guar/Mark components are 0% in the poor category, 80% in the quite good category, and 20% in the good category. The frequency distribution is 0 athletes in the poor category, 7 athletes in the quite good category, and 2 athletes in the good category.



Picture 5. Game performance chart

Based on the chart above, Game Performance is 20% in the poor category, 70% in the quite good category, and 10% in the good category. The frequency distribution is 2 athletes in the poor category, 6 athletes in the quite good category, and 1 athlete in the good category.

Table 2. Results of the F statistical test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.299	4	.075	227.703	.000[b]
	Residual	.001	4	.000		
	Total	.300	8			

Based on the significance value (Sig.) of the SPSS 26 Anova output in table 2 which has a value (sig.) of 0.000 < 0.05, the hypothesis is accepted. This means that the Skill Execution (X1), Decision Making (X2), Support (X3), and Guard/Mark (X4) variables together (simultaneously) influence the Game Performance (Y) variable. Based on the comparison of the calculated F value with the F table from the Anova output in table 4.18, the independent variable has a calculated F value of 227.703 > F table 6.39, so the hypothesis is accepted. This means that the variables Skill Execution (X1), Decision

Making (X2), Support (X3), and Guard/Mark (X4) together (simultaneously) influence the Game Performance (Y) variable.

Table 3. Variables (X1, X2, X3, and X4) together (simultaneously) influence (Y) variable.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.998[a]	.996	.991	.01811

Next, based on table 3 above, it is known that the coefficient of determination or R Square is 0.996. The R Square value of 0.996 comes from squaring the correlation coefficient value or (R), namely 0.998 X 0.998 = 0.996. The coefficient of determination (R Square) is 0.996 or equal to 99.6%. 99.6% means that the skill execution (X1), decision making (X2), support (X3), and guard/mark (X4) variables together (simultaneously) influence the game performance variable (Y). Meanwhile, the remainder (100% - 99.6% = 0.4%) is influenced by other variables outside this regression equation or variables that were not studied.

Discussion

We try to see how the assessment of the GPAI analysis in the korfball match. Based on the results of research it found that there was four variables are the skill execution (X1), decision making (X2), support (X3), and guard/mark (X4) influence the game performance variable (Y) in the Indonesian Korfball National Team's match against the Philippine National Korfball Team in the 2022 Asia-Oceania Korfball Championship. Game analysis is needed to evaluate players and is useful for coaches in developing training programs to suit the athlete's needs. Invasion team play in Indonesia is very diverse and its development is closely linked to individual development, impacting team performance. The Korfball game is included in the invasion game category (Mitchell dkk., 2006)**.** The Korfball game involves attacking activities to make a goal and there are activities that try to prevent the goal from happening (Hariono et al., 2021)**.** For this reason, in developing a performance assessment instrument for Korfball players, several stages are required which are studied carefully and precisely.

Study about Skill Execution component underlies that an athlete who has a good level of technical ability can perform a movement or skill well (Fitrianto, 2017)**.** According to (McGinnis, 2013) Skill Execution is one component of skills and execution, where skills are in understanding and mastering basic techniques, while execution is a continuation of skills that have been given or carried out in situations in the field. Mastering basic technical skills is essential for all players, along with tactical skills, to improve playing performance so that it runs well (Erčulj dkk., 2010).

Apart from that, this study reveals for an athlete, events that occur on the field cannot be predicted in advance or suddenly. This forces athletes to make decisions (Decision Making) quickly (Ferdiansyah

et al., 2020). Decision making is describe how a perso ability to process the information in the current situation, combined with the knowledge they have about the situation to choose (Causer & Ford, 2014), decide and carry out the right action (William & Ford, 2012). Decision making is understood as the player's ability to choose a functional action from a large number of possible actions that arise from the environment to achieve a certain goal Baker et al., (2003). This finding same as that expalined by Bennett et al., (2019) and Travassos et al., (2012) that athletes in team sports must make many decisions because they must understand and interpret environmental information on the field about the position of the ball, teammates, and opposing players while taking appropriate action. The characteristic of the Korfball game is that it relies on movement without the ball (off the ball), requiring athletes to make decisions as quickly as possible.

Korfball is a team sport which is definitely very important for establishing teamwork (Support) which is a form of shared goal within the team Araújo et al., (2020). Teamwork is an important variable within the context of sport team (McEwan, 2017). In team sports, the higher the athletes express their abilities, the more they will help a team in achieving its goals (Handayani, 2019). Support teamwork is an important element in a sports success team (Cannon-Bowers & Bowers, 2006). Team In sports, a team that has good defense and good attacking tactics will of course get good results in every match. Several studies have investigated the defensive strategies used during games (Gómez dkk., 2010). Good defense will result in a high failure rate in the opponent's attacks. Studies of (Sinaga, 2015) A team with a good defensive capabilities will hinder the opponent’s attack strategy. Due to mixed gender sports, athletes must be able to mark/follow their opponent's movements according to their gender and the provisions are that athletes cannot guard other than their gender. Developing individual defensive skills and ball control is a time consuming part of a training routine Shondell et al., (2002). On the other hand, the key to successful individual defense is the team's defense as a whole, if the defense is weak then the team's defense will also be weak and vice versa if the individual defense is strong then the team's defense will also be strong (Hasibuan, 2016).

CONCLUSION

In this research we try to describe the four selected components of playing performance assessment, namely, 1) Skill Execution, 2) Decision Making, 3) Support, and 4) Guard/Mark. These four components are really needed in the game of korfball, the characteristics of the game imply the presence of attacking activities (offense) and defensive activities (defense), therefore the game of korfball is included in the category of invasion games. Where individual development has an impact on team performance. Based on the results of statistical testing, the four assessment components together influence playing performance, therefore if an athlete can contribute to the four assessment components then the athlete will have good playing performance.

REFERENCES

Anam, A. S., & Wicaksono, A. (2022). Analisis Statistik Pertandingan Tim Bola Basket Putra Universitas Negeri Semarang Pada Kejuaraan Liga Mahasiswa Central Java And Yogyakarta Conference 2019. *Unnes Journal of Sport Sciences*, *6*, 59–64.

Araújo, D., Davids, K., & Renshaw, I. (2020). *Kognisi, Emosi dan Tindakan dalam Olahraga. Buku Pegangan Psikologi Olahraga* (G. Tenenbaum & R. C. Eklund (ed.)). John Wiley & Sons, Inc. https://doi.org/doi.org/10.1002/9781119568124.ch25

Aryanto, B., Sukoco, P., & Lumintuarso, R. (2020). The validity of construct analysis on assessment instrument of basketball skill for senior high school in Yogyakarta City. *International Journal of Human Movement and Sports Sciences*, *8*(5), 193–198. https://doi.org/10.13189/saj.2020.080506

Aziz, M. I. M., & Darajat, K. J. (2021). Pengaruh Model Pembelajaran Peer Teaching Terhadap Hasil Belajar Keterampilan Permainanan Bola Besar. *Stkipmutiarabanten.Ac.Id*, *6*(1), 5–16. https://stkipmutiarabanten.ac.id/wp-content/uploads/2021/04/Volume-5-Nomor-1-1-September-2019.pdf

Baker, J., Côté, J., & Abernethy, B. (2003). Sport-Specific Practice and The Development of Expert Decision-Making in Team Ball Sports. *Journal of Applied Sport Psychology*, *15*(1), 12–25. https://doi.org/https://doi.org/10.1080/10413200390180035

Bennett, K. J. M., Novak, A. R., Matthew A, P., Aaron J, C., & Job, F. (2019). Assessing The Validity of a Video-Based Decision-Making Assessment for Ralent Identification in Youth Soccer. *Jurnal Science And Medicine Of Sport*. https://doi.org/10.1016/j.jsams.2018.12.011

Cannon-Bowers, J. A., & Bowers, C. (2006). Applying Work Team Results to Sports Teams: Opportunities and Cautions. *International Journal of Sport and Exercise Psychology*, *4*(4), 447–462. https://doi.org/10.1080/1612197x.2006.9671807

Causer, J., & Ford, P. R. (2014). *'"Decisions, decisions, decisions"': Transfer and Specificity of Decision-Making Skill Between Sports*. *15*, 385–389. https://doi.org/10.1007/s10339-014-0598-0

De Rose, D. (2004). Statistical analysis of basketball performance indicators according to home/away games and winning and losing teams. *Journal of Human Movement Studies*, *47*(4), 327–336.

Erčulj, F., Blas, M., & Bračič, M. (2010). Physical Demands On Young Elite European Female Basketball Players With Special Reference to Speed,Agility,Explosive Strength, And Take-off Power. *Journal of Strength and Conditioning Research*, *8*, 2970–2978. https://doi.org/10.1519/JSC.0b013e3181e38107

Ferdiansyah, R., Imanuddin, I., & Fitri, M. (2020). Dampak Kelelehan terhadap Pengambilan Keputusan di Dalam Permainan Futsal. *Media Ilmu Keolahragaan Indonesia*, *10*(2), 69–71. https://doi.org/10.15294/miki.v10i2.23463

Fitrianto, E. (2017). Pengaruh Latihan Teknik Dasar Terhadap Keterampilan Bermain SepakBola Kelompok Usia 16-18 Tahun Di Diklat Cilo Magelang. *journal.student.uny.ac.id*.

https://journal.student.uny.ac.id/index.php/pko/article/viewFile/9052/8702

Gómez, M. A., Lorenzo, A., Ibáñez, S. J., Ortega, E., Leite, N., & Sampaio, J. (2010). An analysis of Defensive Strategies Used by Home and Away Basketball Teams. *Perceptual and Motor Skills*, *110*(1), 159–166. https://doi.org/10.2466/PMS.110.1.159-166

Handayani, S. G. (2019). Peranan Psikologi Olahraga dalam Pencapaian Prestasi Atlet Senam Artistik Kabupaten Sijunjung. *Gelanggang Olahraga: Jurnal Pendidikan Jasmani dan Olahraga (JPJO)*, *2*(2), 1–12. https://doi.org/10.31539/jpjo.v2i2.714

Hariono, A., Aryanto, B., & Pahalawidi, C. (2021). Validitas dan Reliabilitas Konstruk Instrumen Asesmen Keterampilan Bermain Korfball Menggunakan Analisis Exploratory Factor Analysis dan Confirmatory Factor Analysis. *Jorpres (Jurnal Olahraga Prestasi)*, *17*(1), 84–89. https://doi.org/10.21831/jorpres.v17i1.37173

Hasibuan, M. H. (2016). Analisis Tactical Individual (Block dan Intercept) Tim Futsal Univesitas Negeri Jakarta Pada UGM Futsal Championship 2016. *Jurnal Penelitian Pendidikan Guru Sekolah Dasar*, *6*(August), 128.

Hidayatullah, F. (2020). Analisis Indikator Performa Bola Basket Yang Mempengaruhi Skor Pemenang Pertandingan Pelajar Sekolah Menengah. *Journal STAND : Sports and Development*, *1*(1), 27–34.

IKF, I. K. F. (2019). History IKF Asia-Oceania Korball Championship. *korfball.sport*. https://korfball.sport/wp-content/uploads/2019/05/IKF-Asia-Oceania-Korfball-Championship.pdf

IKF, I. K. F. (2022). Official Rules Of Korfball. In *International Korfball Federation* (Nomor May, hal. 30). International Korfball Federation, Playing rules Committee.

Isriwanto, H. R. (2022). Analisis Kebutuhan Prediksi Pertandingan Bundesliga Menggunakan Metode Fuzzy. *Universitas Islam Indonesia*, *3*, 0–3.

McEwan, D. (2017). *Teamwork in Sport*. The University of British Columbia.

McGinnis, P. M. (2013). *Biomechanics Of Sport And Exercise*. www.HumanKinetics.com/BiomechanicsOfSportAndExercise!and!follow!the!

Memmert, D., & Harvey, S. (2008). The Game Performance Assessment Instrument (GPAI): Some concerns and solutions for further development. *Journal of Teaching in Physical Education*, *27*(2), 220–240. https://doi.org/10.1123/jtpe.27.2.220

Mitchell, S. A., Oslin, J. L., & Griffin, L. L. (2006). *Teaching sport concepts and skills: A tactical games approach (2nd ed.)*. Human Kinetics.

Oslin, J. L., Mitchell, S. A., & Griffin, L. L. (1998). The Game Performance Assessment Instrument (GPAI): Development and preliminary validation. *Journal of Teaching in Physical Education*, *17*(2), 231–243. https://doi.org/10.1123/jtpe.17.2.231

Shondell, Donald, Reynaud, & Cecile. (2002). *The Volleyball Coaching Bible*. Human Kinetics.

Sinaga, A. (2015). *Analisis Defense Tim Bola Basket Putri Pada Kejuaraan Liga Baasket Mahasiswa Jakarta*.

Travassos, B., Araújo, D., Davids, K., Vilar, L., Esteves, P., & Vanda, C. (2012). Informational Constraints Shape Emergent Functional Behaviours During Performance of Interceptive Actions in Team Sports. In *Psychology of Sport and Exercise* (Vol. 11, Nomor 3). https://doi.org/https://doi.org/10.1016/j.psychsport.2011.11.009

William, A. ., & Ford, P. R. (2012). 'Game Intelligence': Anticipation and Decision Making. In *Science and Soccer* (3rd Editio, hal. 17). Routledge.