Do Petanque Sports Athletes in Jawa Tengah Need Android-Based Applications for Training Program Implementation?
¿Los atletas de deportes de petanca en Jawa Tengah necesitan aplicaciones basadas en Android para la implementación del programa de entrenamiento?

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Abstract. The purpose of this study was to analyze the needs of athletes regarding monitoring the implementation of training programs for Android-based athletes and trainers. This research method is descriptive quantitative. The samples in this study were 20 athletes, 5 licensed trainers in petanque sports, and 1 expert in the fields of physical conditioning, 1 information, and technology. The data collection technique for this research was purposive sampling. The results of this study are that researchers found various things athletes need based on data in the field. The data is based on the results of distributing questionnaires and interviews with athletes, licensed petanque trainers, experts in physical conditioning, and experts in information and technology. These needs can be summarized in an Android-based application that can record data and athlete training developments on the field. Additional information from experts on physical conditions that monitor the implementation of petanque sports is urgently needed. This is useful for reducing the risk of injury to athletes caused by physical conditions that are not properly monitored. Information and technology experts claim that the Android application can be used to display chat features and maps, and it is very safe for storing data on the condition of athletes in each exercise. The conclusion from this study is that athletes need the application of a monitoring system for implementing training programs to improve the athlete's performance. Petanque trainers need a touch of technology based on Android applications to monitor the implementation of training programs and activities outside athlete training.
Keywords: Monitoring, Training Program, Android, Petanque

Resumen. El propósito de este estudio fue analizar las necesidades de los deportistas en cuanto al seguimiento de la implementación de programas de entrenamiento para deportistas y entrenadores basados en Android. Este método de investigación es descriptivo cuantitativo. Las muestras de este estudio fueron 20 deportistas, 5 entrenadores titulados en deportes de petanca y 1 experto en los campos del acondicionamiento físico, 1 de la información y la tecnología. La técnica de recolección de datos para esta investigación fue el muestreo intencional. Los resultados de este estudio son que los investigadores encontraron varias cosas que los atletas necesitan basándose en datos de campo. Los datos se basan en los resultados de la distribución de cuestionarios y entrevistas a deportistas, entrenadores de petanca autorizados, expertos en acondicionamiento físico y expertos en información y tecnología. Estas necesidades se pueden resumir en una aplicación basada en Android que pueda registrar datos y la evolución del entrenamiento de los deportistas en el campo. Se necesita urgentemente información adicional de expertos sobre las condiciones físicas que supervisen la práctica de los deportes de petanca. Esto es útil para reducir el riesgo de lesiones de los deportistas provocadas por condiciones físicas que no se controlan adecuadamente. Los expertos en información y tecnología afirman que la aplicación para Android permite visualizar funciones de chat y mapas, y es muy segura para almacenar datos sobre el estado de los deportistas en cada ejercicio. La conclusión de este estudio es que los deportistas necesitan la aplicación de un sistema de seguimiento para implementar programas de entrenamiento para mejorar el rendimiento del deportista. Los entrenadores de petanca necesitan un toque de tecnología basada en aplicaciones de Android para monitorear la implementación de programas de entrenamiento y actividades fuera del entrenamiento de los atletas.
Palabras clave: Monitoreo, Programa de Entrenamiento, Android, Petanca

Introduction

There has been a rapid evolution of the technologies available in the field of sports performance, and the consequences of this evolution are revolutionizing decision-making, training prescription, and injury management (Torres-Ronda & Schelling, 2017). Success in sports depends on access to high-quality coaching, but there are still many sports organizations that have limited financial resources and access to expertise in terms of coaching, and there are still many problems (Bennett, 2020). The approach of science and technology greatly affects the performance improvement of petanque athletes (Pilus et al., 2017). Several sports have implemented technology as a supporting element in improving athlete performance (Thatcher et al., 2021). Based on this theory, the

researchers concluded how important the application of technology and science is to improve athlete performance. The application of petanque sports technology in Indonesia has not been optimally implemented. This fact is demonstrated by several scientific research articles on the development or utilization of technology in petanque sports which are still minimal. This will affect the achievements of Petanque athletes in the last 5 years who have not been able to excel on the international stage. Jawa Tengah athletes' achievement record in the Qualification Pekan Olahraga Nasional (PON), athletes were only able to reach the quarter-finals. This prevented the Jawa Tengah team from qualifying for the 2020 PON which is planned to be held in Papua Province. Based on this, the research team will try to provide solutions to improve the performance of Jawa Tengah petanque athletes. The solution offered by the

research team is to create an Android-based application that can monitor athletes, starting from planning training programs, monitoring the lifestyle of athletes, and detecting the location of athletes in every activity that is carried out daily. Applying the right training program with the right accuracy can have a significant effect on improving shooting results in athletes (Phytanza et al., 2022).

Petanque is a game sport that uses an iron ball as a throwing tool and a jack as a target to bring it closer and when throwing both feet are in a circle with a diameter of 50 cm (Fe, 2020). The petanque sport competes in 11 numbers so it providesa huge opportunity for achievement for Jawa Tengah if it is managed properly (Laksana et al., 2017). The petanque game requires very highaccuracy to throw the iron ball as close as possible to the target in the form of a wooden ball (jack) (Hanief & Purnomo, 2019). Petanque sports have number shooting where shooting accuracy is needed to get maximum points (Badaru et al., 2021). A level of concentration and coordination with shooting accuracy is needed to improve the shooting results of petanque sports (Irawan, 2019). Physical activity is required to improve adiposity and physical fitness (Cabanas-Sánchez et al., 2019). Petanque sport requires good physical condition. Physical conditions that affect the game in petanque sport are arm's length, arm muscle endurance, and athlete'sconfidence directly affect the result of throwing petanque (Pelana et al., 2021). The explosive power of the arm muscles correlates with theresults of throwing 9 meters (Hanief & Purnomo, 2019). The development of exercise models and physical activities for children's gross motor skills is expected to have short-term and long-term physiological effects, for example on growth hormone, growth and development of muscle mass, physical health, and physical fitness (Kohl & Cook, 2013). Contemporary trends in sports coach mentoring literature in the future are needed to build a foundation for implementing earlier training patterns (Leeder & Sawiuk, 2021). Petanque sports have a variety of pointing and shooting very diverse exercises (Parlindungan et al., 2019). Diverse training requires periodic monitoring to provide feedback to the athlete about the performance of each training session (Brennan et al., 2022; Kiely et al., 2019). Trainingload monitoring provides information about the demands of physical conditions to optimize performance and prevent injury (Aughey et al., 2016; Drew & Finch, 2016; Piedra et al., 2021; Wing, 2018). The data generated from training monitoring activities can influence the efficiency of athlete performance and the ability to develop athletes ethically (Paul et al., 2022). Monitoring an athlete's training program can also play an important role in maximizing physical preparation and performance during competition, as well as minimizing unfavorable adaptations and fatigue during the competitive season (Ishida et al., 2022). Monitoring athletes to achieve achievements in professional sports requires monitoring patterns of appropriate trainingprograms (Akenhead & Nassis, 2016). Training intensity adjustment and training program

monitoring should be used to guide the coach, calculate what the coach is currently seeing, and provide longitudinal data to help review the athlete's progress and provide a baseline on the level of expected development (Suchomel et al., 2021). This monitoring system must be actual and factual so thatathletes can receive program adjustments in real time. Based on problems regarding the importance of physical condition in supporting the performance of petanque athletes,the importance of an athlete monitoring system, and the unavailability of monitoring technology for petanque athlete training programs in Jawa Tengah. So, researchers need to conduct a needs analysis for petanque athletes and trainers in Jawa Tengah related to the applications that will be developed later. This study aims to analyze the needs of athletes, coaches, physical trainers, and information technology in implementing petanque sports training programs. The results ofthis study will have the potential to become the basis for developing an application-based monitoring system for pétanquesports.

Material and Methods

This research method is descriptive quantitative where the research method is based on positivism philosophy, as a scientific method because it has fulfilled scientific principles concretely or empirically, objectively, measurably, rationally, and systematically (Sugiyono, 2017). This sampling technique uses purposive sampling where researchers have determined the characteristics of the sample needed in this study (Maksum, 2012). The data collection technique in this research is using the structured interview technique. A structured interview is an interview technique in which the respondent is asked a series of questions in the form of a questionnaire, and the list of questions must be related to the research problem to be solved (Maksum, 2012).

Researchers conducted interviews with athletes and petanque coaches in Jawa Tengah province. The samples in this study were 20 athletes, 5 licensed trainers of petanque sport, and 1 expert in the fields of physical conditioning, 1 expert in information, and technology. The Likert scale was used in the questionnaire answers proposed by the researchers. A Likert scale is a type of research data scale used to measure individuals' or groups' attitudes, opinions, and perceptions about social phenomena under investigation (Sugiyono, 2016). The Likert scale is 1 to 5 (1=strongly disagree=SD, 2=disagree=D, 3=neither agree nor disagree=NAND, 4=agree=A, 5=strongly agree=SA). The interview instrument for the petanque athlete will be presented by the researcher in Table 1. The interview instrument for the petanque trainer will be presented by the researcher in Table 2.

The interview instrument for the physical trainer will be presented by the researcher in Table 3.The interview instrument for the experts in the field of technology and information will be shown by the researcher in Table 4.

Statistical analysis used descriptive percentage data analysis techniques.

Table 1.
Guidelines for preliminary study interviews for petanque athletes

| No. | List of Questions | ANSWER | | | | |
| | | 1 | 2 | 3 | 4 | 5 |
		SD	D	NAND	A	SA
1	Knowledge of training programs is important for athletes.					
2	Athletes must know the training plan for each session.					
3	Athletes need to understand the order in which the exercise program is executed.					
4	Athletes need to know about the evaluation of training in each session.					
5	Athletes need media to consult with coaches privately.					
6	Athletes need to be monitored in performing daily activities outside of training activities.					
7	The coach needs to know the athlete's daily activities outside of training activities.					
8	The coach needs to know the athlete's position when carrying out daily activities outside of training activities.					
9	Athletes need an application that can monitor training activities.					
10	Athletes need knowledge about how to organize activity load and training load and manage these activities in an Android-based application.					

Table 2.
Guidelines for the petanque coach preliminary study interview

| No. | List of Quetions | ANSWER | | | | |
| | | 1 | 2 | 3 | 4 | 5 |
		SD	D	NAND	A	SA
1	The coach must create a training program and set targets in each training session.					
2	The trainer makes a training program plan which the athlete must know about the plan.					
3	The coach must be able to organize every training activity that will be carried out by athletes.					
4	The coach must make an evaluation in each exercise and report it to the athlete.					
5	Coaches need communication media in order to convey and build good communication with athletes.					
6	The trainer needs to monitor the athlete's activity during training and outside of training.					
7	The coach needs to know all the activities carried out by the athlete.					
8	The coach needs to know the location in detail of the athlete's daily activities.					
9	Coaches need application-based technology that can monitor all athletes' activities.					
10	The trainer needs to know about the activity load and training load that has been programmed to the athlete.					

Table 3.
Physical Trainer Preliminary Study Interview Guide

| No. | List of Questions | ANSWER | | | | |
| | | 1 | 2 | 3 | 4 | 5 |
		SD	D	NAND	A	SA
1	Athletes need to know the training program that has been made by the coach.					
2	The coach needs to know the quality of the athlete's rest every day.					
3	Athletes must report all training activities and daily activities to the coach.					
4	The coach needs to monitor all physical activities carried out by athletes.					
5	The coach needs to get data about the athlete's resting pulse rate every morning when the athlete's wakes up.					
6	Athletes need to get an evaluation in every implementation of the training program.					
7	Trainers need an application to manage activity load and training load.					
8	The coach needs to know the quality of the athlete's rest.					
9	Athletes need to get an evaluation of the quality of their rest.					
10	Coaches need to get information about all the physical conditions of athletes before carrying out training.					

Table 4.
Guidelines for preliminary study interviews with technology and information experts

| No. | List of Questions | ANSWER | | | | |
| | | 1 | 2 | 3 | 4 | 5 |
		SD	D	NAND	A	SA
1	Technology for monitoring the implementation of training programs needs to be developed to exceed training targets.					
2	Android is an operational system that is widely used by pétanque athletes and coaches in Jawa Tengah.					
3	The Android operating system is capable of recording training results data.					
4	The Android operating system is safe to use for recording data and monitoring the implementation of athlete training programs.					
5	The chat feature can be developed on the Android system.					
6	The Android operating system can record in detail the location of athletes and coaches in carrying out training activities and athletes' daily activities.					
7	The Android operating system can display graphs of the results of the implementation of the training program.					
8	The Android operating system is easy for users to understand.					
9	The Android operating system is more economical when compared to the existing operational systems on other mobile phones.					
10	The Android operational system is easier to develop compared to the operational systems that are often used on other mobile phones.					

Results

The instruments used in this research have been developed by the research team. Instrument validity and reliability data are presented in Table 5 using $n = 20$ and r table 0.444. Meanwhile, data from the reliability test results are also displayed in Table 6.

Table 5.
The results of the instrument validity test

Variable	Items	r-xy	r-table	Description
App View (X1)	X1,1	0.819	0.444	r xy > r Table, Valid
	X1,2	0.634	0.444	r xy > r Table, Valid
	X1,3	0.626	0.444	r xy > r Table, Valid
	X1,4	0.682	0.444	r xy > r Table, Valid
	X1,5	0.626	0.444	r xy > r Table, Valid
	X1,6	0.594	0.444	r xy > r Table, Valid
	X1, 7	0.854	0.444	r xy > r Table, Valid
	X1, 8	0.480	0.444	r xy > r Table, Valid
	X1, 9	0.753	0.444	r xy > r Table, Valid
	X1, 10	0.705	0.444	r xy > r Table, Valid
Application Usage(X2)	X2,1	0.814	0.444	r xy > r Table, Valid
	X2,2	0.696	0.444	r xy > r Table, Valid
	X2,3	0.832	0.444	r xy > r Table, Valid
	X2,4	0.789	0.444	r xy > r Table, Valid
	X2,5	0.758	0.444	r xy > r Table, Valid
	X2,6	0.586	0.444	r xy > r Table, Valid
	X2,7	0.777	0.444	r xy > r Table, Valid
	X2,8	0.758	0.444	r xy > r Table, Valid
	X2,9	0.839	0.444	r xy > r Table, Valid
	X2,10	0.845	0.444	r xy > r Table, Valid
	X2,11	0.824	0.444	r xy > r Table, Valid
Chat Facility (X3)	X3,1	0.756	0.444	r xy > r Table, Valid
	X3,2	0.797	0.444	r xy > r Table, Valid
	X3,3	0.730	0.444	r xy > r Table, Valid
	X3,4	0.796	0.444	r xy > r Table, Valid
	X3,5	0.911	0.444	r xy > r Table, Valid
	X3,6	0.884	0.444	r xy > r Table, Valid
	X3,7	0.593	0.444	r xy > r Table, Valid
	X3,8	0.726	0.444	r xy > r Table, Valid
	X3,9	0.576	0.444	r xy > r Table, Valid
	X3,10	0.721	0.444	r xy > r Table, Valid
	X3,11	0.475	0.444	r xy > r Table, Valid
Location Detection (X4)	X4,1	0.816	0.444	r xy > r Table, Valid
	X4,2	0.786	0.444	r xy > r Table, Valid
	X4,3	0.675	0.444	r xy > r Table, Valid
	X4,4	0.839	0.444	r xy > r Table, Valid
	X4,5	0.687	0.444	r xy > r Table, Valid
	X4,6	0.748	0.444	r xy > r Table, Valid
	X4,7	0.701	0.444	r xy > r Table, Valid
	X4,8	0.771	0.444	r xy > r Table, Valid

Table 6.
The results of instrument reliability analysis

Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Description
X1,1	158.6500	726.661	0.809	0.974	Reliable
X1,2	159.3000	724.326	0.608	0.975	Reliable
X1,3	159.2000	721.958	0.598	0.975	Reliable
X1,4	158.8500	721.397	0.659	0.975	Reliable
X1,5	159.3000	726.326	0.601	0.975	Reliable
X1,6	159.0500	726.682	0.566	0.975	Reliable
X1,7	158.8500	725.082	0.846	0.974	Reliable
X1,8	159.8000	737.642	0.452	0.975	Reliable
X1,9	159.3000	724.747	0.737	0.974	Reliable
X1,10	159.4000	725.621	0.687	0.974	Reliable
X2,1	159.4000	724.568	0.803	0.974	Reliable
X2,2	159.1500	719.713	0.673	0.975	Reliable
X2,3	159.3000	723.168	0.821	0.974	Reliable
X2,4	159.3000	722.853	0.776	0.974	Reliable
X2,5	158.9000	722.726	0.742	0.974	Reliable
X2,6	159.1500	732.766	0.562	0.975	Reliable
X2,7	159.0500	725.524	0.764	0.974	Reliable
X2,8	158.8500	726.976	0.744	0.974	Reliable
X2,9	159.0500	722.471	0.829	0.974	Reliable
X2,10	159.0000	727.053	0.836	0.974	Reliable
X2,11	159.0000	725.158	0.813	0.974	Reliable
X3,1	158.9000	727.358	0.742	0.974	Reliable
X3,2	158.9500	725.839	0.785	0.974	Reliable
X3,3	159.1500	729.503	0.715	0.974	Reliable
X3,4	158.8000	727.537	0.784	0.974	Reliable
X3,5	159.0500	725.103	0.906	0.974	Reliable
X3,6	159.1500	722.239	0.877	0.974	Reliable
X3,7	159.4500	722.787	0.562	0.975	Reliable
X3,8	159.4500	728.050	0.711	0.974	Reliable
X3,9	159.5500	722.261	0.542	0.975	Reliable
X3,10	159.3500	723.503	0.703	0.974	Reliable
X3,11	159.4500	733.208	0.440	0.976	Reliable
X4,1	159.0500	723.629	0.805	0.974	Reliable
X4,2	159.0000	724.421	0.773	0.974	Reliable
X4,3	159.5000	732.158	0.657	0.975	Reliable
X4,4	159.0500	725.208	0.830	0.974	Reliable
X4,5	159.7000	726.221	0.667	0.975	Reliable
X4,6	158.9000	730.200	0.735	0.974	Reliable
X4,7	159.2000	731.853	0.685	0.975	Reliable
X4,8	159.2500	722.618	0.756	0.974	Reliable

Table 7.
Results of interviews with athletes in the preliminary study

No.	List of Questions	ANSWER				
		1	2	3	4	5
		SD	D	NAN D	A	SA
1	Knowledge of training programs is important for athletes.	0	1	0	5	14
2	Athletes must know the training plan for each session.	0	0	0	9	11
3	Athletes need to understand the order in which the exercise program is executed.	0	1	0	5	14
4	Athletes need to know about the evaluation of training in each session.	0	0	1	7	12
5	Athletes need media to consult with coaches privately.	0	1	3	6	10
6	Athletes need to be monitored in performing daily activities outside of training activities.	0	2	1	8	9
7	The coach needs to know the athlete's daily activities outside of training activities.	0	1	0	7	12
8	The coach needs to know the athlete's position when carrying out daily activities outside of training activities.	0	3	1	9	7
9	Athletes need an application that can monitor training activities.	0	0	0	6	14
10	Athletes need knowledge about how to organize activity load and training load and manage these activities in an Android-based application.	0	0	0	8	12

In this preliminary study, researchers conducted interviews with athletes, trainers, physical trainers, and experts in developing Android-based applications. A summary of the results of these interviews will be described in Table 7 (interviews with athletes), Table 8 (interviews with trainers), Table 9 (interviews with physical trainers), and Table 10 (interviews with Android application experts). Several questions were asked based on the needs of the role of each resource person. This question was also prepared by the researcher based on research findings on monitoring the needs of athletes.

Based on the results of interviews with athletes totaling 20 people. Researchers used a purposive sampling technique. This technique is used because researchers take samples according to the characteristics of the research needs. The researcher will explain data in Table 7 from points 1 to 10. Data Table 5 point 1 explains that 1 (5%) disagree, 5 (25%) agree, and 14 (70%) strongly agree that knowledge of the training program is very important for an athlete. Point 2 explains that 9 (45%) agree and 11 (55%) athletes strongly agree that athletes must know the training plan for each session. Point 3 explained that 1 (5%) disagreed, 5 (25%) agreed, and 14 (70%) strongly agreed if they had to understand the sequence of implementing the training program. Point 4 explains that 1 (5%) is sufficient, 7 (35%) agree, and 12 (60%) strongly agree that athletes need to know about the training evaluation of each session. Point 5 explains that 1 (5%) disagree, 3 (15%) are sufficient, 6 (30%) agree, and 10 (50%) strongly agree that athletes need media to consult with coaches privately. Point 6 explains that 2 (10) disagree, 1 (5%) is sufficient, 8 (40%) agree, and 9 (45%) strongly agree that athletes need to be monitored in carrying out daily activities outside of training activities. Point 7 explains that 1 (5%) disagree, 7 (35%) agree, and 12 (60%) strongly agree that coaches need to know athletes' daily activities outside of training activities. Point 8 explains that 3 (15%) disagree, 1 (5%) enough, 9 (45%) agree, and 7 (35%) strongly agree if the coach needs to know the position of the athlete's location accurately when carrying out daily activities in outside of training activities. Point 9 explains that 6 (30%) agree and 14 (70%) strongly agree that athletes need an application that can monitor training activities. Point 10 explains that 8 (40%) agree and 12 (60%) strongly agree that athletes need knowledge about how to organize activity load and training load and manage these activities in an Android-based application.

In the interview data with these athletes, the researcher also found data about coaches who did not thoroughly know the athlete's activity schedule every day. Knowing the athlete's activity is very important. The coach must be able to ensure athletes carry out activities that are safe and do not interfere with the implementation of the training program. The coach must ensure that the athletes have enough rest. Athlete activities must be carried out with discipline. The discipline of athletes in carrying out all their daily activities such as school, work, study, family, and love, will describe the discipline of athletes when competing. This has an effect on when the athlete is competing. Athletes will continue to focus and be disciplined to maintain performance so they don't make mistakes, even if they are only small.

The next researcher conducted interviews with 5 petanque trainers. The petanque trainers interviewed by the

researchers hold local-level licenses. This coach has a very high dedication to the sport of petanque. This trainer continues to be active in developing petanque sports through a scientific approach. This interview data will later be used as a basis for developing a better and actual training system.

Table 8.
Results of interviews with petanque coaches.

No.	List of Questions	ANSWER				
		1	2	3	4	5
		SD	D	NAND	A	SA
1	The coach must create a training program and set targets in each training session.	0	0	0	2	3
2	The trainer makes a training program plan which the athlete must know about the plan.	0	0	0	1	4
3	The coach must be able to organize every training activity that will be carried out by athletes.	0	0	0	1	4
4	The coach must make an evaluation in each exercise and report it to the athlete.	0	0	0	0	5
5	Coaches need communication media in order to convey and build good communication with athletes.	0	0	0	3	2
6	The trainer needs to monitor the athlete's activity during training and outside of training.	0	0	0	4	1
7	The coach needs to know all the activities carried out by the athlete.	0	0	0	2	3
8	The coach needs to know the location in detail of the athlete's daily activities.	0	0	0	1	4
9	Coaches need application-based technology that can monitor all athletes' activities.	0	0	0	0	5
10	The trainer needs to know about the activity load and training load that has been programmed to the athlete.	0	0	0	0	5

The results of interviews with trainers in Table 8 from point 1 to point 10 will be described by the researcher as follows; Table 6 point 1 explains that 2 (40%) agree and 3 (60%) strongly agree that the coach must make a training program and set targets in each training session. Point 2 explains that 1 (20%) agree and 4 (80%) strongly agree that the coach must make a training program plan that athletes must know about this plan. Point 3 explains that 1 (20%) agree and 4 (80%) strongly agree that coaches must be able to organize every training activity that will be carried out by athletes. Point 4 explains that 5 (100%) strongly agree that the coach must make an evaluation of every exercise and report it to the athletes. Point number 5 explains that 3 (60%) agree and 2 (40%) strongly agree that coaches need communication media to convey good communication with athletes. Point 6 explains that 4 (80%) agree and 1 (20%) strongly agree that coaches need to monitor athletes' activities during practice and outside practice. Point 7 explains that 2 (40%) agree and 3 (60%) strongly agree that coaches need to know all activities carried out by athletes. Point 8 explained that 1 (20%) agreed and 4 (80%) strongly agreed that the coach needed to know the location in detail of the athlete's daily activities. Point 9 explains that 5 (100%) strongly agree that coaches need application-based technology that can monitor all athlete activities. Point 10 explains that 5 (100%) strongly agree that the coach needs to know about the activity load and training load that has been programmed for athletes. Additional information from the trainer who makes the training program is that the coach makes a program based on the athlete's initial ability level. The application of good training principles such as individual principles, specification principles, overload principles, progressive principles, reversibility principles, and recovery principles will have a good impact on the performance of athletes who are practicing (Aprilia, 2018). It's just that, in the training program that the coach compiled there were still many deficiencies and not detailed. The goal of the coachto carry out forms of training according to the wishes of the athlete is to make the athlete feel happy, happy, and enjoy (Allen & McCarthy, 2016).

The next interview is with a physical trainer named Dr. Hadi, M.Pd., who is an expert on strength and conditioning in sports. He has a physical trainer certificate from the Australian Strength and Conditioning Association (ASCA). This interview with the physical trainer aims to find out the scientific basis for making an exercise program. Based on the results of interviews with physical trainers, researchers will make plans to develop monitoring systems for the implementation of training programs.

Table 9.
Interview Results with Physical Trainers

No.	List of Questions	ANSWER				
		1	2	3	4	5
		SD	D	NAND	A	SA
1	Athletes need to know the training program that has been made by the coach.	0	0	0	1	0
2	The coach needs to know the quality of the athlete's rest every day.	0	0	0	0	1
3	Athletes must report all training activities and daily activities to the coach.	0	0	0	0	1
4	The coach needs to monitor all physical activities carried out by athletes.	0	0	0	1	0
5	The coach needs to get data about the athlete's resting pulse rate every morning when the athlete's wakes up.	0	0	0	0	1
6	Athletes need to get an evaluation in every implementation of the training program.	0	0	0	0	1
7	Trainers need an application to manage activity load and training load.	0	0	0	0	1
8	Coaches need to know the psychological condition of athletes before training, during training, and after training.	0	0	0	0	1
9	Athletes need to get an evaluation of the quality of their rest.	0	0	0	0	1
10	Coaches need to get information about all the physical conditions of athletes before carrying out training.	0	0	0	0	1

The results of the researcher's interviews with experts in physical condition have the result that athletes need an exercise program that has been prepared by the coach based on the athlete's initial physical condition. The coach also needs to know the quality of the athlete's rest every day so that the coach can adjust the training program as soon as possible to the athlete's condition. Athlete activity reports need to be carried out to discipline athletes in each activity. The coach also needs to know the psychological condition of the athlete before training, during training, and after training, this will affect the quality of the training that will be carried out by the athlete. To carry out a good managerial training program, trainers need an application that can record training program implementation data. Athletes need a medium to communicate with coaches to synchronize daily activities carried out by athletes with training programs made by coaches. Proper load monitoring can help determine whether an athlete is adapting to a training program and can also minimize the risk of illness and/or injury (Halson, 2014).

Table 10.
Summary of interviews with experts in the field of Technology and Information.

No.	List of Quetions	ANSWER				
		1	2	3	4	5
		SD	D	NAND	A	SA
1	Technology for monitoring the implementation of training programs needs to be developed to exceed training targets.	0	0	0	0	1
2	Android is an operational system that is widely used by pétanque athletes and coaches in Jawa Tengah.	0	0	0	0	1
3	The Android operating system is capable of recording training results data.	0	0	0	1	0
4	The Android operating system is safe to use for recording data and monitoring the implementation of athlete training programs.	0	0	0	1	0
5	The chat feature can be developed on the Android system.	0	0	0	0	1
6	The Android operating system can record in detail the location of athletes and coaches in carrying out training activities and athletes' daily activities.	0	0	0	0	1
7	The Android operating system can display graphs of the results of the implementation of the training program.	0	0	0	0	1
8	The Android operating system is easy for users to understand.	0	0	0	0	1
9	The Android operating system is more economical when compared to the existing operational systems on other mobile phones.	0	0	0	0	1
10	The Android operational system is easier to develop compared to the operational systems that are often used on other mobile phones.	0	0	0	0	1

In the next interview stage, the researcher interviewed one of the experts in the field of information and technology. This interview is to find out the development of technology and the potential for solving the problem of monitoring training programs using a technological approach. Based on previous problems regarding training programs and training program monitoring from athletes and coaches. In the interview stage with this expert, researchers will discuss the potential of the Android system as a support for solving problems regarding monitoring training programs and athletes' daily activities outside of training.

The results of interviews with researchers with experts in the field of information and technology. Researchers answer that Android has the potential as a basis for developing application systems. This application is useful for monitoring all athlete activities in everyday life. These activities are training activities and daily activities such as work, school, study, family, and love. These two activities need to be aligned so that athletes can carry out their daily activities properly, and get achievements that are the result of training activities. The image below is an identification of the factors that affect the athlete's training load.

Discussion

Physical training shows that combating muscle disuse through resistance training is a powerful intervention to combat loss of muscle strength and muscle mass, physiological vulnerability, and its consequent debilitating physical function, mobility, independence, chronic disease, management, well-being, psychology, quality of life, and healthy life expectancy (Fragala et al., 2019). Application-based monitoring on smartphones is needed to m an athlete's

training program can also play an important role in maximizing physical preparation and performance during competition, as well as minimizing unfavorable adaptations and fatigue during the competitive season (Ishida et al., 2022).

Each sport has its physiological characteristics and complications that tend to occur during sports practice (Luan et al., 2019). Petanque sport is a type of accuracy sport in which each number has different characteristics. This will affect the program that is adjusted to the athlete's condition and the athlete's specialization number. Adjustments to the training program for athletes must be conveyed in real time so that athletes can quickly make changes in carrying out the training program provided by the coach. The use of technology is still being explored, but there is potential for technology to positively influence the implementation of training programs and athlete techniques (Adesida et al., 2019). In the field of psychology, technology has been applied that can facilitate athletes to carry out online guidance (Price et al., 2020).

The lack of application of technology in petanque sports training has stimulated researchers to design a technology that can monitor the implementation of training programs and the daily activities of athletes. Based on the interview data that the researchers obtained, the researchers concluded that athletes and petanque in Central Java province still really need a technology that can carry out monitoring of athlete activity. This monitoring aims to review the physiological adaptations experienced by athletes due to training and improve athlete performance (CORRIGAN et al., 2022; Lee et al., 2021). Monitoring that is applied can detect earlier based on reports from athletes to measure levels of fatigue, sleep quality, and muscle pain that athletes self-report (Buchheit et al., 2013; Springham et al., 2021; Thorpe et al., 2015). Future monitoring should critically evaluate and explore methods to reduce the identified effectiveness barriers (Akenhead & Nassis, 2016). Technological robustness is an important factor in determining the scientific productivity of today's supercomputers in real-time and on a large scale (Agarwal et al., 2020). The rapid development of technology creates a non-invasive technology based on image analysis, which can monitor cells in real-time during biological processes (Wang et al., 2019).

Technology plays an important role in monitoring, managing, and managing disease (Moses et al., 2021). Application-based monitoring has been applied to monitor self-reported antihypertensive adherence, home lifestyle monitoring, self-management practices, self-efficacy measures related to blood pressure, weight, and self-reported health behaviors (Persell et al., 2020). Android applications can be used to monitor physical activity in real-time by a person (Hegde et al., 2016).

This research will stimulate the potential of creating training programs, monitoring training programs, and evaluating technology-based training programs. The results of the SWOT analysis show that Android, Blackberry, iOS

(Apple) and Symbian (Nokia) smartphones are located in quadrant I, namely companies have opportunities and strengths that can be utilized to develop and dominate the share of smartphones in Indonesia (Wadu & Wirawan, 2019).

The theories created based on the results of previous research can provide solutions to problems regarding the lack of use of technology in improving the performance of petanque athletes in Jawa Tengah province. Needs analysis based on this research data is that Jawa Tengah petanque athletes need an exercise program monitoring application. The technology offered to be used as a solution is an Android-based monitoring application intended to monitor all athlete activities from the implementation of training programs, rest quality, and daily activities outside the sport.

Conclusions

Based on the research results, it was found that there are still athletes who carry out training activities without an exercise program. The utilization and application of technology have not been maximized. There is a coach who does not carry out monitoring in every implementation of the training program. The coach does not evaluate every training session. The coach does not know the athlete's daily activities outside of training. Therefore, athletes need to implement a monitoring system for the implementation of training programs to support increased performance. Petanque trainers need a touch of Android application-based technology to monitor the implementation of training programs and activities outside of athlete training.

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