Effectiveness of the Sports Training Program Monitor on extracurricular activities of high school students in Central Java

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ABSTRACT

The Sports Training Program Monitor is an Android-based application that can record the performance of a workout program performed by students. This study aimed to identify the effectiveness of the application of sports training program monitoring on extracurricular activities of high school students in Jawa Tengah province. This study employed a quantitative research design using the survey method. The sampling technique was purposive sampling, and the research instrument was a questionnaire. The total sample consisted of 128 students (41 male and 87 female). Their mean body weight was 43.76±5.89 kg, height 1.62±0.09 m, and BMI 16.92±3.15 kg/m². The average duration of exercise was 2.03 ± 0.50 weeks. The effectiveness percentage of the application was 95.66% based on 128 samples, indicating that the application has a very high efficiency score. The implementation of sports training program monitoring has a very high level of effectiveness in monitoring student activities in managing extracurricular training. Teachers and students are encouraged to use this application to manage extracurricular sports programs, as it can help develop students' athletic potential and maintain accurate training records for extracurricular activities.

KEYWORDS

1. INTRODUCTION

Physical education is a physical activity that can influence the behavior of students and trainers (Akbar Harmono et al., 2024; Purwoto et al., 2024), as well as academic time during school (Iserbyt et al., 2022). Physical education is a pedagogical model adopted to develop students' physical literacy through more authentic sports experiences in physical education (Choi et al., 2022). The benefits of physical education and sports (PES) in schools are to build a healthy human being from the physical, mental, cognitive, psychosocial, and moral sides (Habyarimana et al., 2022). Physical education was the backbone of the entire community in the twenty-first century (Bakhrom, 2022). Interest in learning and motivation of students to pursue physical education subjects is very high (Naimi & Rahayu, 2022).

Media learning on physical education continues to make progress. This is what we see with a variety of technologies that have been created to improve learning outcomes and athletic performance in schools. Android-based athlete learning media has been created to improve athletic learning outcomes (Pujianto, 2022). The Classroom Assessment Scoring System (CLASS) was created to be a systematic observation instrument for assessing the characteristics of generic pedagogical pursuits transferred to the context of extracurricular sports training (Kohake et al., 2023).

Extracurricular activities can contribute to the formation of healthy habits and can promote an active lifestyle, so that positive habits can provide social benefits which can be a facilitator of sustainable development (Pérez-Ordás et al., 2019). Participation in sports and other recreational activities can be an effective tool to enhance the sense of ownership and social inclusion among group members (Valcke et al., 2023). Out-of-school activities can also be a source of inspiration for students to engage in entrepreneurial activities (Roșu, 2022). Extracurricular can also be one of the activities to reduce the boredom rate in students with all their activities at school (Heredia-León et al., 2023).

Sport Training Program Monitor is an Android-based application that can record the performance of an athlete's training program. It is an application created by a research team in 2021. The app also has a communication feature between coaches and athletes, so coaches can build good communication during program planning, program organization, program implementation, and program evaluation. The app can also monitor the movement of athletes and the position of the athlete's location through maps. However, the implementation of the application of the sports training program monitor on extracurricular activities in Indonesia is still very limited, especially in Central

Java. There is still no survey research regarding the use of applications for extracurricular training. Apart from that, extracurricular activities rarely use applications in their implementation. This especially needs to be understood by teachers and trainers. In addition, with the advancement of technology, students need applications to monitor their extracurricular activities, allowing them to integrate all their activities in one place.

Lack of diversification of activity in youth can lead to physical exhaustion, psychological fatigue, and acute injury (Popkin et al., 2019). The Android-based sports training monitor program has become one of the media for monitoring athletes' activity to improve their performance. Currently, the application will be tested on extracurricular sports activities in Higher Secondary Schools (SMAs). Based on the problems that the researchers get, researchers will conduct surveys where high school students use the application to monitor the implementation of training programs in extra-curricular activities. So this research aims to determine the effectiveness of application of sports training program monitor on extracurricular activities of high school students in Central Java.

2. METHODS

2.1. Design

This study employed a quantitative research design. Quantitative research is a systematic method of investigation aimed at exploring a phenomenon through the collection of measurable data, using statistical, mathematical, and computational techniques. This study used primary data, which are data obtained directly from the field.

The method applied in this research was the survey method. The survey method aims to gather information about a large population by interviewing a smaller, representative sample. This research describes how the sports training application of the Monitor program can be used to track students' activities in school. The study focused specifically on extracurricular sports activities among high school students in Central Java.

2.2. Population and Sample

Populations are generalized domains consisting of objects or subjects that have certain qualities and characteristics that are determined by the researcher to be studied and then draw conclusions. The purpose of population existence is to determine the size of a sample member taken from a population member and to limit the extent of a generalized area, a population consisting of many things not just people. The population in this study is a high school student in Central Java Province.

Samples are part of the number and characteristics that a population possesses (Sugiyono, 2019). The purpose of determining samples is to study the characteristics of a population because it does not allow researchers to conduct surveys in a population due to large numbers of populations, time constraints, costs, and other obstacles. Nonprobability sampling is a sample-taking technique that does not allow every member of the population to be selected as a sample, and for purposive sampling is a technique that takes a specific sample with a certain consideration. In determining the sample, the researchers considered the selection of samples on the condition that they were 1) male, 2) under 19 years of age, 3) resident or practicing in Central Java 4) performing extracurricular sports. The total sample used in the study was 128 people.

2.3. Instrument

The instrument used in this study is the dissemination of the questionnaire using the likert scale, i.e.: 1) very much agree, disagree, 2) agree, 3) quite agree, 4) disagree, and 5) very disagreed (Sugiyono, 2019). The questionnaires were distributed using Google Forms due to time constraints and to ensure the safety and health of all participants during the endemic period.

2.4. Data Collection Technique

Data collection is an important part of a study. This is because the quality of the research depends on the accuracy of a researcher in determining the correct data collection technique. In this study, the researchers used a lift to collect data in the field. Angket is a series of questions that are used to disclose information, whether it relates to facts or opinions.

2.5. Data Analysis

The data analysis technique in this study involved conducting validity and reliability tests on the questionnaire. A validity test assesses the extent to which a measurement instrument accurately measures what it is intended to measure, or in other words, whether the instrument truly captures the concept being examined (Maksum, 2012).

3. RESULTS

The researchers used the lift to identify the effectiveness scores of the application of sports training program monitoring on the extracurricular sports activities of high school students in Central Java. It was distributed to 128 respondents.

3.1. Efficiency of the Sports Training Program Monitor Application

The object measured in this research is student activities in managing extracurricular training. To find out the effectiveness of the application of sports training programs monitor on to the extracurricular activities of high school students sports in Central Java in the following way:

3.1.1. Data Tabulation

Table 4 presents the distribution of scores obtained by respondents for each item in the survey or assessment.

Table 1. Acquisition of answer scores for each item

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	182	1	.8	.8	.8
	183	2	1.6	1.6	2.3
	184	3	2.3	2.3	4.7
	185	2	1.6	1.6	6.3
	186	5	3.9	3.9	10.2
	187	9	7.0	7.0	17.2
	188	8	6.3	6.3	23.4
	189	10	7.8	7.8	31.3
	190	8	6.3	6.3	37.5
	191	7	5.5	5.5	43.0
	192	16	12.5	12.5	55.5
	193	20	15.6	15.6	71.1
	194	13	10.2	10.2	81.3
	195	7	5.5	5.5	86.7
	196	13	10.2	10.2	96.9
	197	4	3.1	3.1	100.0
	Total	**128**	**100.0**	**100.0**	

Most respondents scored in the mid-to-high range, indicating generally strong performance or agreement with the items assessed by the instrument.

3.1.2. Determination of respondents' response scale

Table 5 shows the criteria for categorizing respondents' scores based on statistical measures.

Table 2. Category criteria

Very Low	$X \leq M - 1{,}5SD$
Low	$M - 1{,}5SD < X \leq M - 0{,}5SD$
Sufficient	$M - 0{,}5SD < X \leq M + 0{,}5SD$
High	$M + 0{,}5SD < X \leq M + 1{,}5SD$
Very High	$M + 1{,}5SD < X$

Below, Table 6 shows descriptive statistics of the respondents' scores.

Table 3. Calculations

N	Valid	128
	Missing	0
Mean		191.32
Std. Deviation		3.547
Minimum		182
Maximum		197

The 128 valid responses had a mean score of 191.32 with a standard deviation of 3.547. The scores ranged from a minimum of 182 to a maximum of 197, showing moderate variation among respondents. Table 7 shows the score ranges used to categorize respondents' performance or responses.

Table 4. Scale range

Very Low	$X \leq 186$
Low	$186 < X \leq 190$
Sufficient	$190 < X \leq 193$
High	$193 < X \leq 197$
Very High	$X > 197$

Scores are classified from very low to very high, with most respondents likely falling in the sufficient (190–193) or high (193–197) ranges. Table 8 shows the frequency distribution of respondents' scores based on the scale range.

Table 5. Frequency distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Low	13	10.2	10.2	10.2
	Low	27	21.1	21.1	31.3
	Sufficient	31	24.2	24.2	55.5
	High	53	41.4	41.4	96.9
	Very High	4	3.1	3.1	100.0
	Total	128	100.0	100.0	

Most respondents scored in the high category (53 respondents, 41.4%), followed by sufficient (31 respondents, 24.2%) and low (27 respondents, 21.1%). Very few respondents were in the very low (13 respondents, 10.2%) or very high (4 respondents, 3.1%) categories.

3.1.3. Calculation of respondents' answer effectiveness scores

Respondent response scores are used to determine the effectiveness of the application. Respondents' response score is calculated using the following formula:

$$P = \frac{\Sigma xi}{\Sigma xj} \times 100\%$$

Where: **P**   = Percentage

Σxi   = Number score from respondent

Σxj   = Maximum score

100% = Constant

After all is calculated, the next score was classified into four categories as follows:

Table 6. Classification of effectiveness

Percentage (%)	Classification
81 - 100	Very Low
61 – 80	Low
41 – 60	Sufficient
21 – 40	High
0 – 20	Very High

Table 10 presents the efficiency scores of the sports training program monitor application across four aspects: application view, app usage, messaging facilities, and location detection.

Table 7. Application efficiency data

No.	Variable	Score
1	Application View (X1)	6123
2	Use Of The App (X2)	6727
3	Message Facilities (X3)	6734
4	Location Detection (X4)	4905
	Scores Obtained	24489
	Score Maximum (5 x 40 x 128 Respondent)	25600
	Percentage Score	**95,66%**

The total score obtained by respondents was 24,489 out of a maximum possible 25,600, resulting in an overall efficiency percentage of 95.66%.

4. DISCUSSION

Based on the calculation of 40 questions relating to the effectiveness of the application of sports training program monitor to 128 respondents obtained, the efficiency score of 95.66% stated to have very high efficiency. This performance improvement must of course be supported by a pattern of discipline in the implementation of activities. A measured exercise program can be a supportive factor in improved athlete performance. The mechanism in the development of training programmes is a way of coaching coaches, athletes, and parents to create and determine training programs that are tailored to the competition calendar (Susanto & Lismadiana, 2016).

The adoption of new technologies is occasionally linked to sedentary behavior in children, resulting in diminished levels of physical activity (Kanellopoulou et al., 2021). Technology can also make teachers have a high level of stress to apply in the learning process at school (Ismail Adham & Al-Zuhairi, 2022). Physical activity is necessary for students to reduce aggressive and irritable behavior and to maintain social order (Galdón-López et al., 2023). Physical education theacers may also serve as sources of encouragement for students to complete achievement-oriented programs (Melguizo-Ibáñez et al., 2023). The Sports Training Program Monitor based android can assist teachers in overseeing students' participation in training programs.

Coaching science and athlete physiology have an important role in developing athletes, especially teenagers (Munadi et al., 2022). The educational curriculum should have a strategy to develop students to have the kinetic abilities needed by students to be able to develop their talents (Obaid Aziz et al., 2022). The right technology can help teachers provide evaluations to students interactively and have a positive effect in improving students' talent skills (Ali, 2022). Sport training program based android can record the data while the students doing the exercise (Hidayah et al., 2024). This data can be used by teachers to evaluate students to improve performance.

The establishment of a real-time training monitoring system makes it easy to get athlete information on a regular basis, process and analyze that information, create appropriate training programmes, and can exchange information in real time (Ma et al., 2020). Performance sports must be carried out through a planned, structured, coherent, and sustainable construction process, and must be supported by sports science and technology (Pratama et al., 2019). To maximum performance has to go through a complex process, not just by exercising. Therefore, the training program should be structured systematically.

Increased performance in sports today is the result of the discoveries and developments of science and technology in sports. Implementation of the sciences and technologies in sports is known as the term sport science. The scope of this sport science is the development of the potential of athletes especially physical, technical, tactical, and mental to obtain maximum performance (Pratama et al., 2022). With this application, it is expected that trainers and athletes can implement on training activities in the preparation, and implementation of training programmes. The sports training program monitor app is a new tool that can be used to monitor exercise in real time.

5. CONCLUSIONS

The sports training program monitor is highly effective for tracking athletes' activities. This data is crucial for trainers to understand all aspects of exercise sessions. Coaches and athletes are encouraged to use this monitoring application for planning, implementing, and controlling training programs, as well as recording athletic activities. Additionally, schools can utilize this application to develop students with potential in sports, ensuring that extracurricular activities are well-organized and effective.

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All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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