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ORIGINAL SCIENTIFIC ARTICLE

THE RELATIONS OF USING DIGITAL MEDIA AND PHYSICAL ACTIVITY WITH THE PHYSICAL FITNESS OF 4TH AND 5TH GRADE PRIMARY SCHOOL STUDENTS

A. Erlina Listyarini[1ABCDE], Abdul Alim[1AB], Anisa Dwi Oktaviani[1BC], Kukuh Hardopo Putro[1BDE], Agus Kristiyanto[2BDE], Agus Margono[2BDE], Kukuh Wahyudin Pratama[3ABCD]

[1]Yogyakarta State University
[2]Universitas Sebelas Maret
[3]Institute of Advanced Science, Engineering, and Education

Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection

Corresponding Author: A. Erlina Listyarini, E-mail: erlina@uny.ac.id
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Abstract

The study purpose was to determine the relations of using digital media and physical activity with the physical fitness of 4th and 5th grade students of the state of Ngablak Elementary School in the academic year 2019/2020, Turi, Sleman Regency both individually and wholly.

Materials and methods. This research is a correlative study, which aims to find out whether there is a relationship between independent variables and dependent variables. The population of this study was 49 students from 4th and 5th grade of the state of Ngablak Elementary School in the academic year 2019/2020, Turi, Sleman. All of them were used as research subjects. The data collection technique is surveys. The surveys are done by applying collection techniques using surveys, tests and measurements. The instrument used in this study was a questionnaire both for digital media variables and physical activities, as well as the physical fitness test for Indonesian physical fitness variables. Data analysis techniques are regression and correlation analysis, both in simple way and double way through the prerequisite tests for normality and linearity.

Results. The results showed that at the level of 5% error means the correlation between the use of digital media and physical activity and the physical fitness of students in 4th and 5th grade of the state of Ngablak Elementary School in 2019/2020 academic year Turi, Sleman Regency, it was $F_{count} = 11.072 > F_{table} = 3.20$.

Conclusions. Since $F_{count} > t_{table}$, it can be concluded there is a significant relation between the use of digital media and physical activity and physical fitness.

Keywords: digital media, physical activity, physical fitness, elementary school.

Introduction

As the age progresses, technology develops rapidly, therefore everyone is required to be able to keep up with these developments (Limin et al., 2021). There are many positive impacts of this development. The positive impact of the development of science and technology enables everyone to obtain abundant, fast, and easy information from all over the world, penetrating space and time, for example with digital media (Wu, Wang, & Evans, 2019). The rapid development of digital media, it turns out that the psychological situation of children also experiences various reactions (Livingstone et al., 2017). Some use smartphones to add value to school lessons, and some make students lazy to move and often waste time in front of smartphones. In addition, the large number of children using digital media makes them less sociable (Cunningham, 2018).

There are actually a lot of sports games that can make a child healthy, but games in digital media e.g. smartphones dominate more (Kristiyanto et al., 2020). This is what makes the child's movements inhibited because the child is already sleepy on the smartphone (Handa & Ahuja, 2020). Physical activity outside the hours of the lesson as a reference becomes unusual for the children, this is actually on the basis of a rationing philosophy that explains the involvement of the child in the care of games, gymnastics, joint activities, and others

(Pozuelo-Carrascosa et al., 2018). To stimulate the development of efficient children's movements which will later be useful for mastering various skills. These skills can be in the form of basic skills, namely: walking, running, throwing, and jumping as well as special skills such as swimming and gymnastics. In the end, these skills will be used by children in everyday life (Bidzan-Bluma & Lipowska, 2018). Physical education teachers cannot know and directly monitor the physical activities of their students outside of school.

Development of basic movement skills and physical abilities in accordance with the needs of growth and development in a multilateral manner according to the age of students can be the basis for the development of sports movement skills (Sutapa et al., 2020). Physical activity is very important for a person, so everything that supports a good level of physical fitness is strived to be implemented since early childhood (Pramandhika, Rumini, & Kusuma, 2020). Therefore, the government requires the inclusion of physical education subjects in the education level from Elementary School, Junior High School, and Senior High School. Elementary school age is a very decisive period in the possibility of achieving growth and development in the future. The role of physical education as an educational tool is to achieve overall goals. The purpose of physical education is not an activity in itself, but to develop a student's potential through physical activity (Castelli & Mitchell, 2021). So that physical activities carried out during physical education can improve the quality of students' physical fitness, but if they are not active during the learning process.

A person with good physical fitness will be able to carry out daily activities relatively longer when compared to someone who has a low level of physical fitness (Nasrulloh et al., 2020; Nugroho et al., 2021). Physical fitness is very important for someone, so everything that supports a good level of physical fitness, is strived to be applied since early childhood. According to the physical education curriculum, Physical Education is 2 integral parts of education as a whole that is able to develop a child or individual as a whole in the sense that it includes physical, intellectual, emotional and moral spiritual aspects which in the learning process prioritize physical activity and habituation to a healthy lifestyle (Osipov et al., 2021). One of the goals of physical education is to increase physical fitness. With good physical fitness, students can participate in learning optimally and in the end it will improve the quality of human resources (Wilson et al., 2021).

Because a good level of fitness is the initial capital for elementary school age children to achieve further physical fitness. Good physical fitness will affect student learning activities, because students with good fitness status will be more enthusiastic in participating in the learning process (Gråstén et al., 2021). However, in reality, from the results of observations at the Ngablak public elementary school, students in the learning process are not allowed to bring digital media such as cellphones, laptops, tablets, and others. So that at rest time children can use rest time to do physical activities such as running, some are sitting while chatting with friends and some are eating. However, during the break, there are still few students who do physical activities.

Table 1. Instrument Grid

Variable	Factor	Indicator	Question Number	Number of Question
The relationship between the use of digital media and physical activities on the physical fitness of 4th and 5th grade students of the state ngablak elementary school academic year 2019/2020, District of Turi, Regency of Sleman		Use of Digital Media		
	Communication	Use of digital media	1,2	2
		Application use	3,4	2
		The purpose of using media in communication	5,6	2
		Frequency and duration of usage	7,8	2
	Education	Use of digital media	9,10	2
		Application use	11,12	2
		The purpose of using media in communication	13,14	2
		Frequency and duration of usage	15,16	2
	Entertaiment/Recreation	Use of digital media	17,18	2
		Application use	19,20	2
		The purpose of using media in communication	21,22	2
		Frequency and duration of usage	23,24	2
		Physical Activity		
	Physical activity at school	The frequency of P.E. learning	27	1
		The intensity of P.E. Learning	29	1
		Participation in P.E. Learning	31	1
		Use of school breaks	33,34*	2
		Extracurricular activities at school	25	1
	Physical activity outside of the school	The frequency of P.E. learning	28,35	2
		The intensity of P.E. Learning	39,40,41	3
		Participation in P.E. Learning	30,37	2
		Use of school breaks	36*,38*	2
		Extracurricular activities at school	26,32	2
Total			41	41

Information: (*) negative statement item (-)

Materials and methods

Study participants

The population in this study were students of the state of Ngablak Elementary School, Turi District, Sleman Regency, with total of 51 students, namely 4th grade with 25 students and 5th grade with 26 students for academic year 2019/2020. The technique used in research sampling was incidental sampling, namely the technique of determining the sample based on the chance, i.e. anyone who incidentally meets the researcher can be used as a sample, if it is considered that the person who happened to be met is suitable as a data source.

Study organization

This study used an observational research design with survey methods and physical fitness test. Observational research is the research that does not manipulate or intervene in research subjects. The survey method of this research is a correlation study, using the survey method, while the data collection technique uses a questionnaire and the test uses the physical fitness test.

The instrument used in this study was a questionnaire. Compilers use a closed questionnaire so that high respondents choose several alternative answers available. Composers used a questionnaire with a Guttman scale. Research using the Guttman scale is carried out if you want to get a firm (consistent) answer to the problem being asked. Answers from respondents can be made the highest score "one" and the lowest score "zero" for alternative answers in the questionnaire, the compilers assign a category for each positive statement, namely Yes = 1 and No = 0, while the category for each negative statement, namely Yes = 0 and No = 1. The general information regarding the instrument can be shown in table 1 below.

Data collection was carried out by distributing the questionnaire directly by the compilers assisted by other colleagues, and the questionnaire then the researcher provided an explanation of the filling of the questionnaire in accordance with reality and honestly with the Guttman scale model, then the questionnaire was collected to the compilers. Physical fitness test is conducted during P.E. lesson hours.

Statistical analysis

To test the relationship between the independent variable and the dependent variable, the product moment correlation analysis was used. To provide an interpretation of this relationship, the following guidelines can be used:

Table 2. Interval Class Table

Formula	Category
$X \leq M - 1{,}5SD$	Very Less
$M - 1.5\ SD < X \leq M - 0.5\ SD$	Less
$M - 0.5\ SD < X \leq M + 0.5\ SD$	Enough
$M + 0.5\ SD < X \leq M + 1.5\ SD$	Good
$X > M + 1.5\ SD$	Very Good

M = Average Value, S = Standard Deviation

Results

Research Result

Digital media is denoted by X_1, obtained a score with a maximum value of 21.00 and a minimum value of 3.00. The mean obtained is 12.43, the standard deviation is 3.99, the mode is 13.00 and the median is 13.00. Furthermore, the data are arranged in a frequency distribution based on the mean and standard deviation values obtained, which are divided into five categories, namely very good, good, enough, poor, and very poor. The calculation of the category norms for the use of digital media can be seen in the following table.

Table 3. Variable Frequency Distribution of Digital Media Use

No	Interval Class	Category	Frequency	Percentage
1	X = 6.51	Very poor	4	8.16%
2	6.51 < X = 10.45	Poor	10	20.41%
3	10.45 < X = 14.40	Enough	19	38.78%
4	14.40 < X = 18.35	Good	13	26.53%
5	X > 18.35	Very good	3	6.12%
	Total		49	100%

From above table, it can be easily seen with the histogram of digital media below:

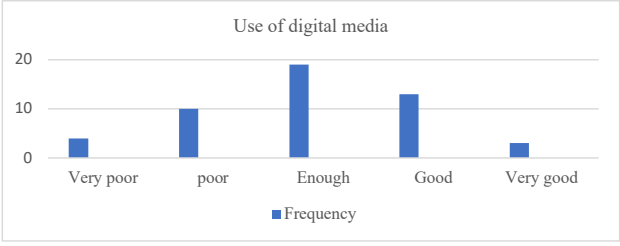

Fig. 1. Variable Histogram of Digital Media Usage

Physical activity is denoted by X_2, obtained a score with a maximum score of 104.00 and a minimum score of 22.00. The mean obtained is 54.53, the standard deviation is 16.66, the mode is 56.00 and the median is 53.00. Furthermore, the data are arranged in a frequency distribution based on the mean and standard deviation values obtained, which are divided into five categories. The following is the calculation of the norms for the physical activity category obtained.

Table 4. Variable Frequency Distribution of Physical Activity

No	Interval Class	Category	Frequency	Percentage
1	$X \leq 29{,}80$	Very poor	2	4.08%
2	$29{,}80 < X \leq 46{,}29$	Poor	14	28.57%
3	$46{,}29 < X \leq 62{,}78$	Enough	20	40.82%
4	$62{,}78 < X \leq 79{,}26$	Good	9	18.37%
5	$X > 79{,}26$	Very Good	4	8.16%
	Total		49	100.00%

From above table, it can be easily seen with the histogram of physical activity below:

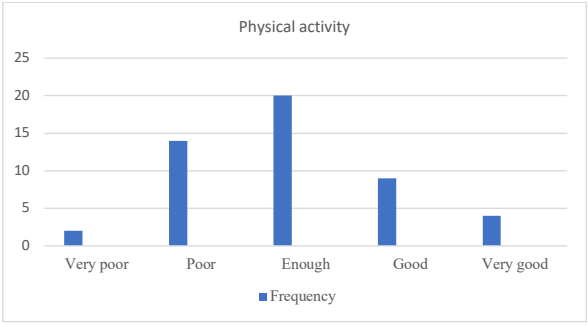

Fig. 2. Physical Activity Variable Histogram

Physical fitness is denoted by Y, the maximum score is 17 and the minimum score is 9. The mean obtained is 13.26, the standard deviation is 2.16, the mode is 12.00 and the median is 13.00. Furthermore, the data are categorized based on the standard norms of physical fitness test. The following is a table of variable frequency distribution of indonesia's physical fitness tests obtained.

Table 5. Distribution of Physical Fitness Frequency

No	Interval Class	Category	Frequency	Percentage
1	5-9	Very poor	2	4.08%
2	10-13	Poor	26	53.06%
3	14-17	Enough	21	42.86%
4	18-21	Good	0	0.00%
5	22-25	Very Good	0	0.00%
	Total		49	100.00%

From above table, it can be easily seen with the histogram of physical fitness below:

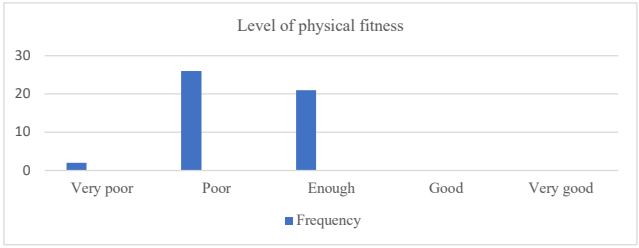

Fig. 3. Variable Histogram of Physical Fitness Test

Normality Test

Normality testing uses the Kolmogorov-Smirnov. This test will test the null hypothesis (Ho) that the sample comes from a normally distributed population. To accept or reject Ho by comparing the Sig price obtained with 0.05. The criterion is to accept Ho if the Sig value is greater than 0.05, in other cases the hypothesis is rejected.

Table 6. Summary of Normality Test Results

No	Variable	KS count	Sig (0,05) (df)	Conclusion
1	Use of digital media	0.090	0.200	Normal
2	Physical activity	0.115	0.124	Normal
3	Indonesian physical fitness test	0.120	0.073	Normal

From the table above the Sig price of the digital media use variable is 0.200, the physical activity variable is 0.124, and the Indonesian physical fitness test variable is 0.070. It turns out that the Sig value of the three variables is all greater than 0.05, thus the hypothesis stating the sample came from a normal distributed population is accepted.

Multiple Correlation

Multiple correlation is the relationship between the independent variables together with the dependent variable. The results of the multiple correlation calculations obtained multiple correlation coefficients in the table below:

Table 7. Multiple Correlation Coefficient

Relations between variables	Regression Line Equations	Correlation coefficient
$X_1X_2.Y$	$\hat{Y}$ =7.896 +0.239X_1+ 0.044X_2	0.570

From the table above, it can be obtained that the multiple correlation coefficient between the use of digital media and physical activity on the Indonesian Physical fitness test is 0.570.

Test Hypotheses Together

For multiple correlation test used F test from Sudjana, (2002: 385). In this test will test the null hypothesis (Ho) there is no significant relationship jointly between the independent variables and the dependent variable. To accept or reject the null hypothesis (Ho) by comparing the calculated F price (F_{count}) with the F price in the table (F_{table}). The criterion is to reject the hypothesis if the Fcount price is equal to or greater than the Ftable price, in other cases accept the hypothesis. The results of hypothesis testing for the relationship are collectively obtained as shown in the table below:

Table 8. Overall Relationship Test Results

Multiple correlation ($X_1X_2.Y$)	F_o	F_t (α = 0,05)(2/46)	Conclusion
0.570	11.072	3.20	Significant

From the table above, it is obtained that the Fvalue of the joint relationship between the use of digital media and physical activity on physical fitness together is 11.072. Meanwhile, the price for F_t (α = 0,05)(2/46) was 3,20. Because the price of F_{count} is greater than F_{table}, ($F_{count} > F_{table}$), the hypothesis which states that there is no significant relationship together between the independent variable and the dependent variable is rejected. Thus it can be concluded that "Together there is a significant relationship between the use of digital media and physical activity on physical fitness."

Discussion

Based on the results of the calculation, a significant relationship was obtained between the use of digital media and physical activity on the physical fitness test. Together, there is a significant relationship between the use of digital

media and physical activity on physical fitness. The multiple correlation value between the use of digital media and physical activity on physical fitness together is 0.570. Based on hypothetical testing, it turns out that the correlation of the two independent variables together with the Indonesian physical fitness test is significant. The relationship given by the two independent variables together with the Indonesian physical fitness test is 0.570. The correlation value obtained is positive, so this means that the higher the use of digital media and one's physical activity, the better one's Indonesian physical fitness test will be. From the correlation coefficient also obtained a coefficient of determination of 0.325. This means that the two independent variables have a contribution of only 32.5%. While the remaining 67.5% is influenced by other variables not included in this study.

These results are in accordance with the research of Riso et al. (2019) that Children participating in SC had higher moderate-to-vigorous PA, vigorous PA and cardiorespiratory fitness than children not participating in SC. Overweight children had lower results in cardiorespiratory fitness and all weight-bearing fitness tests, and better results in handgrip strength test in comparison with normal weight children. Significant associations were found between body composition indices and physical fitness tests. PA level was associated with fat-free mass and physical fitness but not with fatness indices. In addition, research by Pope et al. (2019) explained that Intervention adherence was high (~86%), with a retention of 92.1%. Participants implemented health education tips 1-3 times per week. We observed experimental and comparison groups to have 4.2- and 1.6-min/day increases in moderate-to-vigorous PA (MVPA), respectively, at six weeks – partially maintained at 12 weeks. In both groups, similarly decreased body weight (experimental = -0.6 kg; comparison = -0.5 kg) and increased self-efficacy, social support, and intrinsic motivation were observed pre- and post-intervention.

In the current era, learning with digital media is no longer prohibited, even now, during the corona pandemic around the world, learning that was initially face-to-face was replaced with learning using digital media (Cesare et al., 2019). Students of 4th and 5th elementary school grade will be very happy if they hold gadget, now this should not be misused just for playing games or using social media, but actually it will be more useful when children are directed to use gadget to help in the learning they are going through. Due to the joy that exists when holding gadget, learning using digital media will also be fun, so this will be a driving factor for students in completing their tasks to achieve their goals. In physical education learning, digital media is very important, for example when the teacher gives the task "try to do the correct kicking motion". Students can see examples by watching on YouTube, so that children will be more enthusiastic about practicing the information obtained from digital media to do assignments from their teachers.

The effective contribution given by the variable use of digital media and physical activity is 32.5% to the Indonesian physical fitness test. In the variable use of digital media, an effective contribution of 20.3% was obtained. While the physical activity variable gave an effective contribution of 12.2. It turns out that the contributions given from the two independent variables are not the same, namely that the variable use of digital media provides a greater contribution than physical activity.

Referring to the results above, it is suggested that in physical education learning in schools, the school provides concession for students to bring gadget to support the learning process. With digital media-based learning, learning will be more fun, and students will be more enthusiastic about participating in the learning process. In Physical Education learning, students will be more enthusiastic when doing physical activities, so that the level of physical fitness of the students will also be better. But beyond that there are still many other factors that contribute to Indonesia's physical fitness test such as the intensity of physical activity, frequency of exercise and others, which is 67.5%.

Conclusions

Based on the results of data analysis, hypothesis testing and discussion, it can be concluded that there is a significant relationship between the use of digital media on the physical fitness of 4th and 5th grade students of the state of Ngablak Elementary School in academic year 2019/2020, Turi, Sleman Regency. There is a significant relationship between physical activity on the physical fitness of 4th and 5th grade students of the state Ngablak Elementary School in academic year 2019/2020, Turi, Sleman Regency. Together, there is a significant relationship between the use of digital media and physical activity on the physical fitness of 4th and 5th grade students of the state of Ngablak Elementary School in academic year 2019/2020, Turi, Sleman Regency.

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Conflict of interest

All the authors of this research declare if there is no conflict of interest for this research.

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ВЗАЄМОЗВ'ЯЗОК ВИКОРИСТАННЯ ЦИФРОВИХ МЕДІА ТА ФІЗИЧНОЇ АКТИВНОСТІ З ФІЗИЧНОЮ ПІДГОТОВЛЕНІСТЮ УЧНІВ 4-ГО ТА 5-ГО КЛАСІВ ПОЧАТКОВОЇ ШКОЛИ

А. Ерліна Лістьяріні[1ABCDE], Абдул Алім[1AB], Аніса Дві Октавіані[1BC], Кукух Хардопо Путро[1BDE], Агус Крістіанто[2BDE], Агус Маргоно[2BDE], Кукух Вахьюдін Пратама[3ABCD]

[1]Державний університет Джок'якарти
[2]Університет Себелас Марет
[3]Інститут передової науки, техніки та освіти

Авторський вклад: A – дизайн дослідження; B – збір даних; C – статаналіз; D – підготовка рукопису; E – збір коштів

Реферат. Стаття: 7 с., 3 рис., 8 табл., 25 джерел.

Метою дослідження було визначити взаємозв'язок використання цифрових медіа та фізичної активності з фізичною підготовленістю учнів 4 та 5 класів початкової школи штату Нгаблак 2019/2020 навчальному році.

Матеріали та методи. Це дослідження є кореляційним дослідженням, метою якого є з'ясувати, чи існує зв'язок між незалежними та залежними змінними. У дослідженні прийняли участь 49 учнів 4-го та 5-го

класів початкової школи штату Нгаблак у 2019/2020 навчальному році. Метод збору даних – опитування. Анкетування використовувалося як для змінних цифрових медіа, так і фізичної активності. Для перевірки фізичної підготовленості використовувалося тестування індонезійських змінних фізичної підготовленості. Методами аналізу даних є регресійний та кореляційний аналіз, як простим, так і подвійним способом за допомогою необхідних тестів на нормальність та лінійність.

Результати. Результати показали, що на рівні 5% похибки існує кореляція між використанням цифрових медіа та фізичною активністю з фізичною підготовленістю учнів 4-го та 5-го класів початкової школи штату Нгаблак у 2019/2020 навчальному році ($F_р$= 11,072 > $F_{табл.}$ = 3,20).

Висновки. Оскільки значення $F_р$> значення $F_{табл.}$, можна зробити висновок, що існує значний зв'язок між використанням цифрових медіа та фізичною активністю з фізичною підготовленістю.

Ключові слова: цифрові медіа, фізична активність, фізична підготовленість, початкова школа.

Information about the authors:

A. Erlina Listyarini: erlina@uny.ac.id; https://orcid.org/0000-0002-5683-4050; Department of Physical Education, Faculty of Sport Science, Yogyakarta State University, Jl. Colombo Yogyakarta No.1, Karang Malang, Caturtunggal, Kec. Depok, Kabupaten Sleman, Daerah Istimewa Yogyakarta 55281, Indonesia.

Abdul Alim: abdulalim@uny.ac.id; https://orcid.org/0000-0002-9131-7219; Department of Sport Coaching, Faculty of Sport Science, Yogyakarta State University, Jl. Colombo Yogyakarta No.1, Karang Malang, Caturtunggal, Kec. Depok, Kabupaten Sleman, Daerah Istimewa Yogyakarta 55281, Indonesia.

Anisa Dwi Oktaviani: Oanisa29@gmail.com; https://orcid.org/0000-0003-0819-7541; Department of Physical Education, Faculty of Sport Science, Yogyakarta State University, Jl. Colombo Yogyakarta No.1, Karang Malang, Caturtunggal, Kec. Depok, Kabupaten Sleman, Daerah Istimewa Yogyakarta 55281, Indonesia.

Kukuh Hardopo Putro: Kukuhhardopo.2020@student.uny.ac.id; https://orcid.org/0000-0003-1877-1850; Department of Sport Science, Faculty of Sport Science, Yogyakarta State University, Jl. Colombo Yogyakarta No.1, Karang Malang, Caturtunggal, Kec. Depok, Kabupaten Sleman, Daerah Istimewa Yogyakarta 55281, Indonesia.

Agus Kristiyanto: agus_k@staff.uns.ac.id; https://orcid.org/0000-0001-7961-4643; Faculty of Sports, Universitas Sebelas Maret, Jl. Menteri Supeno, Manahan, Banjarsari, Kota Surakarta, Jawa Tengah 57139, Indonesia

Agus Margono: agusmargono@staff.uns.ac.id; https://orcid.org/0000-0001-6556-4235; Faculty of Sports, Universitas Sebelas Maret, Jl. Menteri Supeno, Manahan, Banjarsari, Kota Surakarta, Jawa Tengah 57139, Indonesia.

Kukuh Wahyudin Pratama: kukuh.pratama@iasee.org; https://orcid.org/0000-0003-4518-6358; Department of Sport Science Research and Development, Institute of Advanced Science, Engineering, and Education (IASEE), A-03A-05, Suria Jelutong, Jalan Bazar U8/99, Shah Alam, 40150, Selangor, Malaysia.

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