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Comparative Analysis of Student Learning Motivation and Motion Intensity in Tactical and Technical Learning Models in Invation Games

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Abstrak

Penelitian ini bertujuan untuk melihat perbedaan motivasi dan intensitas fisik pada siswa SMP melalui model pembelajaran taktis dan teknis dalam permainan invasi. Penelitian ini menggunakan metode eksperimen dengan desain post-test control group design. Pemilihan sampel menggunakan cluster random sampling dipilih untuk menentukan kelompok eksperimen dan kelompok kontrol. Dari masing-masing kelas terdiri dari 24 siswa. Dari masing-masing kelas diambil 8 orang siswa (4 laki-laki; 4 perempuan) karena terbatasnya ketersediaan instrument Polar Global Positioning System (GPS). Motivasi siswa diukur menggunakan angket. Data diolah menggunakan independent sample t-test. Hasil penelitian menunjukkan bahwa terdapat perbedaan motivasi dan intensitas gerak siswa pada kelompok model pembelajaran taktis dan teknis. Intensitas dan motivasi siswa pada kelompok model pembelajaran taktis lebih tinggi dibandingkan dengan model pembelajaran teknis. Implikasi penelitian ini dapat digunakan sebagai data empiris terkait motivasi dan intensitas gerak yang dipengaruhi oleh model pembelajaran taktis dalam permainan invasi. Sehingga pencapaian kebugaran jasmani dapat diperoleh dengan memperhatikan intensitas gerak siswa selama pembelajaran penjas secara objektif.

Abstract

This study aims to look at differences in motivation and physical intensity in junior high school students through tactical and technical learning models in invasion games. This study used an experimental method with a post-test control group design. Sample selection using cluster random sampling was chosen to determine the experimental group and the control group. Each class consists of 24 students. From each class 8 students were taken (4 men; 4 women) because of the limited availability of the Polar Global Positioning System (GPS) instrument. Student motivation is measured using a questionnaire. Data is processed using independent sample t-test. The results showed that there were differences in the motivation and intensity of student movements in the tactical and technical learning model groups. The intensity and motivation of students in the tactical learning model group is higher than the technical learning model. The implications of this study can be used as empirical data related to motivation and intensity of movement influenced by tactical learning models in invasion games. So that the achievement of physical fitness can be obtained by taking into account the intensity of student movement during the Physical Education learning objectively.

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INTRODUCTION

Physical education is one of the subjects in schools and has a role in the development of cognitive, affective and psychomotor aspects. Physical education programs in schools are aimed at developing students' potential (Rokhayati, Nur, Elan, & Gandana, 2017). Physical education is education through physical activities, which in learning leads and covers matters relating to these three aspects (Suherman, 2009). The process of teaching and learning physical education is a learning process basically a pedagogical interaction between teacher, student, material, and the environment. In addition to learning goals, the existence of physical education at school can support student learning. One study showed a positive relationship between insulin resistance, VO2max, and the forebrain in adolescents. Giving importance to brain health for learning and school performance, concludes that schools need to emphasize physical fitness to maintain integrated brain structure and function and support academic achievement (Ross, Yau, & Convit, 2015).

The goal of the learning process is student learning. Broadly speaking, this process can be divided into three management categories, namely routine management, core management of the learning process, and environmental management and learning materials. In relation to the teaching and learning process, we need a teacher who understands how to teach well, one of which is the selection of effective and efficient learning models as an effort to develop students' potential. The selection and use of appropriate learning models in the teaching and learning process of practice with the aim that learning outcomes can be mastered well, is an effort that must be done by every teacher. The use of appropriate learning models can encourage the growth of students' enjoyment of the lesson, foster and increase motivation in doing assignments, making it easy for students to understand the lesson so as to enable students to achieve better learning outcomes (Aunurrahman, 2010). For this reason, it is necessary to develop a learning model that is more effective and efficient, in accordance with the demands and characteristics of students who study. This means that students who have low levels of motivation will have many obstacles so that the achievement of learning outcomes is not optimal. Therefore, teachers must be able to anticipate or overcome these problems, by not using careless learning models, meaning teachers must be able to plan, set and implement various efforts related to teaching and learning activities, of course the selection of learning models is very effective for the creation of learning quality so that it has an impact on expected learning outcomes. More effective learning time in which there is a combination of high-quality teachers, as measured by general indicators such as experience, educational background, and main subjects. This influence has a big influence on students with lower socioeconomic conditions (Motegi, 2019).

Motion learning in physical education not only provides a challenging motion experience but motivates children to move. However, several studies mention that motivation and intensity of learning motion is seen as a key factor in the quality of the physical education learning process (Cortés, Correa-Díaz, Benjumea-Arias, Valencia-Arias, & Bran-Piedrahita, 2017). Learning model as a way to facilitate students to learn effectively so that they are able to improve their capabilities (Joyce, Weil, dan Calhoun;Fawaid & Mirza, 2009). Motivation is a psychological phenomenon that is produced as a result of a person's intentions, needs, interests or desires (Cortés et al., 2017). In the practice of physical education and sports students can engage in motivational factors that encourage or break the spirit (Cortés et al., 2017). But there are no studies that assess objectively the intensity of movement in secondary school students included in the adolescent category. This study will analyze the differences in motivation and the achievement of student movement intensity in physical education learning through tactical and technical learning models, using assistive devices Heart Rate Monitor Polar GPS (Owen, Curry, Kerner, Newson, & Fairclough, 2017).

METHODS

Research is a type of comparative research (Maksum, 2009). The research method that will be used in this research is experiment with design Posttest Control Group Design (Johnson & Christensen, 2012; Astuti, Prasetyo & Rahayu, 2012). The subjects were students of Laboratorium Percontohan UPI Bandung Junior High School. The Sample are Students Grade VII.

The sampling technique in this study uses the technique Cluster Random Sampling, so that as many as 2 classes were taken randomly from the total number of classes to be sampled, each class consisting of 24 students with an age range of 12-13 years. Due to the limited availability of the Polar Global Position System (GPS) instrument as a tool for measuring pulse rate and distance traveled, the samples in each class were only taken as many as 8 students (4 male; 4 female) with an age range of 12-13 years. Motivation was measured using a physical education and sports learning motivation questionnaire adopted from (Ginanjar, 2015).

RESULT AND DISCUSSION

Data that has been obtained from the results of research and measurements on research subjects are analyzed according to need. Descriptive statistics are the initial images to see the distribution of data in each group.

Table 1. Descriptif Statistic

	Group	N	Mean	Std. Dev.	Std. Error Mean
Movement Intensity	Tactical	8	202.25	15.11	5.343
	Technique	8	169.00	13.54	4.789
Motivation	Tactical	8	20.25	1.48	.526
	Technique	8	16.62	2.50	.885

Based on the descriptive statistical table above, the mean value obtained in the variable of the intensity of the uninterrupted Motion is between 169.00 to 202.25 and the standard savings ranges from 4.78 to 5.34. A mean value of 169.00 was obtained in the technical group, whereas in the tactical group a mean value of 202.25 was obtained. In addition to the motivational variables obtained mean values ranged between 16.62 to 20.25 and standard simulations ranged from 1.48 to 2.50. A mean value of 20.25 was obtained in the tactical group, while in the technical group a mean value of 16.62 was obtained.

Based on the Shapiro Wilk test table the variable motion intensity of the Tactical group obtained a significance value of 0.229 (0.229> 0.05), while the Technical group obtained a significance value of 0.714 (0.714> 0.05). Then in the motivation variable the Tactical group obtained a significance value of 0.428 (0.428> 0.05), while the Technical group obtained a significance value of 0.714 (0.404> 0.05). The decision making method for the normality test is if the significance value> 0.05 then the data is normally distributed and if the significance value <0.05 then the data is not normally distributed). Therefore, based on the significance value obtained in the variable of motion intensity and motivation in both the Tactical and Technical groups the significance value obtained above 0.05, in other words the data on the motion intensity and motivation variables are normally distributed.

The significance value of the motion intensity variable was 0.597 while the motivation variable obtained a significance value of 0.139. Same is the case with the normality test. The decision making method for homogeneity test is if the significance value> 0.05 then the data is homogeneous and if the significance value <0.05 then the data is not homogeneous. Therefore, based on the significance value obtained in the variable motion intensity and motivation obtained significance values above 0.05, in other words data on the motion intensity variable and homogeneous motivation.

Table 1. Independent Samples Test

		Levene's Test for Equality of Variances		**t-test for Equality of Means**			
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference
Movement Intensity	Equal variances assumed	0.29	0.60	4.63	14.00	0.00	33.25
	Equal variances not assumed			4.63	13.84	0.00	33.25
Motivation	Equal variances assumed	2.47	0.14	3.52	14.00	0.00	3.63
	Equal variances not assumed			3.52	11.40	0.01	3.63

Based on the analysis results presented in the independent sample t test table, it is evident that there are significant differences between the tactical and technical learning models of learning motivation, this is evidenced by the t value of 4.43 and significant at 0.00 (0.00 < 0.05). Then the mean defference obtained value of 33.25, meaning that there is a difference in the average value between tactical and technical groups on learning motivation. The tactical learning model group

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(M = 202.25) is higher than the technical group (M = 169.00)

Similar to learning motivation variables, based on the results of the analysis presented in the independent sample t test test table, it is evident that there are significant differences between the tactical and technical learning models of motion intensity, this is evidenced by the t value of 3.52 and significant at 0 .00 (0.00 <0.05). Then the mean defference obtained value of 3.63, meaning that there is a difference in the average value between tactical and technical groups to the intensity of motion in the tactical learning model group (M = 20.25) higher than the technical group (M = 16.62).

Human behavior and motivation can be explained through self-determination theory. Cognitive evaluation theory distinguishes between intrinsic and extrinsic motivation, and focuses on the determinants of intrinsic motivation. Intrinsic motivation is a very important factor in physical activity throughout (Deci & Ryan, 1985; Costigan, Lubans, Lonsdale, Sanders, & del Pozo Cruz, 2019). Other studies show the potential benefits of physical activity in adolescent health. The time spent on moderate physical activity is related to better affective behavior. The importance of moderate physical activity in adolescents, as recommended as many as 3 days a week in accordance with physical activity guidelines (Costigan et al., 2019). Other findings support the application of the self-determination model in explaining the antecedents of moderate physical activity in adolescents that are measured objectively. To increase physical activity of adolescents, it must focus on increasing their intrinsic motivation towards physical education and emphasizing the importance of students' intrinsic motivation and meeting their psychological needs in physical education learning (Kalajas-Tilga, Koka, Hein, Tilga, & Raudsepp, 2019). Reducing obesity and increasing physical activity to a moderate degree can predict a short-term reduction in systolic blood pressure that is clinically meaningful for African-American adolescents suffering from obesity. The natural environment can change physical activity in adolescents as well as at their own pace, compared to structured physical activity programs. The physical activity model created in this study suggests small changes in obesity reduction and moderate physical activity increase. (Towner et al., 2019).

Another study shows novelty in testing the enjoyment of physical activity as a mediator of the social and physical environment in the physical activity of early adolescents based on female gender. This study shows the contribution of the existing literature by identifying several social and physical environmental factors associated with pleasure in physical activity (Budd et al., 2018; Pfledderer, Burns, & Brusseau, 2019). Physical education in secondary schools provides valuable experience and structured physical activity programs (McLennan & Thompson, 2015;Bechter, Dimmock, & Jackson, 2019).

Teacher training programs in using teaching strategies can be useful to encourage student motivation as expected, and provide insights into the mechanisms of responsibility for positively influencing classes (Bechter et al., 2019). Sedentary behavior and physical activity are both important predictors of depression in adolescents (Farren, Zhang, Gu, & Thomas, 2018). There is a reciprocal relationship between motor competence, body fat, VO2peak during childhood through early adolescence (6-13 years). Interventions on motor competence, cardiorespiratory fitness, and body fat in children are recommended as interventions that might be improved because of the mutual relationship with each other on the three variables. (Lima, Bugge, Ersbøll, Stodden, & Andersen, 2018).

There is a lot of literature documenting student results that can be achieved through student-centered learning strategies and satisfaction of students' basic psychological needs. These two literatures, however, have developed largely in isolation from each other, and our aim in this investigation is not only to examine motivational results derived from student-centered learning interventions, but also to better understand whether there are desired outcomes from pedagogical the. the approach can be explained by satisfying the needs of students. Our analysis largely expresses support for our statement, and shows that student-centered methods can satisfy students' needs for autonomy and interconnectedness, and promote (or at least, protect or maintain) their motivation and efforts in PE. We hope this investigation offers a basis for further work that provides strong insights into the psychological process-

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es that underlie student-centered learning outcomes. (Bechter et al., 2019).

CONCLUSION

Students' motivation in the tactical learning model group spurs students to move more intensely, because the opportunity to move on the tactical learning model is more than that of the technical learning model group that is sufficient to simply repeat the movements instructed by the teacher. The tactical learning model applied by the teacher to physical education learning can increase motivation for students to move and achieve high intensity of movement compared to groups learning with technical learning models. The intensity of the motion can describe the effectiveness of learning and student motivation in participating in physical education learning.

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