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The Effect of Growth Mindset on Athletic Learning Success: A Study on Students in Sprint Numbers

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Abstract

This study aims to analyse the effect of growth mindset on the success of athletic learning, especially in sprinting numbers on PJKR STKIP Pasundan students. The method used is Single Subject Research (SSR) with A-B-A design according to Tawney and Gas (1984), initial measurement (pre-test), growth mindset-based intervention phase, and final measurement (post-test). The research subjects were 34 students of Physical Education, Health, and Recreation (PJKR) STKIP Pasundan who were selected through cluster random sampling technique. The instruments used included a sprint test and a growth mindset questionnaire. The results showed a significant increase in students' sprint performance after the growth mindset intervention. Before the treatment, the majority of students were in the low ability category (71%), but after the intervention, this proportion decreased to 24%, while the fair and good categories increased to 56% and 20%. Statistical tests using paired sample t-test showed a significant difference between the pre-test and post-test results ($t = 9.781$, $p = 0.001$). The data also showed a strong and significant relationship between growth mindset and sprint performance ($r = 0.794$, $p < 0.001$). Thus, the growth mindset-based intervention proved to be effective in improving the success of students' sprint learning.

Keywords: Growth Mindset, Sprint, Athletics Learning

INTRODUCTION

Mindset is an important factor that influences motivation, achievement and well-being (Dweck, 1017; Sarrasin et al., 2018; Sigmundsson et al., 2020). In addition, mindset also plays a major role in developing skills and potential (Sigmundsson et al., 2020). Good thinking skills not only help individuals solve problems and make wise decisions, but also play a role in facing life's challenges with more confidence (Verawati & Sarjan, 2023). In addition, one's mindset also affects mental and physical health, where positive thoughts can improve well-being, while negative thoughts have the potential to have a negative impact. In addition, creativity and innovation are also born from an evolved mindset, allowing individuals to find solutions in various aspects of life (Bernecker & Job, 2019).

Physical Education in higher education has an important role in character building, physical skills, and learning achievement (Bisa, 2023). The success of PE learning depends not only on the physical, but also the mindset of students. In line with that, mindset theory explains that the

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way a person's mindset will affect how they think, feel and act in the face of challenges to develop (Dweck & Leggett, 1988). In an academic context, there are two types of mindsets that can influence how a person faces learning challenges, namely growth mindset and fixed mindset (Dweck, 2016).

Growth mindset encourages one to believe that abilities and intelligence can develop over time through effort and learning (Dweck, 2017; Limeri et al., 2020; Mayshita et al., 2023; Rahmania et al., 2022). In contrast, a fixed mindset tends to make a person feel that their abilities are fixed and cannot be changed (Dweck & Leggett, 1988). Supriyadi et al.'s (2023) research shows that students with a growth mindset are better able to deal with academic stress, have higher learning motivation, and are more persistent in overcoming challenges, thus contributing to improved learning outcomes. They see challenges as opportunities for growth and are more eager to participate in learning, including in courses. Someone with a growth mindset tends to have high perseverance and be more active. This belief encourages one to be more diligent, focused, enjoy the learning process, and stay motivated in facing challenges without giving up easily (Jach et al., 2017; Rahmania et al., 2022).

In learning athletics in higher education, student success is not only determined by physical factors alone, but also by the mindset they have. Growth mindset, as explained by Dweck in Michael & Rutledge, (2022) a person's ability can develop through practice, consistent effort, and effective learning strategies. Therefore, persistent effort and actively seeking solutions to improve their skills are required.

In relation to this, in the context of athletic learning, especially in sprinting, there is an interesting phenomenon among students who take part in this programme. Many of the students showed a lack of motivation and seriousness in attending lectures, which had a negative impact on the learning process (Sormin & Mulyani, 2022). Some students find it difficult to absorb the material taught and doubt their abilities, thus hindering the development of athletic skills that should be achieved (Mulyana, 2017). In addition, there is a tendency among students to compare themselves with others, so that some of these students feel that their colleagues have better motor skills (Utomo & Indahwati, 2017; Birriy & Indahwati, 2016). This can result in decreased self-confidence and motivation to practice, which in turn affects learning outcomes (Bandura, 1977).

Therefore, the application of the growth mindset concept is needed to help students overcome challenges in learning athletics, especially in sprinting numbers. With a growth mindset, it is expected that student motivation and self-confidence can increase, thus supporting academic success. So, this study aims to measure and determine the correlation between growth mindset and students' sprinting results, in order to understand the extent to which growth mindset can contribute to improving sprinting performance.

METHODS

This study uses the Single Subject Research (SSR) method based on the theory of Tawney and Gas (1984), using the A-B-A design. Where A is an initial measurement without treatment (pre-test), B is the intervention phase, and A again as a measurement after treatment (post-test). This method was chosen to evaluate changes in students' sprinting results after being given a growth mindset-based intervention.

The research was conducted at STKIP Pasundan Cimahi with a population of students of the Physical Education Health and Recreation (PJKR) Study Programme of STKIP Pasundan Batch 2024. The sampling technique uses Cluster Random Sampling, namely the researcher randomly determines which group is the sample, then the PJKR 1i class is selected as many as 34 students as the research sample.

The instruments used in this study consisted of a sprint test and a growth mindset questionnaire. The initial test (pre-test) of sprinting was carried out and then the intervention (growth mindset), then the final test (post-test) to measure changes in student performance in sprint learning.

The data obtained was analysed using SPSS through several stages as follows; 1) Categorising data on sprinting results, 2) Growth Mindset questionnaire results data categorisation, 3) Normality Test, 4) Homogeneity Test, 5) Hypothesis Test using the Paired Sample t Test, 6) Correlation Test, 7) Regression Test.

RESULTS AND DISCUSSION

After conducting research related to sprinting performance through pre-test and post-test, from the results of these test it can be seen how much the level of change between the initial test and the final test after treatment of sprint learning. After data processing and calculations, the results of the sprint test comparison are as follows:

The results of the percentage analysis of the sprint test

Table 1. Data Categorisation of Overall Sprint Test Results

No.	Category	Interval	*Pre-test*		*Post-test*	
			Freq	Precentage	Freq	Precentage
1.	Poor	X<29,03	24	71%	8	24%
2.	Sufficient	29,03 ≤X<33,44	10	29%	19	56%
3.	Good	X ≥33,44	0	0%	7	20%
	n		34	100%	34	100%

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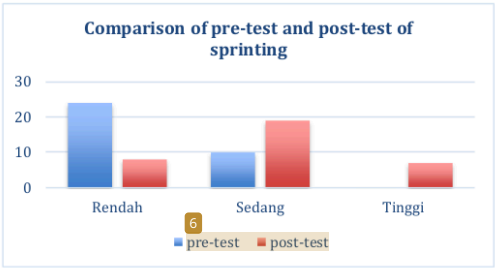

Figure 1. Diagram of Pre-test and Post-test Results of Student Sprinting

Based on the results of the pre-test and post-test of sprinting in Figure 1, there is a significant increase in the category of running ability. At the pre-test stage, out of a total of 34 students, the majority or as many as 24 students (71%) were in the poor category, while 10 students (29%) were in the sufficient category, and no students reached the good category (0%). After being given the growth mindset treatment, the post-test results showed a significant improvement in performance. The number of students in the insufficient category decreased to 8 people (24%), while the sufficient category increased to 19 people (56%), and as many as 7 students (20%) managed to reach the good category. These results indicate that the applied treatment is effective in improving students' sprinting ability.

Percentage analysis results of growth mindset questionnaire

Table 2. Data Categorisation of Growth Mindset Questionnaire Results

No.	Categories	Interval	Freq	Precentage
1.	low	X<70,44	3	9%
2.	Moderate	70,44 ≤ X < 92,44	30	88%
3.	High	X ≥92,44	1	3%

Figure 2. Classification Diagram of Growth Mindset Questionnaire Respondents Based on Assessment

Based on the results of the research on the level of growth mindset of respondents, it illustrates that out of a total of 34 students, 30 students (88%) are in the moderate category, which indicates that the majority of students have a growth mindset at a moderate level. Meanwhile, there are 3 students (9%) who fall into the low category, and 1 student (3%) who falls into the high category.

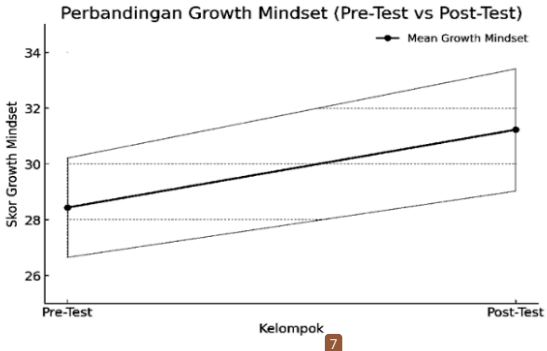

Figure 3. Comparison Chart of Pre-Test and Post-Test

Table 3. Descriptive Statistics of Growth Mindset

No	Variabel	n	Mean (Pre)	Mean (Post)	Std. Deviasi (Pre)	Std. Deviasi (Post)	Korelasi dengan Hasil Lari Cepat (r)	Signifikansi (p)
1	*Growth Mindset*	34	28,44	31,23	1,79	2,20	0,794	<0,001

Based on Table 3, the mean value of Growth Mindset increased from 28.44 in the pre-test to 31.23 in the post-test. This increase indicates a positive change after the intervention. The Standard Deviation value also increased slightly from 1.79 to 2.20, indicating a greater variation in data after the intervention.

The result of the correlation between Growth Mindset and sprinting results is r = 0.794, with a significance value (p) 0.001, indicating a strong and significant relationship between the two variables. This indicates that an increase in Growth Mindset contributes to an increase in sprinting performance. The homogeneity test shows that the data for sprinting skills obtained a levene statistic value = 2.451 and Significance (Sig.) = 0.122> 0.05, it can be interpreted that the data is homogeneous.

Based on the results of hypothesis testing using Paired Sample t-Test, the value of t = 9.781 with a significance value (Sig.) = 0.001 was obtained. This significance value is smaller

than the significance level of 0.05, so the null hypothesis (H_0) which states that there is no significant difference between the pre-test and post-test results is rejected.

Thus, it can be concluded that there is a significant effect of growth mindset on improving students' sprinting ability. The average sprint travel time before the intervention (pre-test) was 28.44 seconds, while after the intervention (post-test) increased to 31.23 seconds. This increase shows that students who apply growth mindset have better running performance than before the intervention.

These results are in line with the theory proposed by Dweck, (2016) which states that individuals with a growth mindset are more motivated to try and overcome obstacles. So that it can improve their performance in various fields, including sports. This finding is also in line with Yeager & Dweck's research, (2012) which found that a growth mindset contributes to improved academic and physical performance.

CONCLUSION

Based on the results of data analysis, this study shows that growth mindset has a significant influence on the success of athletic learning, especially in sprint numbers for students of the Department of Physical Education, Health and Recreation at STKIP Pasundan. This finding confirms that the development of a growth mindset can increase students' motivation, perseverance, and response in facing challenges during the learning process of sprint athletics, which in turn has a positive impact on the achievement of learning outcomes.

Nevertheless, although the growth mindset intervention proved to be effective, the success of sprint learning is not only influenced by psychological factors alone, but also involves various other aspects such as physical conditions, student motor abilities, teaching quality, and the environment of the lecture facilities.

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