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DIFFERENCES IN GROWTH MINDSET OF PHYSICAL EDUCATION STUDENTS BASED ON SPORTS ACHIEVEMENT HISTORY

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Abstract

Growth Mindset is the belief that individual abilities can develop through continuous effort, practice, and learning experiences. In the context of physical education, experiences of achieving in sports are often associated with higher levels of growth mindset. However, empirical evidence regarding this relationship in physical education students is still limited. This study aims to compare the growth mindset levels between physical education students who have and do not have a history of sports achievements. The study used a quantitative approach with a comparative survey design. The research sample was obtained through random sampling techniques among second and fourth semester PJKR students of the Faculty of Sport Science, State University of Malang. After the screening process, 48 respondents were obtained, consisting of 24 students with a history of sports achievements and 24 students who did not have a history of sports achievements. Data were collected using a Growth Mindset questionnaire based on Dweck's theory, consisting of 24 items with a dichotomous scale. Data analysis was conducted descriptively and inferentially using the Mann-Whitney U test. The results showed that there was no significant difference in the growth mindset level between students with a history of sports achievements and students without a history of sports achievements ($U = 245.00$; $p = 0.366$). The average growth mindset score of the high-achieving group was 12.17 ± 1.61 , while the low-achieving group was 13.75 ± 2.38 . The effect size obtained was relatively small (Cohen's $d = 0.29$). This finding indicates that a history of sports achievements is not a factor that significantly differentiates the growth mindset level of PJKR students. Therefore, growth mindset development needs to be directed to all students regardless of their sports achievement status.

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INTRODUCTION

Higher education plays a strategic role in preparing human resources capable of adapting to change, possessing critical thinking skills, and sustainably developing their potential. In the context of 21st-century education, student success is not solely determined by intellectual ability but is also influenced by psychological factors that support the learning process and self-development (Mishchenko et al., 2024) (Suditu & Safta, 2025). Psychological constructs, in addition to intellectual abilities, are crucial for fostering student success and self-development (Obi, 2024). One psychological construct that has received widespread attention in education is the growth mindset.

The concept of a growth mindset was first introduced by Carol S. Dweck, who explained that intelligence, abilities, and skills are not fixed characteristics, but can be developed through effort, appropriate learning strategies, and continuous learning experiences (Kusumawati et al., 2025) (Westby, 2020) (Grüning & Rammstedt, 2025) (Katsumata & Teixeira, 2024). In contrast, individuals with a fixed mindset view abilities as relatively fixed and difficult to change, thus tending to avoid challenges that could potentially reveal their limitations. Individuals with a growth mindset are generally better able to view challenges as opportunities for learning and development, demonstrate greater persistence in the face of difficulties, have a stronger motivation to learn, and view failure as part of the learning process that drives continuous improvement (Spatz & Goldhorn, 2021) (Royal, 2020). Various studies also show that a growth mindset contributes to increased adaptability, resilience, engagement in the learning process, continuous self-development, openness to various opportunities, and a higher commitment to achieving long-term goals (Mendonça, 2024) (Grüning & Rammstedt, 2025) (Katsumata & Teixeira, 2024) (Biazus, 2025) (Kareemuddin, 2025).

In the context of Physical Education (PE), a growth mindset plays a crucial role, as the learning process requires mastery of not only motor skills but also cognitive skills, social skills, and mental readiness to face challenges (Wang, 2025) (Sheffler et al., 2022). Students are required to master various professional competencies, including pedagogical knowledge, sports skills, leadership, communication, and problem-solving skills (Sushchenko & Filatova, 2025) (Kornosenko et al., 2023). Mastery of these competencies requires a continuous learning process and the belief that abilities can be continuously improved through practice and experience. PJKR students are prepared to become prospective PE teachers who will play a role in shaping the character, healthy lifestyle habits, and physical abilities of students. Furthermore, as prospective educators, students need to have an adaptive mindset and be oriented towards self-development to be able to face various professional challenges in the future. Students with a good growth mindset are expected to be lifelong learners who continuously strive to improve their academic and professional competencies.

Various studies have shown that a growth mindset has a positive relationship with academic achievement, learning motivation, academic resilience, and the ability to adapt to increasingly complex learning demands (Royal, 2020). Another study revealed a significant, moderate relationship between growth mindset and academic achievement among fourth-grade students (Gallardo, 2025). Students with a high growth mindset tend to be more active in seeking new learning experiences, do not give up easily when facing obstacles, and are able to develop strategies to achieve their academic goals (Fatima, 2024). Studies have shown that a growth mindset positively influences academic resilience, as students view failure as a learning opportunity, increasing their ability to cope with stress and academic pressure, ultimately contributing to their success in facing academic challenges (Alfitsani et al., 2026). Studies have shown that growth mindset interventions have shown significant positive impacts on student academic achievement, motivation, resilience, and persistence. These interventions foster a supportive learning environment that enhances students' adaptability to complex learning demands (Mohamoud, 2024). These findings indicate that growth mindset is a crucial factor supporting academic success and student self-development. However, studies specifically identifying growth mindset levels in PJKR students are still limited. Therefore, this study aims to investigate differences in growth mindset between PE students based on their sports achievement history, thereby providing empirical evidence to support the development of educational strategies that foster students' psychological and professional development.

From a theoretical perspective, students with a sporting achievement background are often assumed to have stronger growth mindset characteristics because competitive sport requires continuous practice, persistence, resilience, and the ability to interpret failure as constructive feedback for improvement rather than as an indication of fixed ability. Athletes repeatedly experience cycles of training, evaluation, failure, and performance improvement, which is consistent with Dweck's conception that abilities can be developed through sustained effort and adaptive learning strategies. Consequently, students with competitive sport experience are expected to exhibit higher levels of growth mindset than those without such experience. However, empirical evidence supporting this assumption among PE students is scarce.

Although growth mindset has been shown to play a significant role in supporting academic success, empirical data describing the growth mindset levels of PJKR students is currently lacking. This information is crucial for understanding the extent to which students believe their abilities and competencies can continue to develop through learning and experience. Therefore, this study aims to describe the growth mindset levels of PJKR students as a basis for developing learning strategies, character development, and competency improvement.

METHOD

This study used a quantitative approach with a comparative survey design. The aim of the study was to determine the growth mindset levels and compare them between students with a history of sports achievements and those without a history of sports achievements in the Departement of Physical Education, Health, and Recreation (PJKR), Faculty of Sport Science, State University of Malang.

The study population was second- and fourth-semester students of the Departement of Physical Education, Health, and Recreation (PJKR). Sampling was conducted using a random sampling technique. In the initial stage, 95 respondents participated in the study.

Students with sports achievements are assessed as students who have won at least one official sports competition at the district/city, provincial, national, or international level, as evidenced through self-reported information and supporting documentation. Students who had never received an award in any official sports competition were classified as the no-achievement group. After initial screening, a screening process was conducted based on the study's inclusion criteria. First, only students who engaged in physical exercise at least three times a week were included in the analysis. Eligible participants were then classified based on their sporting achievement history into two groups: students with sporting achievements and students without sporting achievements. After applying these criteria, the final sample consisted of 48 students, consisting of 24 students with a history of sports achievement and 24 students without a history of sports achievement.

The research instrument used a growth mindset questionnaire based on the growth mindset theory developed by Carol S. Dweck. The questionnaire consists of 24 items that measure an individual's beliefs about abilities that can be developed through effort, practice, experience, and learning.

The instrument uses a dichotomous scale with two answer options: "Yes" and "No." For positive statements, "Yes" is given a score of 1 and "No" is given a score of 0. Conversely, for negative statements, the scoring is reversed. The total score is obtained by adding all item scores, with a score range of 0-24. The higher the score, the higher the student's growth mindset level.

Data collection was conducted by distributing questionnaires to second- and fourth-semester students of Department of Physical Education, Health, and Recreation (PJKR). Respondents completed the questionnaires independently after being explained the research objectives. After data collection, a selection process was conducted based on exercise frequency and sports performance history to determine the respondent groups for analysis.

Data analysis was performed using statistical software. Prior to the main analysis, instrument reliability was tested using the Kuder-Richardson 20 (KR-20) coefficient because the instrument uses a dichotomous scale (Ramadhan et al., 2024) (Wanjala & Makhanu, 2025). Descriptive analysis was then conducted to describe the

growth mindset level in each group through the mean, standard deviation, minimum score, and maximum score.

To examine the differences in growth mindset levels between students with a history of sports achievement and those without, a normality test was conducted using the Shapiro–Wilk test (Kılıç, 2024). The results of the normality test were used as the basis for selecting inferential analysis techniques. If the data were normally distributed, the Independent Samples t-test was used. However, if the data were not normally distributed, the nonparametric Mann–Whitney U Test (Xolmatov & Norova, 2026) was used (Xudaybergenova & Norova, 2025). All statistical tests were conducted at a significance level of 0.05.

In addition to statistical significance, this study also calculated effect sizes to determine the magnitude of the differences in growth mindset between the two groups of students. Interpretation of effect sizes refers to Cohen's criteria, namely 0.20 (small), 0.50 (moderate), and 0.80 (large). Thus, the results of this study can provide information regarding the existence and strength of differences in growth mindset between students with and without a history of sports achievements.

RESULTS

Descriptive analysis was conducted to describe the level of growth mindset in students who have a history of sports achievements and students who do not have a history of sports achievements.

Table 1.
Descriptive Statistics of Growth Mindset

Variable	N	Mean	SD	Min	Max
Student with Sports Achievement	24	12.17	1.61	11	17.00
Student without Sports Achievement	24	13.75	2.38	10	20.00

Based on Table 1, the group of students without a history of sports achievements had a slightly higher average growth mindset score ($M = 13.75$; $SD = 2.38$) compared to the group of students with a history of sports achievements ($M = 12.17$; $SD = 1.61$). However, the average difference between the two groups appeared relatively small. Before conducting the difference test, a normality test was first carried out using the Shapiro-Wilk test.

Table 2.
Result of the Shapiro-Wilk Normality Test

Variable	Statistics	Sig.
Student with Sports Achievement	Data	<0.009
Student without Sports Achievement	Data	<0.002

The results of the normality test showed that the significance value in both groups was less than 0.05. Therefore, the growth mindset data in both groups were not normally distributed. Therefore, a variance analysis was conducted using the nonparametric Mann-Whitney U test.

The differences in growth mindset levels between students who have a history of sports achievements and students who do not have a history of sports achievements were analyzed using the Mann-Whitney U test.

Table 3.

Mann-Whitney U Test Results

Variable	U	Sig.
Growth Mindset	245.00	0.366

The Mann-Whitney U test showed a U value of 245.00 with a significance value of $p = 0.366$ (> 0.05). These results indicate that there is no significant difference in growth mindset levels between students with a history of sports achievements and students without a history of sports achievements. To determine the magnitude of the difference between groups, the effect size was calculated using Cohen's d.

Table 4.

Effect Size of Growth Mindset Differences

Cohen's d	Interpretasi
0.29	Small

Cohen's d value of 0.29 indicates that the difference in growth mindset levels between the two groups is small. This finding supports the Mann-Whitney U test, which showed that sports achievement status did not significantly impact the growth mindset levels of PJKR students.

DISCUSSION

The results of this study do not fully align with the initial assumptions that have developed in the context of sports. Conceptually, students who have achieved sporting success are thought to have a higher level of growth mindset because success in sports is generally achieved through continuous training, perseverance, discipline, and the ability to face failure (Jung & Lee, 2024) (Toktas & Köse, 2025) (Shi, 2025). According to the theory proposed by Carol S. Dweck, individuals with a growth mindset believe that abilities can be developed through effort, appropriate strategies, and continuous learning experiences (Fatima, 2024). Therefore, athletes or high-achieving individuals are often assumed to have a stronger growth mindset. However, the results of this study indicate that this belief is not only held by high-achieving students, but also by students without a history of sporting achievement.

This finding can be understood when linked to the characteristics of the study respondents. All respondents were PJKR students who actively exercised at least three times a week. Regular exercise allows students to gain relatively similar learning

experiences in facing challenges, correcting mistakes, developing skills, and improving abilities through practice. Therefore, the process of developing a growth mindset is likely more influenced by active involvement in sports activities than by the sporting achievements themselves. This explains why students without formal sporting achievements still exhibit relatively similar levels of growth mindset as those who have.

The results of this study are related to various previous studies that show that growth mindset plays a significant role in individual success. One study reported that growth mindset is positively related to academic achievement, learning motivation, academic resilience, and student adaptability (Pohl & Nelson, 2020). The results of this study found a significant relationship between growth mindset and academic achievement (Gallardo, 2025). Furthermore, other studies have shown that students with a strong growth mindset tend to be more active in seeking new learning experiences and are more persistent in the face of obstacles (Fatima, 2024). Other studies have also explained that growth mindset contributes to increased academic resilience because individuals view failure as an opportunity for learning and growth (Alfitsani et al., 2026). The findings of this study align with those studies regarding the importance of growth mindset for individual development. However, this study differs in that it does not examine the relationship between growth mindset and academic achievement or learning motivation, but rather compares growth mindset based on sporting achievement status. Therefore, this study provides a new perspective that sporting achievement is not always related to differences in growth mindset levels.

The findings of this study are also supported by research showing that the primary benefits of a growth mindset lie in increased resilience, adaptability, and continuous self-development (Lloren & Asparin, 2025) (Corcaci, 2023). Thus, the presence of a growth mindset is not always reflected in directly visible achievements, but can manifest in the ability to face challenges, maintain motivation, and continuously strive for self-improvement. This allows students without formal sporting achievements to still demonstrate a level of growth mindset equivalent to those who have.

Critically, the results of this study indicate that growth mindset is a psychological construct influenced by various factors that are more complex than simply the experience of achieving sporting success. The insignificant difference between the two groups suggests that other factors may be more dominant in shaping students' growth mindsets. These factors could include learning experiences during college, social support from friends and family, a supportive academic climate, organizational experience, intrinsic motivation, self-efficacy, or experience facing challenges in daily life. Furthermore, this study only grouped respondents based on whether or not they had sporting achievements without considering the level of achievement, frequency of competition, or duration of experience as an athlete. These

variables have the potential to have different influences on the formation of growth mindsets and cannot be explained through this study.

The findings of this study have several important implications. From a theoretical perspective, the results reinforce the view that a growth mindset is not solely shaped by a person's past successes or achievements, but also by the various learning and self-development experiences an individual undergoes. From a practical perspective, the results suggest that efforts to develop a growth mindset should be extended to all students, regardless of their sporting achievements. In the context of higher education, lecturers can develop learning strategies that emphasize the importance of the learning process, self-reflection, providing constructive feedback, and recognizing student effort. This approach has the potential to increase students' confidence that their abilities can continue to develop through continuous practice and learning experiences.

The findings of this study support the recommendations of various studies that emphasize the importance of creating a learning environment oriented toward process, effort, and self-reflection. Providing constructive feedback, developing metacognitive skills, and creating a supportive learning climate are effective strategies for fostering a growth mindset (Suman, 2023). Therefore, PJKR lecturers need to develop learning that is not only performance-oriented but also values the learning process, effort, and individual student progress.

However, this study has several limitations. First, the sample size was relatively limited, at 48 students, thus limiting the generalizability of the results. Second, the study was conducted only on PJKR students at one university, thus not being able to describe the broader situation of PJKR students. Third, growth mindset was measured using a self-report instrument, which could potentially introduce subjective bias in completing the questionnaire. Fourth, the study did not consider the level of sports achievements, type of sport, or length of competitive experience of the respondents.

Based on these limitations, further research is recommended to involve a larger sample size and be drawn from various universities to obtain more representative results. Future research could also examine the relationship between growth mindset and other relevant variables in PE, such as achievement motivation, self-efficacy, academic resilience, teaching skills, and academic achievement. Furthermore, grouping respondents based on level of sports achievements, type of sport, and competitive experience should be considered to gain a deeper understanding of the factors influencing the growth mindset of PE students. Thus, the development of growth mindset studies in the field of PE can be conducted more comprehensively and make a stronger contribution to the development of educational theory and practice.

CONCLUSION

These findings indicate that history of sports achievements is not a significant factor in differentiating the growth mindset of PJKR students. A growth mindset

appears to develop through various learning experiences, training, and academic interactions, not solely through sports achievements. Therefore, developing a growth mindset needs to be a priority for all students, regardless of their sports achievements status.

This study provides an empirical contribution to the study of growth mindset in the field of PE by showing that students who are active in sports have relatively similar levels of growth mindset, regardless of whether or not they have a history of sports achievements. Therefore, study programs and lecturers need to develop learning environments that support the formation of a growth mindset through providing meaningful learning challenges, constructive feedback, self-reflection, and appreciation for students' processes and efforts in achieving learning goals.

Future research is recommended to involve a larger sample size and samples from various universities to provide broader generalizability. Furthermore, future research could examine the relationship between growth mindset and other variables such as achievement motivation, self-efficacy, academic resilience, academic achievement, and teaching skills. Grouping respondents based on level of sports achievements, type of sport, and competitive experience should also be considered to gain a deeper understanding of the factors influencing the growth mindset of PE students.

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