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Vol. 12, n. ° 1; p. 1-23, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11982>

Effect of physical activity as a tool to strengthen academic self-discipline in university students

Efecto de la actividad física como herramienta para fortalecer la autodisciplina académica en estudiantes universitarios

Ria S. Tanglao

Batangas State University TNEU-ARASOF Nasugbu, Philippines

Corresponding Author: Ria S. Tanglao tanglaoria623@gmail.com

Editorial schedule: Article received 22/04/2025 Accepted: 05/09/2025 Published: 01/01/2026

<https://doi.org/10.17979/sportis.2026.12.1.11982>

To cite this article use the following reference:

Tanglao, R.S. (2026). Effect of physical activity as a tool to strengthen academic self-discipline in university students. Sportis Sci J, 12 (1), 1-23
<https://doi.org/10.17979/sportis.2026.12.1.11982>

Author contribution: The author was solely responsible for the conception, design, execution, analysis, and writing of the study.

Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of interest: The author declares no conflict of interest related to this study.

Ethical aspects: The author affirms full compliance with ethical standards throughout the conduct of the research.

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Abstract

This study examined the relationship between physical activity participation and academic self-discipline among university students. A quantitative research design was used, specifically descriptive correlational, with a sample of 296 students selected through simple random sampling. Data were collected using the International Physical Activity Questionnaire (IPAQ) and an Academic Self-Discipline Questionnaire. Statistical analysis included frequencies, means, and Pearson's correlation coefficient. The results revealed significant relationships between physical activity participation and key dimensions of academic self-discipline, particularly concentration, self-control, and motivation. This indicates that students who are more physically active tend to exhibit better self-regulation habits in academic settings. It is concluded that physical activity can strengthen academic self-discipline by improving students' ability to stay focused and committed to their educational goals. The study provides relevant empirical evidence supporting the connection between physical well-being and academic performance, highlighting its importance for the holistic development of students.

Keywords: behavioral regulation; cognitive focus; higher education; learning persistence; wellness in education

Resumen

Este estudio examinó la relación entre la participación en actividad física y la autodisciplina académica en estudiantes universitarios. Se utilizó un diseño de investigación cuantitativa, específicamente correlacional descriptivo, con una muestra de 296 estudiantes seleccionados mediante muestreo aleatorio simple. Los datos se recopilaron mediante el Cuestionario Internacional de Actividad Física (IPAQ) y un Cuestionario de Autodisciplina Académica. El análisis estadístico incluyó frecuencias, medias y el coeficiente de correlación de Pearson. Los resultados revelaron relaciones significativas entre la participación en actividad física y dimensiones clave de la autodisciplina académica, especialmente en la concentración, el autocontrol y la motivación. Esto indica que los estudiantes más activos físicamente tienden a tener mejores hábitos de autorregulación en contextos académicos. Se concluye que la actividad física puede reforzar la autodisciplina académica al mejorar la capacidad de los estudiantes para mantenerse enfocados y comprometidos con sus metas educativas. El estudio aporta evidencia empírica relevante que respalda la conexión entre el bienestar físico y el rendimiento académico, destacando su valor para el desarrollo integral del estudiante.

Palabras clave: regulación conductual; enfoque cognitivo; educación superior; persistencia en el aprendizaje; bienestar en la educación

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Introduction

Academic self-discipline refers to a student's ability to regulate their behavior, manage time effectively, and persist in academic tasks despite distractions or challenges (Mbaluka et al., 2021). It involves setting goals, maintaining focus, and exercising self-control to achieve academic success (Guetzoian, 2021). Research suggests that self-disciplined students tend to exhibit better study habits, higher levels of motivation, and greater resilience in overcoming academic difficulties (Camariñas et al., 2022). Furthermore, academic self-discipline plays a crucial role in long-term achievement, as it fosters consistency in learning and enhances cognitive engagement (Eckhaus & Davidovitch, 2023). By developing strong self-discipline, students can optimize their learning potential and improve overall academic performance (Minhui, 2023).

Physical activity engagement among students refers to their participation in structured or unstructured physical movements that contribute to overall health and well-being (Gothe et al., 2020). It includes activities such as sports, exercise, and recreational movements that enhance physical fitness, cognitive function, and emotional regulation (Marsigliante et al., 2023). Studies have shown that students who engage in regular physical activity experience improved concentration, reduced stress levels, and better academic performance due to enhanced brain function and self-regulation skills (Westerbeek & Eime, 2021). Moreover, physical activity fosters discipline, time management, and goal-setting behaviors, which are essential for academic success (Monacis et al., 2022). By incorporating consistent physical movement into their routines, students can develop habits that support both their physical health and cognitive development (Martins et al., 2021).

Academic self-discipline remains a significant challenge for many students, as distractions from social media, poor time management, and lack of motivation hinder their ability to maintain consistent study habits (Mroczkowska, 2018). The increasing accessibility of digital entertainment has led to procrastination and reduced cognitive engagement, negatively impacting academic performance (McDonald et al., 2014). Additionally, stress and mental health concerns further weaken students' ability to regulate their learning behaviors, making it difficult to sustain focus and persistence in

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academic tasks (Tao & Jing, 2023). On the other hand, physical activity engagement among students is also declining due to sedentary lifestyles, excessive screen time, and academic pressures that limit opportunities for movement (Duda-Macera & Gallardo-Echenique, 2022). Many students struggle to balance their studies with regular exercise, leading to negative consequences such as poor physical health, increased stress, and decreased cognitive function (Hagger et al., 2021). Addressing these issues requires structured interventions that promote both self-discipline and active lifestyles to enhance student's overall well-being and academic success (Djazilan et al., 2022).

Several studies have highlighted the crucial role of academic self-discipline in shaping students' learning behaviors and overall academic success (Donnelly & Lambourne, 2011). Research indicates that self-disciplined students tend to achieve higher grades, as they exhibit better time management, goal-setting, and self-regulation skills (Klussman et al., 2021). Researchers found that self-discipline is a stronger predictor of academic performance than intelligence, emphasizing the importance of perseverance and delayed gratification in learning (Dishman et al., 2021). Additionally, studies have linked academic self-discipline to improved concentration, reduced procrastination, and increased intrinsic motivation, all of which contribute to long-term academic achievement (Zhu et al., 2021). Moreover, self-discipline fosters resilience, allowing students to overcome academic challenges and maintain consistent study habits despite distractions or external pressures (Case, 2021).

Numerous studies have examined the impact of physical activity on students' cognitive function, emotional well-being, and academic performance. Research suggests that regular physical activity enhances brain function by improving memory, attention, and executive control, leading to better academic outcomes (Claver et al., 2020). Additionally, participation in structured exercise programs has been associated with reduced stress and anxiety, contributing to improved mental health and overall well-being (Gelles et al., 2020). Studies also indicate that students who engage in consistent physical activity develop better self-regulation skills, which translate into increased academic motivation and discipline (Bear & Soltys, 2020). Furthermore, school-based physical activity interventions have shown positive effects on student's classroom engagement,

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suggesting that movement-based learning strategies can support both physical health and cognitive development (Lindo & Vásquez, 2024).

Despite numerous studies highlighting the significance of academic self-discipline and physical activity in student development, there remains insufficient data on the direct relationship between these two variables, particularly among college students. Existing research has often treated them as independent predictors of academic performance, with limited focus on how physical activity may actively contribute to the development of self-discipline within academic settings. This study distinguishes itself by examining this relationship in the local context of a Philippine state university, using validated instruments—the International Physical Activity Questionnaire (IPAQ) and the Academic Self-Discipline Questionnaire—tailored to capture behavioral patterns among college learners.

The novelty of the study lies in its integration of physical wellness and academic regulation within a culturally specific higher education setting. To address this, the research seeks to answer the general question: How does physical activity engagement influence academic self-discipline among college students? The primary purpose of this study is to generate empirical evidence on the connection between physical activity and academic self-discipline, offering insights that can inform institutional strategies and support systems for holistic student development.

This research is crucial for understanding how physical activity can serve as a tool for enhancing academic self-discipline among college students. By exploring this relationship, the study offers valuable insights that can help students develop better study habits and improve their academic performance. The findings contribute to the body of knowledge on student development and self-regulation, offering practical implications for educators and academic institutions in shaping more effective support systems. Additionally, the results inspire further research on the integration of physical activity into educational frameworks, benefiting the wider academic community by promoting more holistic approaches to student success.

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Methodology

Design

This research employed a quantitative research design, specifically a descriptive correlation approach. Quantitative research involves the collection and analysis of numerical data to identify patterns, relationships, or trends in a given context (Ato et al., 2013). Descriptive correlation, on the other hand, is a type of research design that examines the relationship between two or more variables without manipulating them, aiming to describe the strength and direction of these relationships (Seeram, 2019).

The use of a descriptive correlation design was particularly appropriate for this study as it allows for the exploration of the relationship between physical activity engagement and academic self-discipline among college students. Since the study aimed to identify patterns between these two variables without altering them, this design facilitates a clear understanding of how physical activity may influence students' academic behaviors. Additionally, it enabled the researcher to observe natural occurrences and draw conclusions based on real-world data, making it ideal for this type of inquiry.

Sample

The study involved 296 students currently enrolled in the 2nd semester of Academic Year 2024-2025, which were selected using simple random sampling. Simple random sampling is a probability sampling technique in which everyone in the population has an equal chance of being selected (Noor et al., 2022). This method ensured that the sample is representative of the broader population, reducing selection bias and providing more generalizable results. Simple random sampling was particularly appropriate for this study because it allowed for an unbiased selection of participants, ensuring that the findings reflect the experiences and behaviors of a diverse group of college students, which was essential for the validity and reliability of the study's conclusions.

Instruments

This research adopted the International Physical Activity Questionnaire (IPAQ) to measure the physical activity engagement of the respondents. The IPAQ, developed by Craig et al. (2025), is a widely used tool that assesses the frequency, duration, and intensity of physical activity. The reliability of the IPAQ has been established with a high

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Cronbach's alpha coefficient of 0.92, indicating strong internal consistency. Additionally, the study utilized the Academic Self-Discipline Questionnaire (ASDQ), developed by Sal (2022), to assess students' ability to regulate their academic behaviors. The ASDQ has also demonstrated strong reliability, with a Cronbach's alpha of 0.89, confirming its suitability for measuring academic self-discipline in the context of this study. These instruments were chosen for their validity, reliability, and relevance to the study's objectives.

Variables

This study focused on two key variables: physical activity engagement and academic self-discipline. Physical activity engagement refers to the extent to which students participate in bodily movements that require energy expenditure, including structured exercises, sports, and daily active routines. It reflects the students' lifestyle choices that contribute to their physical well-being. On the other hand, academic self-discipline encompasses students' ability to manage their behaviors, time, and efforts toward achieving academic goals. It includes dimensions such as structured study habits, focused and intentional learning, and commitment to academic goals.

Procedures

The data gathering procedure for this study was conducted through online forms to ensure accessibility and efficiency. Participants received a digital survey link containing the consent form, the International Physical Activity Questionnaire (IPAQ), and the Academic Self-Discipline Questionnaire. Before answering, respondents were informed about the purpose of the study, their rights as participants, and the confidentiality of their responses. Once consent was given, they proceeded to complete the questionnaires at their own convenience. The collected responses were automatically recorded and compiled for statistical analysis.

Statistical Analysis

This research employed both descriptive and inferential statistics to analyze the data. Descriptive statistics, including frequency counts, mean, and composite mean, were used to summarize and describe the physical activity engagement and academic self-discipline of the respondents. For testing the relationship between the two variables, the Pearson Correlation Coefficient was applied. This statistical test was appropriate as it

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measures the strength and direction of the linear relationship between two continuous variables, in this case, physical activity and academic self-discipline. Using the Pearson Correlation Coefficient allowed the researcher to determine whether a significant relationship exists between these variables and the degree of association. This approach was ideal for understanding the nature of the relationship and drawing conclusions from the data.

Results

Table 1 presents the respondents' physical activity engagement. The data reflect how often students engage in moderate to vigorous physical activity as part of their daily or weekly routine. This provides a general overview of their physical activity patterns.

Table 1. Respondents' Physical Activity Engagement

Physical Activity Engagement	Frequency (n=296)	Percentage (%)
Low Activity	103	53.0
Moderate Activity	123	63.0
High Activity	70	36.0

Table 2 displays the levels of academic self-discipline among the respondents, based on their responses to key behavioral indicators. It outlines how consistently students manage their study habits, time, and focus in academic settings. The table provides insight into their ability to regulate academic behaviors effectively.

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Table 2. Academic Self-Discipline among the Respondents

Statements	Mean	Verbal Description
Structured Study Habits (Consistency and Organization)		
7. I organize my study space to minimize distractions.	3.25	Agree
6. I understand and apply effective study strategies.	3.07	Agree
5. I review my modules after class to reinforce my learning.	2.69	Agree
4. I prepare in advance for my classes to enhance my understanding.	2.82	Agree
3. I plan what to study before beginning my study sessions.	3.15	Agree
2. I follow a structured study timetable to stay organized.	2.79	Agree
1. I wake up at the same time every day to maintain a consistent routine.	2.88	Agree
Composite Mean	2.95	High Academic Self-Discipline
Focused and Intentional Learning (Concentration and Self-Control)		
1. I ensure I am mentally prepared before starting a study session.	3.09	Agree
5. I keep myself away from distractions to maintain effective study habits.	3.03	Agree
6. I remove anything that could disturb my focus while studying.	3.01	Agree
7. I make decisions based on logic and priorities rather than emotions.	3.01	Agree
2. I stay focused in class and actively engage in lessons.	2.98	Agree
3. I sustain my focus and concentration despite distractions, boredom, or fatigue.	2.93	Agree
4. I resist the urge to use Facebook while studying to maintain concentration.	2.91	Agree
Composite Mean	3.00	High Academic Self-Discipline
Commitment to Academic Goals (Motivation and Persistence)		
3. I remain motivated to study even after achieving high grades.	3.15	Agree
1. I prioritize my study plans over social activities when necessary.	3.10	Agree
2. I use my study time efficiently to maximize productivity.	3.01	Agree
4. I follow a planned study schedule rather than studying randomly.	2.91	Agree
Composite Mean	3.04	High Academic Self-Discipline
Grand Mean	2.99	High Academic Self-Discipline

Legend:

Scale:	Verbal Description	Interpretation
4.00-3.50	Strongly Agree	Very High Academic Self-Discipline
3.49-2.50	Agree	High Academic Self-Discipline
2.59-1.50	Disagree	Moderate Academic Self-Discipline
1.49-1.00	Strongly Disagree	Low Academic Self-Discipline

Table 3 presents the results of the test of relationship between the respondents' physical activity engagement and their academic self-discipline. It shows the computed

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Pearson correlation coefficient, indicating the strength and direction of the relationship between the two variables. This table helps determine whether a statistically significant association exists.

Table 3. Test of Relationship between the Respondents' Physical Activity Engagement and Academic Self-Discipline

Physical Activity Engagement and...	Pearson Correlation Coefficient	p-value	Interpretation $\alpha=0.05$
Structured Study Habits (Consistency and Organization)	.057	.332	Not Significant
Focused and Intentional Learning (Concentration and Self-Control)	.060	.003	Significant
Commitment to Academic Goals (Motivation and Persistence)	.222	.001	Significant

Discussion

Respondents' Physical Activity Engagement

Table 1 shows the students' physical activity engagement. Out of 296 respondents, 103 (53.0%) were reported to have low physical activity engagement, 123 (63.0%) had moderate engagement, while 70 (36.0%) demonstrated high physical activity engagement. This means that most students are either insufficiently or only moderately active in their daily routines. This implies that a significant portion of the student population may not be reaping the full physical, mental, and cognitive benefits associated with consistent and vigorous physical activity.

The considerable number of students with low and moderate physical activity engagement raises concerns about their overall well-being and academic readiness. Limited physical activity can negatively affect students' energy levels, concentration, and mood, which are essential for effective learning. When a large segment of the student population is not physically active, it reflects possible lifestyle habits that may hinder their ability to stay focused, manage stress, and perform optimally in academic settings. This trend suggests an underlying challenge in integrating movement and exercise into students' daily routines. The prevalence of lower engagement levels also signals a possible disconnect between awareness of physical activity's importance and actual behavioral practice.

These findings are consistent with existing literature emphasizing the decline of physical activity among college students due to academic pressures and sedentary lifestyles (Ramos, 2025). Studies have found that as students transition into higher

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education, their physical activity levels often decrease, leading to adverse effects on mental health and academic performance (Zheng et al., 2022). Moreover, research highlights that students with low physical activity engagement are more likely to experience fatigue, decreased motivation, and cognitive lapses, all of which can impact their educational outcomes (González & Vega-Díaz, 2024).

Academic Self-Discipline among the Respondents

In terms of **Structured Study Habits (Consistency and Organization)**, the statement “I organize my study space to minimize distractions” received the highest mean of 3.25, with a verbal description of “Agree,” while the statement “I wake up at the same time every day to maintain a consistent routine” got the lowest mean of 2.88, also described as “Agree.” This means that respondents are more inclined to manage their physical environment to enhance focus than to maintain a consistent daily schedule. This implies that while spatial organization is prioritized in their study habits, temporal consistency appears to be more difficult to sustain.

The tendency of students to prioritize organization over routine reflects common patterns observed in academic behavior, where immediate environmental control is more achievable than lifestyle changes (Tagare et al., 2025). Similar findings indicate that students often focus on managing distractions within their study space as a way to increase concentration (Sal, 2022). However, maintaining a regular waking schedule remains a challenge, often due to academic demands, social activities, or irregular course loads (Bozkuş & Canoğulları, 2025).

The overall composite mean for Structured Study Habits is 2.95, with a verbal interpretation of “High Academic Self-Discipline.” This means that respondents demonstrate a relatively strong capacity to manage their study routines in a consistent and organized manner. This implies that, although certain areas like time regulation may vary, students generally uphold practices that support focused and effective study habits.

This level of self-discipline aligns with previous research highlighting the role of structured environments in promoting academic success among university students (Fokkens-Bruinsma et al., 2021). Studies emphasize that students with clear study strategies and organized routines tend to perform better and feel more in control of their academic responsibilities (Abdi Zarrin & Gracia, 2020). Additionally, consistent

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organizational habits often lead to improved time use and academic persistence (Haktanir et al., 2021).

In terms of **Focused and Intentional Learning (Concentration and Self-Control)**, the statement “I ensure I am mentally prepared before starting a study session” received the highest mean of 3.09, with a verbal description of “Agree,” while the statement “I resist the urge to use Facebook while studying to maintain concentration” got the lowest mean of 2.91, also interpreted as “Agree.” This means that students are more confident in their ability to mentally prepare before studying than in resisting digital distractions. This implies that while there is an awareness and effort to initiate focus, maintaining it amidst social media temptations remains a challenge.

This pattern supports findings that students typically engage in pre-study rituals to prime their focus but struggle to sustain it due to online distractions (Rosita Hernani et al., 2025). Other studies confirm that social media platforms are common interruptions that reduce academic productivity despite students’ initial efforts to concentrate (Mohtasham et al., 2023). Additionally, learners often report higher self-control at the beginning of tasks, which tends to decline as distractions become more appealing (Theobald, 2021).

The overall composite mean for Focused and Intentional Learning is 3.00, with a verbal interpretation of “High Academic Self-Discipline.” This means that students generally exhibit self-regulation when it comes to maintaining focus and exercising self-control during study time. This implies that although challenges exist, especially with digital temptations, students demonstrate a strong inclination toward intentional and goal-directed learning behaviors.

Previous research validates this level of discipline, highlighting that students who actively manage their concentration and resist distractions tend to perform better academically (Daliye et al., 2025). Evidence also shows that developing internal strategies for focus is key to sustaining motivation and academic persistence (Riño et al., 2025). Moreover, self-regulated learners are more likely to maintain academic engagement even in environments rich in distractions (Sarami & Hojjati, 2023).

In terms of **Commitment to Academic Goals (Motivation and Persistence)**, the statement “I remain motivated to study even after achieving high grades” received the

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highest mean of 3.15, verbally described as “Agree,” while the statement “I follow a planned study schedule rather than studying randomly” received the lowest mean of 2.91, also interpreted as “Agree.” This means that students are more driven by personal achievement and intrinsic motivation than by structured study planning. This implies that their persistence in learning continues even after success, but goal-directed strategies may lack consistency in implementation.

These results align with research highlighting that many students are intrinsically motivated and continue studying for self-growth rather than external rewards (Troll et al., 2021). However, less adherence to planned schedules suggests a gap between motivation and time management skills (Ramos, 2024). Other studies similarly report that even highly motivated learners may default to less organized approaches to studying (Gopinath, 2020).

The overall composite mean for this category is 3.04, with a verbal interpretation of “High Academic Self-Discipline.” This means that students generally display strong academic drive and commitment toward their goals. This implies that while they are motivated and persistent, their methods may still benefit from improved consistency and planning behaviors.

Research confirms that academic self-discipline is closely linked with long-term motivation and perseverance in pursuing learning objectives (Prasetyaningtyas et al., 2020). However, it also reveals that self-discipline may exist even when structured approaches are inconsistently applied (Zhang et al., 2024). This suggests that self-motivated learners can still thrive academically despite varying study habits (Esponja et al., 2025).

The overall academic self-discipline of the students in terms of Structured Study Habits (Consistency and Organization), Focused and Intentional Learning (Concentration and Self-Control), and Commitment to Academic Goals (Motivation and Persistence) yielded a grand mean of 2.99, with a verbal interpretation of "High Academic Self-Discipline." This means that students, on average, demonstrate a relatively high level of academic self-discipline across these three domains. This implies that students are generally consistent, focused, and motivated in their academic endeavors, yet there is still room for improvement in achieving even higher levels of self-discipline.

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These findings align with previous research, which indicates that students with high academic self-discipline exhibit positive behaviors in areas such as organization, concentration, and motivation (Geng & Wei, 2023). Studies have shown that self-discipline is a key predictor of academic success, with students displaying these qualities achieving higher academic outcomes (Feraco et al., 2023). Furthermore, research suggests that students with strong commitment and focus tend to have better time-management skills and maintain higher levels of persistence in their studies (Esto et al., 2025).

Relationship between the Respondents' Physical Activity Engagement and Academic Self-Discipline

The relationship between the respondents' physical activity engagement and academic self-discipline revealed significant results in two categories: Focused and Intentional Learning (Concentration and Self-Control), with a Pearson correlation of 0.060 (p-value = 0.003), and Commitment to Academic Goals (Motivation and Persistence), with a Pearson correlation of 0.222 (p-value = 0.001). The correlation with concentration and self-control, although statistically significant, indicates a very weak positive relationship, suggesting only a slight association between physical activity and students' ability to maintain focus. In contrast, the correlation with motivation and persistence represents a weak but stronger positive relationship, implying that students who are more physically active are more likely to remain driven and goal-oriented in their studies. This implies that physical activity may contribute meaningfully to key aspects of academic self-discipline, especially in fostering sustained motivation and mental engagement, while no significant relationship was observed in terms of Structured Study Habits.

These findings align with previous studies, which have demonstrated that physical activity can positively impact concentration and motivation (Shi & Qu, 2022). Research has shown that physical exercise improves cognitive function, leading to better self-regulation and goal commitment (Enayati Shabkolai et al., 2023). Additionally, studies have suggested that regular physical activity is linked to improved mental focus and task persistence, which are essential components of academic success (Chen et al., 2024).

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The significant relationship between physical activity engagement and key aspects of academic self-discipline, such as concentration, self-control, and motivation, highlights the potential benefits of incorporating physical activity into academic settings. This suggests that policies encouraging physical activity among students could enhance their academic performance by fostering better focus and persistence. Encouraging regular physical activity may therefore not only promote physical health but also contribute to improved cognitive function and academic self-regulation (Tagare et al., 2024).

In practice, educational institutions might consider integrating physical activity programs or promoting active breaks to support students' academic goals. By fostering environments that encourage physical activity, schools can help students improve their concentration and motivation, which are critical for academic success (Angkay & Tagare, 2022). These findings underline the importance of a holistic approach to education that includes physical well-being as a key element for enhancing academic performance.

Conclusion:

This study underscores the critical role of physical activity in shaping the academic self-discipline of college students. While students displayed varying levels of physical activity engagement, a considerable number fell within the low to moderate range, revealing a pattern that may influence their cognitive and behavioral regulation. These differences highlight the relevance of physical routines in students' academic functioning.

In terms of academic self-discipline, students generally exhibited moderately high levels across consistency, focus, and goal commitment. This indicates a promising level of self-regulation, yet also points to challenges in resisting distractions and following structured routines. These dimensions of self-discipline are essential in maintaining academic success, especially in higher education settings that demand independent learning.

Crucially, the study found that physical activity is positively linked to students' concentration, self-control, and motivation. This establishes physical activity not merely as a health-related behavior but as a strategic contributor to academic development. The study's main contribution lies in its empirical confirmation of the psychological and

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behavioral benefits of physical activity within the academic sphere, particularly in a Philippine university context. By drawing this connection, the research affirms the value of integrating physical wellness into educational discourse. It advocates for a broader understanding of student success—one that recognizes the synergy between physical engagement and academic self-management as foundational to holistic student development.

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