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The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement

El efecto mediador del apoyo emocional percibido del entrenador sobre la satisfacción vital, la curiosidad, la resiliencia académica y el compromiso deportivo

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Abstract

This predictive-causal study examined the direct effects of life satisfaction, curiosity, and academic resilience on sports engagement among 399 purposively selected student-athletes from a public higher education institution and investigated the mediating role of perceived coach's emotional support in these relationships. Using Partial Least Squares-Structural Equation Modeling, results indicated that curiosity significantly predicted sports engagement, except life satisfaction and academic resilience. Furthermore, academic resilience significantly predicted perceived coach's emotional support, except life satisfaction and curiosity. Moreover, perceived coach's emotional support had not significantly predicted sports engagement and had not mediated the relationships between life satisfaction, curiosity, academic resilience, and sports engagement. These findings highlighted the critical role of curiosity and resilience in enhancing student-athlete engagement, suggesting that self-driven motivation had played a stronger role than external emotional support from coaches. The study's main limitation had been its focus on a specific population, restricting generalizability. Future research should explore longitudinal designs to assess causal relationships over time. In this, integrating curiosity-driven learning strategies in sports training and developing targeted resilience-building programs for student-athletes to sustain engagement in sports are highly recommended.

Keywords: academic resilience, coach's emotional support, curiosity, life satisfaction, sports engagement

Resumen

Este estudio predictivo-causal examinó los efectos directos de la satisfacción vital, la curiosidad y la resiliencia académica en la participación deportiva entre 399 estudiantes-atletas seleccionados intencionalmente de una institución pública de educación superior e investigó el papel mediador del apoyo emocional percibido del entrenador en estas relaciones. Utilizando el Modelo de Ecuaciones Estructurales de Mínimos Cuadrados Parciales, los resultados indicaron que la curiosidad predijo significativamente la participación deportiva, excepto la satisfacción vital y la resiliencia académica. Además, la resiliencia académica predijo significativamente el apoyo emocional percibido del entrenador, excepto la satisfacción vital y la curiosidad. Además, el apoyo emocional percibido del entrenador no había predicho significativamente la participación deportiva y no había mediado las relaciones entre la satisfacción vital, la curiosidad, la resiliencia académica y la participación deportiva. Estos hallazgos destacaron el papel crítico de la curiosidad y la resiliencia en la mejora de la participación de los estudiantes-atletas, lo que sugiere que la motivación autoimpulsada había jugado un papel más importante que el apoyo emocional externo de los entrenadores. La principal limitación del estudio había sido su enfoque en una población específica, lo que restringía la generalización. Las investigaciones futuras deberían explorar diseños longitudinales para evaluar las relaciones causales a lo largo del tiempo. En este sentido, se recomienda encarecidamente integrar estrategias de aprendizaje basadas en la curiosidad en el entrenamiento deportivo y desarrollar programas específicos de desarrollo de la resiliencia para que los estudiantes deportistas mantengan su participación en el deporte.

Palabras claves: resiliencia académica, apoyo emocional del entrenador, curiosidad, satisfacción vital, compromiso deportivo

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Introduction

Multiple academic studies have emphasized the strong link between individuals' involvement in the pursuit of success and three favorable attributes: life satisfaction, academic resilience, and curiosity (Burgos-Videla et al., 2022; Martin et al., 2022; Oliveira & Lathrop, 2022). Within the realm of positive psychology in academia, educational psychologists and researchers are currently focusing extensively on investigating three specific positive attributes. These attributes have been found to have a significant correlation with students' exceptional performance (Antaramian, 2017; Bittmann, 2021; Vidler, 1980). The current empirical study on the relationship between student-athletes' engagement and the three listed positive traits has mainly been obtained from separate studies conducted at different educational institutions globally. Although many studies have separately explored the connection between the mentioned variables, there is a dearth of research that has evaluated the capacity to forecast the engagement of student-athletes by considering the three positive characteristics indicated. Moreover, there is a lack of scholarship that has quantitatively assessed the mediating influence of a coach's emotional support on the relationship between these variables. Unfortunately, a thorough examination of relevant research conducted in the Philippines indicates a lack of verified data regarding these specific inquiries, especially in the context of higher education. Without a doubt, it is necessary to carry out a comprehensive and extensive investigation. This study aimed to examine the relationship between life satisfaction, curiosity, and academic resilience in relation to engaging in competitive sports among student-athletes at a State University in the Philippines. Additionally, the study sought to determine the mediating role of coach's emotional support in this relationship. The results of this study will establish the correlation between these characteristics and the substantial impact of a coach's emotional support on the achievement of student-athletes in the field of competitive collegiate sports.

Life satisfaction

There have been several scholars who have defined the definition of life satisfaction. According to Ellison et al. (1989), life satisfaction is a cognitive evaluation

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of a supposedly stable and socially influenced underlying state. Meanwhile, Veenhoven (2015) referred it as the extent to which an individual positively assesses the overall quality of their life in its entirety. Put simply, the extent to which an individual derives satisfaction from the manner in which they conduct their life. On the one hand, Usán Supervía et al. (2020) defined it as a comprehensive evaluation of an individual's emotional and cognitive dispositions towards their life circumstances at a specific juncture, encompassing a spectrum of pessimistic to optimistic inclinations. While there may exist slight variations in the meanings, the fundamental concept remains consistent, it pertains to an individual's comprehensive emotional assessment of their own life. Therefore, rather than being based on any particular moment in time or domain, an evaluation of life happiness is global in nature. Captivatingly, the theory proposed by researcher Jussi Suikkanen regarding life satisfaction is quite fascinating. According to this theory, an individual experiences pleasure with their life when an idealized version of themselves, characterized by enhanced knowledge and rationality, would assess that their existence aligns with their envisioned life-plan (Suikkanen, 2011). This theory improves on the earlier idea that happiness comes from perceiving life aligns with one's goals. The inadequacy of this simplified rendition of the theory in comprehensively capturing life satisfaction stems from its potential to erroneously signify life satisfaction in those who experience transient or impulsive happiness without actively engaging in introspection over the overall trajectory of their lives (Suikkanen, 2011). There is no inherent flaw in experiencing spontaneous happiness; nonetheless, achieving life fulfillment necessitates more than transient feelings of happiness. Additionally, satisfaction with one's life is an essential component of mental health, which is defined as a positive and realistic appraisal of one's life in comparison to one's own criteria of happiness (Zhang et al., 2023). Likewise, life satisfaction as the assessment of an individual's quality of life based on their own subjective criteria (Shin & Johnson, 1978; Zhou & Lin, 2016). Indeed, the measurement of life satisfaction holds significance as it serves as an indicator of an individual's overall well-being and psychological condition (Bieda et al., 2019; Pavot & Diener, 2008).

Multiple investigations have been previously undertaken to explore the association between life satisfaction and university engagement. Research has

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demonstrated that maintaining a positive perspective on life is associated with increased levels of engagement among university students, ultimately resulting in enhanced academic performance. Furthermore, empirical investigations have demonstrated that there exists a bidirectional link between these two constructs. For example, the study of Yuen (2016), a cohort of 5809 adolescents, ranging in age from 12 to 19 and representing various cultural backgrounds: Hong Kong mainstream students (HKMS), South Asian Students (SAS), Chinese Immigrant Students (CIS), and Cross-Boundary Students (CBS) from Mainland China, underwent assessment using the Multidimensional Students' Life Satisfaction Scale (MSLSS) and School Engagement Questionnaires. The results of regression analysis indicate that there is a statistically significant relationship between life satisfaction and school engagement among the four student groups. In this regard, it can be assumed that satisfaction towards life has a positive association to students' engagement in which will eventually result to higher academic performance scores. However, these studies are predominantly vast in the educational discipline, but not in the sports realm.

Curiosity

Curiosity, a natural and potent driver of motivation, has emerged as a significant focus for psychologists and educational researchers exploring fundamental traits and personal attributes (Evans et al., 2023; Mahama et al., 2023; Shah et al., 2023; Spitzer et al., 2023). Despite its widespread recognition, the progress of curiosity research has been impeded by inconsistent terminology, varied operational definitions, and diverse measurement methods. Intrinsic motivation, often aligned with curiosity, is a key characteristic of human nature. It reflects an inherent tendency to seek novelty, face challenges, grow personally, explore, and acquire knowledge (Ryff, 1989). Curiosity can manifest through "flow," a heightened state of engagement where individuals are fully absorbed in challenging yet enjoyable activities requiring their complete skill set (Fredrickson, 1998). While curiosity is frequently equated with terms such as interest, novelty-seeking, and openness to experience, its foundation lies in a sense of self-efficacy. This confidence enables individuals to navigate and make sense of novel, ambiguous, or unpredictable experiences. Confidence may vary across contexts, but its

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n.º 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

general expression includes a willingness to embrace uncertainty rather than retreat from it. Throughout life, curiosity fosters knowledge acquisition, skill development, meaningful relationships, and expertise (Ernst & Burcak, 2019). Individuals driven by curiosity inevitably encounter unique experiences and insights, further motivating their quest for new skills and challenges (Lobo, Balahadia, et al., 2024). Defined as the cognitive process of recognizing, embracing, and actively seeking new knowledge and experiences, curiosity has only recently begun to receive systematic academic attention (Chang et al., 2023; Jirout, 2020). Emerging research highlights curiosity's positive effects on cognitive ability, wisdom, subjective well-being, resilience, social connections, and educational engagement (Jirout et al., 2022; Karcher et al., 2022; Kashdan et al., 2020; H. Wang & Li, 2015). Kashdan et al. (2009) identified two dimensions of curiosity: *stretching*—the active pursuit of knowledge and experiences—and *embracing*—the willingness to engage with uncertainty and novelty (Devereux, 2022; Fry et al., 2023). These intertwined aspects provide a nuanced understanding of curiosity as an essential human trait (Berlyne, 1960; Deci, 1975; Litman, 2019).

The correlation between curiosity, exploration, and engagement has been extensively studied. Findings consistently demonstrate that individuals who exhibit curiosity and adaptability tend to achieve higher engagement, which positively impacts academic performance. For example, Mahama et al. (2023) investigated the roles of curiosity, motivation, and creativity in academic achievement among 568 high school students studying science and mathematics. Their results revealed that curiosity-driven students exhibit heightened engagement, leading to improved academic outcomes. Similarly, a meta-analysis of 41 randomized controlled trials involving 4,496 participants found that interventions enhancing curiosity significantly improved life satisfaction, workplace participation, and academic performance (Dubey et al., 2022; Singh & Manjaly, 2022; Whitecross & Smithson, 2023).

Academic resilience

Drawing upon the resilience theory, a comprehensive understanding of the formation of resilience encompasses three interrelated elements: adversity, mediating processes, and outcomes (Van Breda, 2018). The comprehension of adversity is essential

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for the comprehension of resilience, as *resilience* is defined as the capacity to either recover from adversity or effectively manage it (Panganiban et al., 2024). Resilience theory elucidates the various elements that enhance or moderate an individual's resilience in the context of coping abilities. These factors can be categorized into three domains: individual (such as capacity for problem solving, emotions, and motivation), social (including interpersonal relationships), and environmental (encompassing infrastructure and educational facilities) (Hartling, 2008; Van Breda, 2018). When an individual faces adversity, their subsequent interactions and support from various sources, such as individuals, social networks, or the environment, can contribute to the development of resilience. Resilient individuals are distinguished by their capacity to effectively utilize available resources and actively seek assistance in order to address problems and achieve success in their endeavors (Abdolrezaipoor et al., 2023; Hechanova et al., 2023). The attributes of resilient individuals were identified as inherent characteristics, including strength, perseverance, and outlook on the future, together with the cultivation of a sense of kinship and companionship (Alkaissi et al., 2023; Johansson et al., 2023). The emergence of *resilience* has garnered significant attention in recent years, notably within the realm of academia, owing to its association with academic achievement and the capacity to navigate novel situations (Cui et al., 2023; Skedsmo & Huber, 2023). Its concept has been conceptualized in the scientific community as the capacity to endure and recuperate from challenging circumstances (Mukyala & Namono, 2023; Ojo et al., 2021). Within the domain of education, the concept of *academic resilience* pertains to a student's capacity to effectively navigate and manage challenges that possess a notable and enduring impact on their educational progress (Ang et al., 2022; Nurjain et al., 2023). Researchers have provided several interpretations for academic resiliency, which refers to the capacity of individuals from disadvantaged backgrounds to overcome challenges and achieve academic success, regardless of their socioeconomic status (Serrano Sarmiento et al., 2021; Ye et al., 2021). Similarly, some researchers have conceptualized academic resilience as the capacity to persist in the presence of challenges within an educational environment, while simultaneously attaining exceptional academic accomplishments (García-Crespo et al., 2021; Lohner & Aprea, 2021). It is seen that students who have encountered substantial challenges in their educational journey often

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exhibit greater resilience within the academic setting (Nair et al., 2023; Yamamoto et al., 2023). Highly resilient students demonstrate active engagement in the process. Individuals exhibit a notable resilience towards the formidable obstacles encountered in the realm of academia, and this characteristic has demonstrated a noteworthy capacity to forecast positive consequences, including heightened motivation and scholastic attainment, diminished intentions to withdraw from academic pursuits and elevated levels of contentment with one's life (Bittmann, 2021; Rao & Krishnamurthy, 2018; Vidić et al., 2023).

Numerous academic studies have been initiated to further explore the association between academic resilience and university engagement. Although, the existing scholarship has shown wildly varying results about the nature of the relationship between resilience and engagement within the educational context (Rodríguez-Fernández et al., 2018; Versteeg et al., 2022); on the one hand, A previous systematic study suggested that school engagement is a strong indicator of academic resilience (Tudor & Spray, 2017). These study efforts have yielded important findings indicating that students who possess a higher level of academic resilience are protected from significant maladjustments and are more likely to demonstrate increased levels of engagement with their educational pursuits (Allan et al., 2014; Fiorilli et al., 2020; Martin, 2013). Additionally, the presence of favorable inherent qualities in such students enhances their level of engagement with the educational process, hence exerting a positive influence on their academic achievements when juxtaposed to their counterparts. Based on the scholarly research reviewed, it is posited that students who actively utilize available resources and seek support to handle challenges and attain success demonstrate greater university engagement. However, studies that were connected to sports engagement has not yet been proven, which calls for a study that may deepen the relationship between these variables.

Sports engagement

Engagement is an increasingly important subject that has garnered the attention of educational scholars due to its potential to predict academic progress (Liu et al., 2021). Student-athletes exhibit various levels of attentiveness, inquisitiveness, curiosity, buoyant behavior, and eagerness while information on a subject or specific sport is being presented

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n.º 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

to them. The interest that students take in their respective sports extends to the motivation they feel to learn new things and make progress in the course of their career as athletes (Charkhabi et al., 2019). Furthermore, this concept has been widely acknowledged to encompass multiple domains, including cognitive (such as a commitment to task mastery and versatile figuring out solutions), affective (such as a sense of recognition and a positive attitude towards sports), and behavioral domains (such as student-athletes taking an active role in learning and the adoption of beneficial behaviors in learning) (da Fonseca et al., 2023; de Toro et al., 2023). Sports engagement encompasses three distinct features: Vigor (VI), Dedication (DE), and Absorption (ABS), as derived from these three domains (Jaya & Ariyanto, 2021). First, a student-athlete with boundless enthusiasm, fortitude, exuberance, and adaptability in their quest of success is an athlete with *vigor* (Demirbatır, 2020; Pulido-Martos et al., 2020). In light of the myriad academic responsibilities that student-athletes encounter, they consistently exhibit a favorable disposition towards these obstacles. Second, *dedication* can be defined as an individual's profound involvement in a range of athletic obligations, characterized by a strong sense of dedication and a burning desire to succeed (Listau et al., 2017; Teuber et al., 2021). In this particular construct, the student-athlete has been characterized as possessing a strongly constructive cognitive disposition towards education and displaying a high level of devotion towards the processes and outcomes of learning (Kassab et al., 2023). Finally, *absorption* denotes a state of experiencing a sense of expertise and complete focus and engagement in one's sporting pursuits (Dacillo et al., 2022). This domain is characterized by the presence of a significantly elevated sense of competence in relation to the acquisition and comprehension of the sports. The three dimensions of sports engagement discussed exhibit clear distinctions while also demonstrating strong interconnections (Archambault et al., 2022; Li, 2023).

As previously stated, there is a strong and positive correlation between engagement and academic performance. A number of investigations have been undertaken over the past few years to further investigate the association between the two variables from various educational researches. Fascinatingly, the study conducted by Lei et al. (2018) aimed to address the ongoing dispute on the association between school engagement and academic achievement. The authors aimed to provide definitive evidence

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n.º 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

by conducting a meta-analysis that included 69 separate studies, with a total of 196,473. The findings of the study indicated a significant and positive association between students' overall engagement and their academic performance. Furthermore, an examination of the specific dimensions of engagement, namely behavioral, emotional, and cognitive engagement, demonstrated that nearly all of them exhibited a positive correlation with students' academic achievement. In this regard, it can be postulated that the three domain of university engagement predicts academic achievement which has been corroborated by various scholars in the most recent published scholarly works published from various fields (Acosta-Gonzaga, 2023; Luo et al., 2023). As mentioned above, these studies are conducted concerning school engagement and academic achievement. On the other hand, studies that are highly related to sports engagement and sports achievement are still poorly documented.

Perceived coach's emotional support

Student-athletes face a wide range of challenges in their training environments, including demanding physical activities, psychological pressures, and high expectations (Romano et al., 2021a). Given the significant emotional strain associated with balancing academic and athletic responsibilities, the emotional support provided by key figures in their academic journey (Lobo, Masagca, et al., 2024), such as sports coaches, plays a crucial role in their well-being and performance (Yang et al., 2021). *Perceived Coach's emotional support* refers to a coach's ability to foster a positive environment, build strong relationships, and address the needs of their student-athletes through meaningful interactions (Pakarinen et al., 2020). It encompasses genuine care, empathy, and respect for athletes, alongside efforts to understand their emotions, perspectives, and challenges (Hogekamp et al., 2016; Ruzek et al., 2016; L. Wang, 2022). This support helps athletes feel secure, motivated to take risks, and actively engaged in the learning and training processes (Gasser et al., 2018; Kikas & Tang, 2019).

The framework proposed by Pianta and Hamre (2009) identifies three key dimensions of emotional support: *positive climate* (PC), *coach's sensitivity* (CS), and *regard for adult perspective* (RAP). Positive climate refers to the creation of an environment where coaches actively foster positive connections with athletes, leading to

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n.º 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

improved performance and a stronger sense of belonging (Khalfaoui et al., 2021; Pangle, 2022). Coach sensitivity emphasizes a coach's ability to identify and address athletes' emotional, academic, and individual needs, providing proactive and consistent support (Chen et al., 2020; Kennedy, 2019; Romano et al., 2020, 2021b). Regard for adolescent perspective highlights the importance of promoting autonomy, meaningful peer interactions, and relevance to athletes' lives, creating a supportive and engaging learning atmosphere (Vattøy & Gamlem, 2019; Verhoeven et al., 2019).

Research consistently demonstrates the benefits of emotional support for students' academic and personal growth. Students who perceive emotional support from their instructors tend to exhibit better academic performance, higher engagement, and improved school adjustment compared to those who do not (Domitrovich et al., 2017; Frenzel et al., 2021; Konishi & Wong, 2018). Additionally, academically resilient students often report higher levels of perceived support and a more positive view of their learning environment, which fosters greater engagement and long-term success (Cassidy, 2015; Pitzer & Skinner, 2017; Rodríguez-Fernández et al., 2018; Yilmaz Findik, 2016). Recent studies further establish that academic resilience and perceived emotional support are strongly linked to student engagement (Ahmed et al., 2018; Romano et al., 2021a). These findings suggest that students who are both resilient and perceive strong emotional support from instructors are more likely to experience heightened engagement and improved outcomes.

Despite this body of research, the role of coach emotional support in the interplay between life satisfaction, curiosity, and sports engagement remains largely unexplored, even on a global scale. This study aims to address this gap by investigating the mediating role of coach emotional support in the relationship between these variables, providing new insights into its significance for student-athletes' development and engagement.

Synthesis

Based from the review of literature conducted in this present study, it has been observed that the three desirable traits are significantly and positively related to engagement. However, these studies are predominantly vast in the field of education and sports research are still undocumented. Furthermore, it has been observed that coach's

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.
 Vol. 12, n. ° 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

emotional support mediates the relationship between academic resilience and engagement. On the other hand, the studies reviewed are also in the field of education and psychology, and no studies were yet conducted in relation to sports. In addition to this, there have been no studies found concerning the mediating effect of coach's emotional support to life satisfaction, curiosity, and sports engagement. In this regard, this investigation have determined the relationship between variables and the mediating effect of Coach's emotional support to these existing relationship in which fills the gap in the scarcity of papers that were conducted in relation to these variables being studied.

Statement of the problem and hypotheses formulation

This present study has been conducted to determine the effect of life satisfaction, curiosity, and academic resilience to sports engagement, and examined the mediating effect of coach's emotional support to student-athletes at Bulacan State University, City of Malolos, Bulacan, Philippines during the Academic Year 2023-2024 as illustrated in Figure 1.

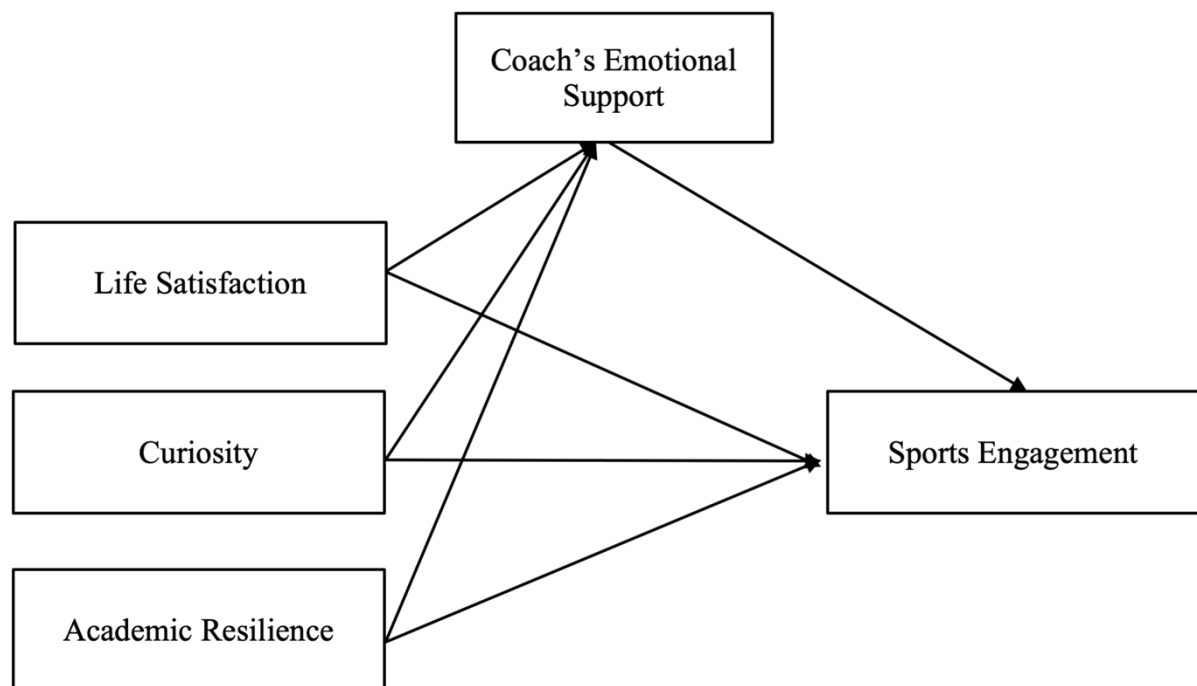


Figure 1. Conceptual framework of the study

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n.º 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

In this regard, the following hypothesis were tested:

H₁: Life Satisfaction predicts Sports Engagement;

H₂: Curiosity predicts Sports Engagement;

H₃: Academic Resilience predicts Sports Engagement;

H₄: Life Satisfaction does not predict Coach's Emotional Support;

H₅: Curiosity does not predict Coach's Emotional Support;

H₆: Academic Resilience does not predict Coach's Emotional Support;

H₇: Coach's Emotional Support predicts Sports Engagement;

H₈: Coach's Emotional Support mediates Academic Resilience and Sports Engagement;

H₉: Coach's Emotional Support does not mediate Life Satisfaction and Sports Engagement;

H₁₀: Coach's Emotional Support mediates Curiosity and Sports Engagement

Methods

Participants and Sampling Technique

The study surveyed student-athletes from various sports who were currently enrolled at a public higher education institution in the Philippines. Participants were selected using Purposive Sampling, a non-probability technique that identifies respondents based on specific criteria relevant to the study (Etikan, 2016). To ensure accuracy in data collection, the study established the following criteria for participation: (a) must be a currently enrolled student-athlete from any academic program at the selected institution and (b) respondents can be either male or female. To determine the appropriate sample size, the study used the Raosoft Sample Size Calculator, considering the total student-athlete population at the university, which was 530. Based on a 95% confidence level and a 5% margin of error, the recommended sample size was 223. However, after data cleaning, the final sample size exceeded expectations, with a total of 399 respondents. The majority of respondents were male, accounting for 62.9% (251 individuals), while females comprised 37.1% (148 individuals) of the total sample.

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n.º 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

Instrument

This study utilized an online survey as the primary data collection method, which enabled efficient acquisition of substantial data at a lower cost while saving time (Regmi et al., 2017). The survey was divided into six distinct sections, each measuring different aspects relevant to the study.

The first section gathered demographic information, specifically the sex of the participants. The second section employed the Satisfaction with Life Scale (SwLS) by Diener et al. (1985), a five-item scale designed to assess an individual's overall life satisfaction. An example statement is, *"The conditions of my life are excellent,"* with responses recorded on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The third section utilized the Curiosity and Exploration Inventory-II by Kashdan et al. (2009), a 10-item self-report instrument measuring curiosity in terms of Stretching (e.g., *"I am at my best when doing something that is complex or challenging"*) and Embracing (e.g., *"Everywhere I go, I am out looking for new things or experiences"*). Responses were documented using a 5-point Likert scale from 1 (very slightly or not at all) to 5 (extremely).

The fourth section incorporated the Academic Resilience Scale (ARS-30) by Cassidy (2016), a 30-item questionnaire that assesses students' cognitive, affective, and behavioral responses to academic challenges. A sample statement is, *"I would start to monitor and evaluate my achievements and effort,"* with responses recorded on a 5-point Likert scale from 1 (unlikely) to 5 (likely). The fifth section used the Teacher's Emotional Support Scale by Romano et al. (2020) to evaluate students' perceptions of their coach's emotional support. This 15-item scale, recorded on a 5-point Likert scale (1 = *Not at all true*, 5 = *Very true*), assesses three components: Positive Climate (e.g., *"Our coach wants the athletes in this team to work well together"*), Coach's Sensitivity (e.g., *"Our coach understands when something is bothering me"*), and Regard for Adolescent Perspective (e.g., *"Our coach allows us to discuss our work with our teammates"*). Some words were modified in this instrument to better align with the present study.

Finally, the sixth section employed the Utrecht Work Engagement Scale for Students (UWES-9S) by Carmona-Halty et al. (2019), a 9-item self-report measure of student-athletes' engagement in sports. This instrument is categorized into three

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n.º 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

dimensions: Vigor (e.g., *"I feel energetic and capable when I'm playing or going to training"*), Dedication (e.g., *"I am proud of my training"*), and Absorption (e.g., *"I feel happy when I am training immensely"*). Responses were recorded on a 6-point Likert scale ranging from 0 (never) to 6 (always), with minor wording adjustments made to fit the study's context.

Data analysis

To analyze the demographic characteristics of the respondents based on sex, the study utilized Statistical Packages for Social Science (SPSS) version 29 for MacOS. Additionally, a causal-predictive approach was employed using Partial Least Squares-Structural Equation Modeling (PLS-SEM) through SmartPLS4. To ensure the reliability of each item, a factor loading analysis was conducted, and items with loadings below 0.70 were removed from the model (Hair et al., 2021). Only the items that met or exceeded this threshold were retained to ensure reliability. Furthermore, the internal consistency and validity of the constructs were assessed using Cronbach's Alpha (CA), Composite Reliability (CR), and Average Variance Extracted (AVE). The study adhered to the following thresholds: $CA > 0.70$ for acceptable internal consistency, $CR \geq 0.70$ to ensure composite reliability, and $AVE \geq 0.50$ to validate construct reliability (dos Santos & Cirillo, 2021). Additionally, the corresponding p-value was required to be ≤ 0.50 (Hair et al., 2021). As presented in Table 1, all constructs met these thresholds: SwLS ($CA = 0.919$, $CR = 0.932$, $AVE = 0.755$), ARS ($CA = 0.924$, $CR = 0.930$, $AVE = 0.596$), CUR ($CA = 0.952$, $CR = 0.953$, $AVE = 0.722$), CES ($CA = 0.937$, $CR = 0.941$, $AVE = 0.615$), and SE ($CA = 0.945$, $CR = 0.945$, $AVE = 0.751$). Based on these findings, convergent validity was successfully established, confirming that the retained items reliably measured their intended constructs.

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n.º 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

Table 1. Reliability measures and convergent Validity

Construct	Items	Item Loading	CA	CR	AVE
Life Satisfaction	SwLS1	0.901	0.919	0.932	0.755
	SwLS2	0.915			
	SwLS3	0.888			
	SwLS4	0.861			
	SwLS5	0.780			
Academic Resilience	ARS2	0.735	0.924	0.930	0.596
	ARS4	0.716			
	ARS11	0.790			
	ARS13	0.723			
	ARS16	0.781			
	ARS18	0.777			
	ARS22	0.820			
	ARS25	0.787			
	ARS27	0.779			
	ARS30	0.802			
Curiosity	CEIII_1	0.820	0.952	0.953	0.722
	CEIII_2	0.806			
	CEIII_3	0.884			
	CEIII_4	0.869			
	CEIII_5	0.884			
	CEIII_6	0.840			
	CEIII_7	0.872			
	CEIII_8	0.856			
	CEIII_9	0.811			
Coach's Emotional Support	PC1	0.798	0.937	0.941	0.615
	PC3	0.807			
	PC5	0.754			
	TS1	0.790			
	TS2	0.834			
	TS3	0.834			
	TS5	0.778			
	TS6	0.781			
	RAP1	0.722			
	RAP3	0.799			
Sports Engagement	RAP4	0.721	0.945	0.945	0.751
	VI1	0.822			
	VI2	0.894			
	VI3	0.851			
	DE1	0.882			
	DE2	0.883			
	DE3	0.852			
	AB1	0.878			

Note: Item loadings should be ≥ 0.70 ; Cronbach's Alpha (CA) and Composite Reliability should be ≥ 0.70 ; Average Variance Extracted (AVE) should be ≥ 0.50 .

Legends: SwLS- Life Satisfaction, ARS- Academic Resilience, CEIII- Curiosity, PC/TS/RAP- Coach's Emotional Support (based on three factors: positive climate, teacher/coach's sensitivity and regard to adult perspective), VI/DE/AB – Sports Engagement (based on three dimensions: vigor, dedication and absorption).

Moreover, to establish the discriminant validity, the Fornell-Larcker criterion and the Heterotrait-Monotrait Ratio (HTMT) should be inspected. For the Fornell-Larcker

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n. ° 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

criterion, the square root of AVE (diagonal value) in each variable should surpass the correlation of latent variables as presented in Table 2. Also, Table 3 forecasts the result of the Heterotrait-Monotrait ratio (HTMT). The HTMT value should be ≤ 0.90 . Based on the findings, most of the values are < 0.90 . Hence, discriminant validity has been established.

Table 2. Fornell-Larcker Criterion

	ARS	CES	CUR	SwLS	SE
ARS	0.772				
CES	0.329	0.784			
CUR	0.085	0.058	0.850		
SwLS	-0.019	-0.064	0.068	0.869	
SE	0.058	0.032	0.560	0.001	0.867

Legends: ARS- Academic Resilience, CES- Coach's Emotional Support, CUR- Curiosity, SwLS- Life Satisfaction, SE- Sports Engagement.

Table 3. Heterotrait-Monotrait Ratio (HTMT)

	ARS	CES	CUR	SwLS	SE
ARS					
CES	0.343				
CUR	0.096	0.066			
SwLS	0.045	0.070	0.076		
SE	0.073	0.040	0.587	0.025	

Note: HTMT value should be < 0.90 .

Legends: ARS- Academic Resilience, CES- Coach's Emotional Support, CUR- Curiosity, SwLS- Life Satisfaction, SE- Sports Engagement.

Table 4 presents the results of PLS-Predict, which was used to assess the predictive power and validity of the model. The Q^2 predict values were examined, where values greater than 0 indicated a meaningful level of predictive relevance. Additionally, the PLS-SEM MV error histogram was analyzed, revealing that most indicators exhibited symmetry, suggesting a well-fitted model. To further evaluate predictive accuracy, PLS-SEM Root Mean Square Error (PLS-SEM_RMSE) was compared with Linear Model Root Mean Square Error (LM_RMSE). The results showed that for most indicators, PLS-SEM_RMSE values were lower than LM_RMSE values, indicating moderate predictive power of the model. These findings align with the predictive model assessment guidelines

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n.º 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

established by Shmueli et al. (2019), further confirming the reliability and applicability of the model in predicting the study variables.

Table 4. PLSpredict / CVPCAT results

	Q ² Predict	PLS-SEM RMSE	PLS-SEM MAE	LM RMSE	LM MAE
AB1	0.239	0.846	0.649	0.793	0.589
DE1	0.202	0.834	0.615	0.811	0.598
DE2	0.199	0.855	0.619	0.829	0.573
DE3	0.241	0.800	0.619	0.777	0.552
PC1	0.055	0.574	0.425	0.597	0.438
PC3	0.092	0.548	0.428	0.571	0.435
PC5	0.059	0.555	0.400	0.570	0.405
RAP1	0.054	0.796	0.675	0.824	0.688
RAP3	0.072	0.707	0.594	0.742	0.609
RAP4	0.045	0.769	0.628	0.802	0.632
TS1	0.031	0.722	0.615	0.739	0.617
TS2	0.068	0.713	0.613	0.740	0.622
TS3	0.044	0.745	0.639	0.766	0.642
TS5	0.034	0.735	0.611	0.756	0.617
TS6	0.035	0.737	0.620	0.764	0.628
VI1	0.256	0.882	0.692	0.804	0.579
VI2	0.196	0.866	0.652	0.824	0.616
VI3	0.203	0.806	0.635	0.794	0.600

Note: If most indicators in PLS-SEM have lower RMSE or MAE than the LM benchmark, the model has high predictive power. If about the same number or a majority show lower errors, it has moderate predictive power. If only a few indicators show lower errors, it has low predictive power. If none do, the model lacks predictive power. Based from Shmueli et al. (2019).

Ethical statement

The study followed strict ethical standards and was exempt from formal ethics review, posing minimal risk to participants. Data collection was conducted via Google Forms, detailing the study's purpose, criteria, instruments, and variables. Participants were informed of their rights, including voluntary participation and withdrawal without consequences. Potential minor risks, such as discomfort from sensitive questions, were disclosed, and no monetary compensation was provided. Confidentiality and anonymity were ensured in compliance with the Data Privacy Act of 2012 (RA 10173), and respondents could withdraw or request debriefing at any time.

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.
 Vol. 12, n.º 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

Results And Discussion

Structural model assessment

Concerning the model specification, SwLS, CUR and ARS are the predictors, while CES is the mediating variable, and SE is the outcome. For all the variables, a composite score was used to obtain global score. The explanatory power of the model has been evaluated by measuring the discrepancy amount in the dependent variables of the model. As Hair et al. Hair et al. (2021) have stated, the R^2 and the path coefficients are the essential measures for assessing the structural model. As seen in Figure 2, the model has R^2 value of CES 11.3% and SE 31.5% respectively.

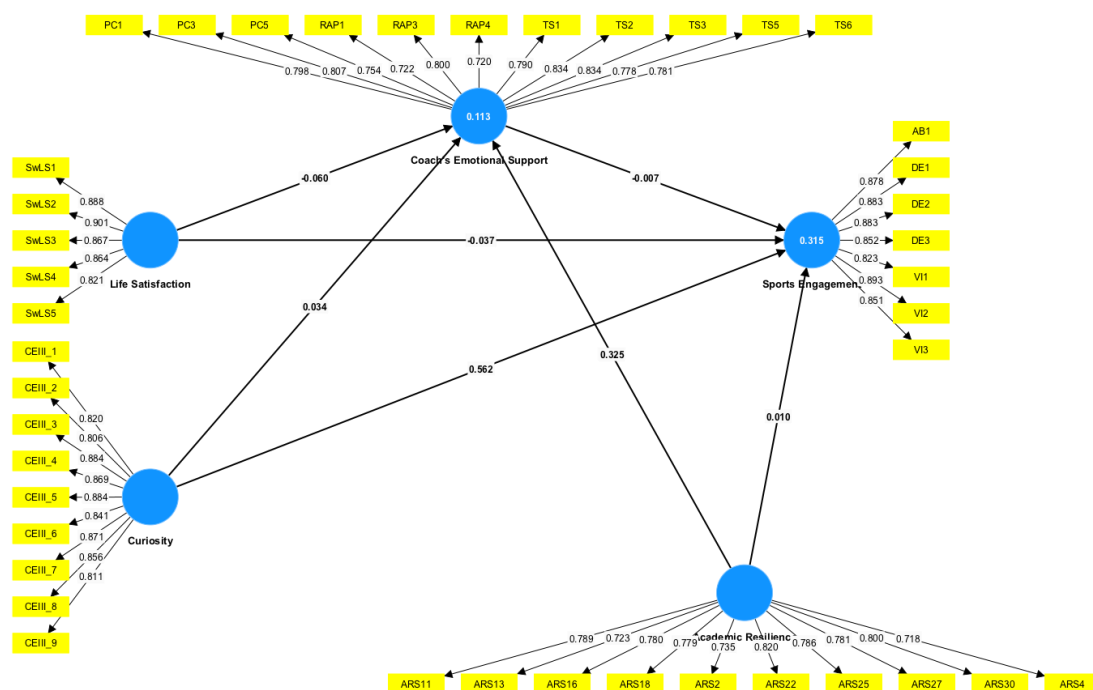


Figure 2. Path analysis: The mediating effect of coach's emotional support in the relationship between life satisfaction, curiosity, academic resilience and sports engagement

Direct effects

The model was bootstrapped into 10,000 subsamples for the path analysis, as suggested by scholars (Fauzi, 2022; Hair et al., 2021). Each hypothesis' path coefficient and p -values are illustrated in Figure 2 and Table 5. Based on the findings, it was observed

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n.º 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

that SwLS does not predict SE ($\beta = -0.037$, $p = 0.464$), indicating that, even though student-athletes are satisfied and contented with their life, it does not affect their engagement in sports, which led to the refutation of several experts' findings from other related studies (Rainey, 2017; Upadaya & Salmela-Aro, 2017). According to the aforementioned studies, there exists a bidirectional association between individuals' life satisfaction and their level of engagement in university activities which may lead to enhanced academic performance. On the other hand, the specific finding lends credence to the idea that the level of contentment that students have with regard to their lives is not necessarily proportional to the amount of effort that they put into their sports pursuits. It is important to note that life satisfaction can be understood as the evaluation of an individual's overall well-being, determined by their own personal and subjective standards (Shin & Johnson, 1978; Zhou & Lin, 2016). Therefore, it may be inferred that students may experience a sense of satisfaction in their lives, irrespective of the level of involvement they dedicate to their sports endeavor endeavors. Furthermore, given that life satisfaction is inherently subjective, contingent upon an individual's personal evaluation of the overall quality of their own life, it is important to acknowledge that there may exist additional underlying factors that warrant consideration in further exploring the relationship between these two variables. In this regard, H_1 has been rejected.

Fascinatingly, it was observed that CUR predicts SE ($\beta = 0.562$, $p < .05$), indicating that curiosity has a direct effect to the engagement of student-athletes in sports. The findings suggest that student-athletes who actively seek new knowledge and engage in novel experiences, while also embracing the challenges and rewards of their daily lives, will experience a notable increase in their level of engagement in sports. The claim that curiosity is vital for promoting long-term student involvement in various pursuits has received support from multiple education experts (Mahama, 2022; Mahama et al., 2023; Schutte & Malouff, 2022). Curiosity plays a crucial role throughout a person's life, contributing to the acquisition of knowledge, skill development, relationship building, and overall competence (Dubey et al., 2022; Singh & Manjaly, 2022; Whitecross & Smithson, 2023). Hence, H_2 has been supported.

Meanwhile, it was observed that ARS does not predict SE ($\beta = 0.012$, $p = 0.803$), suggesting that ARS does not affect SE. The result of this study suggests that students-

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n.º 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

athletes' resilience to academics may not automatically translate into a more invested attitude toward their sports endeavors. This finding contrasted significantly from the observations made by other scholars in the field of education (Ahmed et al., 2018; Lobo, 2023; Tortosa Martínez et al., 2023). These scholars have already demonstrated that academic resilience serves as a protective factor for students, shielding them from substantial maladjustments and potentially leading to heightened levels of involvement with their sports endeavors (Allan et al., 2014; Fiorilli et al., 2020; Martin, 2013). Furthermore, the level of involvement in sport activities serves as a strong sign of a student's exceptional resilience (Tudor & Spray, 2017). Moreover, the existence of advantageous intrinsic attributes in these students amplifies their degree of involvement in the educational process, thereby exhibiting a constructive impact on their academic accomplishments when compared to their peers. Ergo, H₃ has been rejected.

Moreover, it was observed that both SwLS ($\beta = -0.060$, $p = 0.242$) and CUR ($\beta = 0.034$, $p = 0.498$) does not predict CES indicating that these two variables do not have a direct impact to student-athletes' perception of the emotional support being provided by their coaches. Based on these findings, it can be deduced that even though student-athletes are satisfied in their respective lives, and they are highly curious toward seeking for new knowledge, it does not directly change their perceived coach's emotional support being provided to them. Unfortunately, there have been no studies that were found in relation to the existing relationship between these variables. In this regard, performing a similar study from other set of populations is highly suggested in order to support or refute the findings of this present investigation. As such, H₄ and H₅ were supported.

On a positive note, it has been observed that ARS predicts CES ($\beta = 0.325$, $p < .05$), postulating that academic resilience has a direct and positive impact to the perceived CES by student-athletes. This is substantiated by prior research conducted by various studies (Hu, 2022; Romano et al., 2021a). In addition, Yuan et al. (2018) discovered that those with high levels of resilience reported perceiving greater emotional support from their significant individuals compared to those with lower levels of resilience. In addition, Downey (2008) has suggested that the development of a positive relationship between coaches and student-athletes, as well as creating a conducive sports environment, should be taken into account in order to promote academic resilience in student-athletes.

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n.º 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

Additionally, subsequent research has demonstrated that individuals who possess resilient traits are more likely to actively participate in sports activities and show a strong commitment to their respective sport events (Tang et al., 2019). The findings suggest that student-athletes with high levels of resilience are more likely to feel greater emotional support from their coaches and exhibit better levels of engagement in sports. Based on the result, H_6 has been rejected.

Additionally, it has been observed that CES does not predict the SE of student-athletes ($\beta = -0.007$, $p = 0.892$), suggesting that the perceived coach's emotional support of student-athletes does not greatly impact their engagement in sports. This can be explained that when student-athletes perceived that they are receiving higher levels of emotional support from their coaches, there engagement to their respective sports event is not being affected. This particular finding contradicts the other discoveries of various scholars (Kelly & Zhang, 2016; Pérez-Salas et al., 2021). Additionally, studies have established the relationship between teachers' emotional support and students' engagement (Lam et al., 2012; Pöysä et al., 2019). However, studies mentioned earlier are mostly related to primary and high school students, but no studies have been found concerning higher education, most specifically, studies which are focused on student-athletes. Therefore, conducting a similar study to other set of samples or individuals may be able to support or repudiate the claims of this present study. In this regard, H_7 has been rejected.

Indirect effects

Furthermore, it has been observed that CES does not mediate the relationship between ARS and SE ($\beta = 0.130$, $p = 0.896$). In this, it can be construed that student-athletes with higher levels of academic resilience and sports engagement cannot be strengthened by the emotional support being provided by coaches. This particular finding has been supported by the study of Ansong et al. (2017), in which the results shown that teachers' emotional support does not mediate the relationship between academic resilience and engagement of students. In contrast, most of the studies in the field of education that were conducted in relation to these variables shown that the emotional support being provided by significant individuals can strengthen the relationship between

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n. ° 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

academic resilience and engagement, like the study of Romano et al. (2021b). It was mentioned that academically resilient student-athletes could positively affect their sports engagement through coach's emotional support. In other words, it can be construed that highly resilient student-athletes are highly engaged in their respective sport events because they can receive higher emotional support from their coaches. Likewise, based on Pedler et al. (2020), coaches' support influences student-athletes engagement, highlighting the coach's role as paramount to ensuring students can experience meaningful sports engagement. More in-depth, the findings posited that academically resilient students tend to establish a more reliable, supportive network in various teams, as student-athletes believe that coaches could foster their engagement and sports success. In this regard, H_8 has been rejected.

Lastly, it was observed that the relationship between SwLS, CUR, and SE cannot be mediated by CES ($\beta = 0.097, p = 0.922$) and ($\beta = 0.075, p = 0.940$), respectively. Based on these findings, even though student-athletes receive a higher level of emotional support from their coaches, it does not leverage their life satisfaction, curiosity, and sports engagement. Unfortunately, studies that were conducted in relation to this current topic is still undocumented, even after performing an exhausting literature review. In this regard, investigating a similar study from other set of student-athletes from other higher education institutions is highly recommended to determine if the findings of this study may be supported or rejected. In this regard, H_9 has been supported and H_{10} has been rejected.

Despite extensive searches of previous scholarly works, no prior studies have been found that specifically investigate the mediating effect of perceived coach's emotional support on life satisfaction, curiosity, and sports engagement. While related research exists in broader educational contexts, this study is among the first to explore this mediation in a sports engagement framework, particularly within the Philippine higher education setting. The findings provide an initial empirical foundation, which future studies can further explore across diverse populations and contexts.

Table 5. Path analysis findings and hypotheses testing

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n.º 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

Hypothesis	Path	Path Coefficient	p-value	Decision
<i>Direct effect</i>				
H ₁	SwLS → SE	-0.037	0.464	Not Supported
H ₂	CUR → SE	0.562	0.000	Supported
H ₃	ARS → SE	0.012	0.803	Not Supported
H ₄	SwLS → CES	-0.060	0.242	Supported
H ₅	CUR → CES	0.034	0.498	Supported
H ₆	ARS → CES	0.325	0.000	Not supported
H ₇	CES → SE	-0.007	0.892	Not Supported
<i>Indirect effect</i>				
H ₈	ARS → CES → SE	0.130	0.896	Not Supported
H ₉	SwLS → CES → SE	0.097	0.922	Supported
H ₁₀	CUR → CES → SE	0.075	0.940	Not Supported

Note: ARS- Academic Resilience, CUR- Curiosity, SwLS- Life Satisfaction, CES- Coach's Emotional Support, SE- Sports Engagement

Conclusion

This study examined the direct effects of life satisfaction, curiosity, and academic resilience on sports engagement, as well as the mediating role of perceived coach's emotional support. The findings revealed that life satisfaction and academic resilience did not significantly predict sports engagement, indicating that a student-athlete's overall life contentment and ability to overcome academic challenges do not necessarily translate into greater commitment to sports participation. In contrast, curiosity was found to be a significant predictor of sports engagement, suggesting that student-athletes who actively seek knowledge and new experiences are more likely to be highly engaged in their respective sports activities. This highlights the importance of intrinsic motivation and curiosity-driven learning in fostering long-term sports engagement.

Regarding the relationships with perceived coach's emotional support, the results showed that life satisfaction and curiosity did not significantly predict perceived coach's emotional support, implying that being satisfied with life or possessing a strong desire for learning does not necessarily alter how student-athletes perceive their coaches' emotional support. However, academic resilience significantly predicted perceived coach's emotional support, suggesting that resilient student-athletes are more likely to perceive their coaches as emotionally supportive. This finding aligns with previous research

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n. ° 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

indicating that individuals with strong resilience tend to establish better support networks and view mentors more positively.

In terms of mediation, the findings revealed that perceived coach's emotional support did not mediate the relationships between life satisfaction, curiosity, academic resilience, and sports engagement. This suggests that while coaches' emotional support may contribute to a positive training environment, it does not directly influence the engagement of student-athletes when considered as a mediating factor. These results challenge conventional beliefs that external emotional reinforcement from coaches enhances student-athlete engagement and instead emphasize the stronger role of intrinsic motivational factors such as curiosity.

The significance of this study lies in its contribution to understanding the psychological and motivational factors influencing student-athlete engagement. The findings suggest that coaches and sports educators should focus on fostering curiosity and self-driven motivation among student-athletes rather than solely relying on emotional support strategies. Additionally, since academic resilience was found to predict perceived coach's emotional support, interventions aimed at developing resilience may have indirect benefits in shaping athletes' perceptions of support within the sports environment.

Despite its contributions, this study has limitations. First, it was conducted exclusively among student-athletes from a public higher education institution in the Philippines, which limits the generalizability of the findings to private universities, different sports institutions, and other cultural contexts. Second, key demographic factors such as age, gender, and type of sport were not considered, which may have influenced the relationships among the variables. Future research should incorporate these factors to provide a more comprehensive understanding of student-athlete engagement. Third, the study utilized a cross-sectional design, meaning that causality cannot be firmly established. Longitudinal studies are recommended to track how these relationships develop over time and to assess the long-term impact of curiosity, resilience, and emotional support on sports engagement.

Original article. The mediating effect of perceived coach's emotional support to life satisfaction, curiosity, academic resilience and sports engagement.

Vol. 12, n. ° 1; p. 1-42, January 2026. <https://doi.org/10.17979/sportis.2026.12.1.11614>

Future Research Directions

While this study offers new insights into the relationships among life satisfaction, curiosity, academic resilience, and sports engagement, there remain several unexplored areas that warrant further research. First, since perceived coach's emotional support did not mediate sports engagement, future studies should examine alternative mediators such as self-efficacy, team cohesion, and motivational climate to better explain the connection between psychological attributes and engagement. Second, conducting comparative studies across different countries, sports disciplines, and educational levels would help assess the cross-cultural and contextual applicability of these findings. Third, future research should differentiate between individual and team sports, as engagement dynamics may vary depending on the nature of the sport.

Furthermore, experimental or intervention-based studies should be conducted to test the effectiveness of curiosity-driven learning strategies and resilience-training programs in enhancing student-athlete engagement. A longitudinal approach would also be beneficial in examining how psychological factors evolve over time and whether changes in coach support influence engagement in the long run. Additionally, expanding the sample population to private university athletes, varsity players, and international student-athletes would enhance the generalizability of these findings. Lastly, incorporating sociodemographic variables such as age, gender, sport type, and competition level could provide deeper insights into how different groups experience sports engagement differently. By addressing these areas, future research can further refine theoretical models of sports engagement and inform evidence-based practices in coaching, sports education, and athlete development.

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