SJIF Impact Factor (2025): 8.688| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 10 | Issue: 5 | May 2025 - Peer Reviewed Journal

ENDURANCE AND ENGAGEMENT ON COMPUTER-BASED FITNESS PROGRAMS AS PREDICTORS OF PERFORMANCE SKILLS ACQUISITION OF JUNIOR HIGH SCHOOL STUDENT-ATHLETES

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ABSTRACT
Poor acquired skills in student-athletes are a global concern. This study aimed to determine the significance of endurance and engagement in a computer-based fitness program as predictors of the performance skills acquisition. Employing a predictive research design and using simple random sampling in selecting the 150 junior high school student-athletes, results showed that with a combined degree of 47.8%, both predictors significantly predict the criterion variable. Hence, Com-B Theory is affirmed. Future research may explore other variables not covered in this study to account for the 52.2% variance in performance skills acquisition. Improving resource allocation for fitness programs, integrating gamified strategies, and adopting evidence-based training methodologies is encouraged.
KEYWORDS: *Endurance And Engagement on Computer-Based Fitness Programs, Predictors Performance Skills Acquisition, Junior High School Student-Athletes*

CHAPTER 1

The Problem and Its Scope

In the rapidly evolving world of sports and athletic performance, student-athletes face the challenge of poor performance skills in their respective disciplines. However, questions remain about the effectiveness of these computer-based fitness programs, particularly in addressing the unique demands of various sports (Ding et al, 2024).

Moreover, in Nigeria, a study by the National Institute of Youth Athletics in 2022 revealed that 68% of Junior High School athletes are eager to improve their low performance skills. Similarly, in Indonesia, an analysis by the International Sports Development Consortium in 2020 highlighted that over 70% of Junior High School students in parts of Africa and Southeast Asia have limited access to proper sports training, further weakening their sports performance.

A study conducted in the Philippines by Rodriguez (2022) revealed that student-athletes who underwent poor physical training had poor acquired sports skills. The interactive programs, which use advanced technology and data analysis to create personalized training plans, highlight a potential solution, but also develop poor sports skills (Castro, 2019).

Poor performance skills in athletes can lead to a range of negative consequences that affect both their physical and psychological well-being. According to Moon, et al. (2025), athletes with poor performance skills have a treat to their identity, high anxiety and psychological distress. Additionally, poor performance skills can lead to diminished confidence, increased stress, and reduced motivation, particularly when athletes feel they are not meeting expectations (Gustafsson et al., 2023). The following consequences of poor performance skills trigger the urgency to conduct this study, coupled with fewer published studies.

Significance of the Study

This study aligns with Sustainable Development Goal Four, which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, by addressing the need for innovative approaches in sports education. Building on previous studies that highlight the positive effects of integrated training programs, it examines the combined impact of physical training and computer-based fitness programs on the performance skills acquisition of junior high school student-athletes. This research aims to contribute to equitable access to quality training methods, ensuring young athletes develop holistically through both physical and cognitive components. By providing valuable insights for Department of Education (DepEd) officials, educators, coaches, student-athletes, and

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future researchers, it hopes to bridge the gap in knowledge regarding comprehensive training strategies. Ultimately, this study supports the development of evidence-based programs that foster skill acquisition and lifelong learning opportunities in sports.

Statement of the Problem

This study aimed to determine the significance of endurance and engagement on a computer-based fitness program as predictors of the performance skills acquisition of junior high school student-athletes. Specifically, it sought to meet the following objectives:

1. To determine the levels of endurance in terms of physical/ emotional strain, body fitness and body strength; engagement on computer- based fitness programs in terms of motivation, facility and equipment and strategies and performance skills acquisition in terms of coaching practice, athletics development, and movement mechanics of Junior High School student-athletes.
2. To determine the significance of the relationship between endurance and computer-based fitness engagement programs on the performance skills acquisition of Junior High School student-athletes.
3. To determine the significance of the degree of combined influence of physical training and computer-based fitness programs on the performance skills acquisition of Junior High School student-athletes.

Hypotheses

This study had been tested at a .05 level of significance.

$H_0$1: Endurance and engagement on computer-based fitness programs do not significantly correlate the performance skills acquisition of Junior High School student-athletes.

$H_0$2: Combined endurance and computer-based fitness programs do not significantly influence the performance skills acquisition of Junior High School student-athletes.

Theoretical Framework

This study is anchored to the Com-B Theory as cited by West and Michie (2020), which suggests that behavior is identified by three factors that need to be present, which are capability, opportunity, and motivation. This theory provides a useful framework for understanding physical training programs and computer-based fitness programs that influence the performance skills being acquired

In this study, the physical training variable indicated by physical/ emotional strain, body fitness, and body strength stands for capability mentioned in the theory (Silverman and Deuster, 2022). Moreover, computer-based fitness programs indicated by motivation, facility/ equipment, and strategies (Tate, 2018) stand for opportunity in the theory. Lastly, the performance skills acquisition variable indicated by coaching practice, athletic development, and movement mechanics (Rees, 2017) stands for behavior. In conclusion, this study is delimited only to capability, opportunity, and behavior as variables mentioned in the theory. However, motivation is excluded from the study

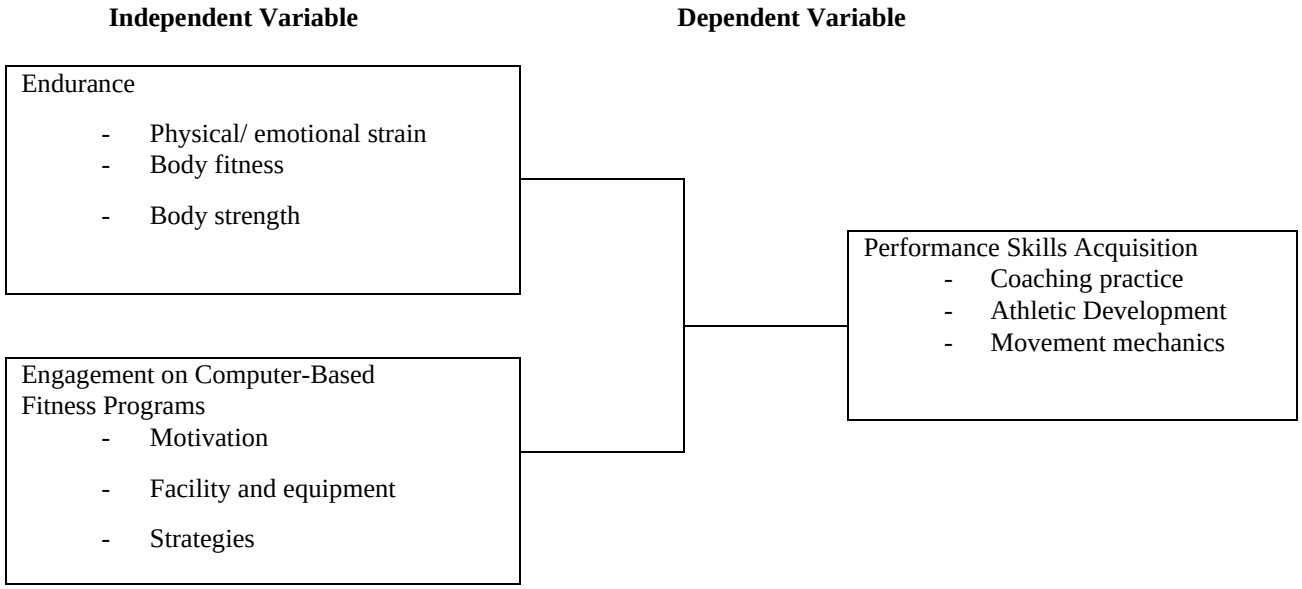


Figure 1. Conceptual Framework of the Study

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CHAPTER 2
METHODOLOGY

This chapter presents the methods and processes used by the researcher in conducting the study. This chapter encompasses various components, including the research design, research respondents, research locality, research instrument, data gathering technique, and data analysis.

Research Design

The researcher used a quantitative non-experimental research design utilizing the descriptive-correlational method as the most accurate design for this study. In this context, the researcher described the students-athletes level of physical training, computer-based fitness program, and performance skills acquisition and their relationship. This study utilized a descriptive-correlation approach to fulfill the objectives set in this study. It is used to describe two or more variables and their relationships. Descriptive correlation design can provide a picture of current affairs (Panda, 2022). The behavior of Junior High school athletes in terms of physical training, computer-based fitness programs, and performance skills acquisition is described in this study through descriptive correlation.

Research Locale

The research was conducted in a public high school in the Division of Davao City, Region XI, known for producing national medalist athletes. The school have a diverse range of student-athletes and the necessary facilities to support both physical training and computer-based fitness programs. This diversity ensures the study provides a comprehensive understanding of the program's impact across various demographics. By selecting a location that meets these criteria, the researcher gathered robust data and made informed conclusions about the fitness program's efficacy and potential for broader implementations.

Research Respondents

The researcher utilized a random sampling technique to select the respondents for this investigation. Creswell (2015) posits that random sampling is a method to select a subset of observations from a larger population to draw inferences about the entire population. This particular technique is highly suitable for my investigation because it can mitigate bias and guarantee accurate depiction. This practice is advantageous as it facilitates adherence to the scientific methodology in selecting responses. The researcher employed a random selection technique to select a sample of 150 Junior High School student-athletes ages 14 years old or above from one of the schools in Cluster 14, Division of Davao City, for the academic year 2022-2023 as respondents for the research study. The respondents were selected considering their athletic experience in different training programs for at least six months in preparation for their different athletic games. A sample size is deemed adequate for conducting statistical analysis on the data collected, which were utilized to address the research issues and concerns posed in this study.

Research Instrument

The researcher had adapted and modified the Student-Athlete Strength and Conditioning Survey of Eisner (2014) to gather data for the first independent variable, physical training. In evaluating the physical training of Junior High School student-athletes, the respondents used the following in rating the questionnaire: 4 as strongly agree, 3 as agree, 2 as disagree, and 1 as strongly disagree. The Likert scale below was used to analyze the result:

Ranges of Means	Descriptive Level	Interpretation
3.25-4.00	Very High	Student-athletes' endurance is very strong.
2.50-3.24	High	Student-athletes’ endurance is strong.
1.75-2.49	Low	Student-athletes’ endurance is weak.
1.00-1.75	Very Low	Student-athletes’ endurance is very weak.

In gathering the data for the second independent variable, the researcher had adapted and modified the Student-Athlete Online Training Program for Sports Survey of Cope (2022). In evaluating the computer-based fitness program of Junior High School student-athletes, the respondents used the following in rating the questionnaire: 4 as strongly agree, 3 as agree, 2 as disagree, and 1 as strongly disagree. The Likert scale below was used to analyze the result:

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Ranges of Means	Descriptive Level	Interpretation
3.25-4.00	Very High	Engagement on computer-based fitness program is very good.
2.50-3.24	High	Engagement on computer-based fitness program is good.
1.75-2.49	Low	Engagement on computer-based fitness program is poor.
1.00-1.75	Very Low	Engagement on computer-based fitness program is very poor.

The researcher had adapted and modified the student-athletes Performance Survey of Petrolia (2022) to gather data for the dependent variable: performance skills acquisition. In evaluating the performance skills acquisition of Junior High School student-athletes, the respondents used the following in rating the questionnaire: 4 as strongly agree, 3 as agree, 2 as disagree, and 1 as strongly disagree. The Likert scale below was used to analyze the result:

Ranges of Means	Descriptive Level	Interpretation
3.25-4.00	Very High	Performance skills acquisition is very strong.
2.50-3.24	High	Performance skills acquisition is strong.
1.75-2.49	Low	Performance skills acquisition is weak.
1.00-1.75	Very Low	Performance skills acquisition is very weak.

In summary, the research instrument composed of 45 items with three parts: part 1 comprised a questionnaire of fifteen (15) items that assessed the respondent's physical training based on their physical/emotional strain, body fitness, and body strength; part 2 comprised a questionnaire of fifteen (15) items that assessed their level of computer-based fitness programs with the variables of motivation, facility and equipment and strategies; and part 3 consisted of a questionnaire comprising fifteen (15) items that assessed the student-athletes performance skills acquisition with the variables of coaching technique, athletics development, and movement mechanics. Moreover, the study utilized statistical tools such as mean, standard deviation, and correlation analysis to analyze the data gathered from the questionnaire. The instruments used to assess endurance, engagement on computer-based fitness programs, and performance skills acquisition were modified and adapted and have undergone validation by experts in the field. In this study, Cronbach's alpha values were determined for endurance (0.884), Engagement on Computer-Based Fitness Programs (0.876), and Performance Skills Acquisition (0.708), demonstrating good internal consistency. Typically, a value exceeding 0.7 signifies acceptable reliability, with higher scores for Endurance and Computer-Based Fitness Programs, while Performance Skills Acquisition also maintains a strong level of consistency. These findings confirmed the reliability of the measures used in the study.

Data Gathering Procedure

Pre-Data Gathering. Asking for clearance from the Research Ethics Committee (REC). For research to result in benefits and minimize the risk of harm, it must be conducted ethically. The researcher asked for clearance from the research ethics committee to ensure that the research is conducted to protect the research participants' dignity, rights, and safety and that the research design is ethically sound and is likely to yield the expected results. Also, a research project's ethical approval helps increase the legitimacy of research findings. This is important for those making decisions based on the research results. After asking for a clearance from REC, the researcher asked for an endorsement letter from the Dean of the Graduate School of Holy Cross of Davao with the consent of the thesis adviser to conduct the study on physical training and computer-based fitness program on the performance skills acquisition of Junior High School student-athletes. With the endorsement letter, the researcher sent a request letter to the Division Office of Davao City through the Schools

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Division Superintendent (SDS) to conduct the study. After the school Division Superintendent's approval letter, the researcher sent a letter to the School Principals under study. The following data procedures were used while gathering the data. Several processes were performed when collecting the data for the study.

Data Gathering. Administration and retrieval of questionnaires took place. With the approval and full support of the Schools Division Superintendent (SDS) and School Principals, the questionnaires were administered in-person to the respondents. Only those with assent and parents' consent were considered in the study via a survey questionnaire. After the respondents had entirely and honestly answered and provided all the necessary data needed in the questionnaire, the researcher retrieved all the answers and stored them in a steel cabinet with a padlock.

Post Data Gathering. The gathering and tabulation of data took place. After successfully administering and receiving the survey questionnaires, the data were then collected and tabulated. The researcher guaranteed that all collected data were appropriately interpreted and utilized accordingly. Appropriate statistical tools were employed to get the necessary data for interpretation and further analysis.

Data Analysis

Information and data were then analyzed and interpreted, and were subjected to statistical treatment. Consistent with the research design of this study, the correlational study design method was applied using the following statistical tools:

Weighted Mean. The weighted mean was used in assessing the effects of physical training and computer-based fitness programs on Junior High School student-athletes performance. It also helped to identify biases or outliers, providing deeper insights for meaningful conclusions. The average weighted mean were used to process and interpret survey results.

Pearson Product-Moment Correlation Coefficient. The Pearson R was used to determine the relationship between physical training and a computer-based fitness program on the performance skills acquisition of junior high school student-athletes. In addition, this statistical analysis was used to compare the data of physical training and computer-based fitness programs and the performance skills acquisition of the student-athletes. By utilizing this tool, it determines whether there is a significant relationship in the student's performance skills acquisition as a result of their exposure to the physical and computer based.

Regression Analysis. This is used to identify which among the indicators of physical training and computer-based fitness program significantly affect the performance skills of the Junior High School student-athletes.

For the r value the following scheme is used

Computed r	Descriptive Interpretation
+/- 1.00	Perfect Correlation
Between +/- 0.75 - +/- 0.99	High Correlation
Between +/- 0.51 - +/- 0.74	Moderately High Correlation
Between +/- 0.31 - +/- 0.50	Moderately Low Correlation
Between +/- 0.01 - +/- 0.30	Low Correlation

Ethical Considerations

In this study, the researcher ensured that ethical issues are considered at every step. For example, the researcher ensured that the respondents are well-informed about the purpose of the research in which they are asked to participate, and they ensured that each respondent's rights are respected.

The study adhered to the ethical principles for research involving human subjects, as outlined in Republic Act No. 10532 and the Philippine Health Research Ethics Board (PHREB) guidelines. It ensured compliance with essential ethical elements, including social value, informed consent, risks, benefits, safety, privacy, and confidentiality. The study focused on the significance of integrating physical and computer-based fitness programs for student-athletes, addressing both macro-level stakeholders like the DepEd and micro-level stakeholders such as students and athletes. Measures are in place to ensure voluntary participation through informed consent and assent, minimize risks, and maintain the confidentiality of respondents' information by securely storing data and ensuring anonymity.

In addition, the researcher also prioritizes fairness by selecting respondents based on random sampling and compensating their time and effort with tokens of appreciation. Transparency is emphasized through open communication, ethical decision-making, and

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dissemination of findings in research forums and libraries. The researcher is qualified and guided by academic advisers, ensuring a substantial study. Adequate facilities have been provided to create a comfortable and safe environment for data collection, while cultural sensitivity and community involvement are integrated to respect the diverse backgrounds of respondents and ensure the study's relevance.

CHAPTER 3
RESULTS

This chapter presents the analysis and interpretation of the data gathered. Specifically presented are descriptive analysis, correlation analysis, regression analysis, and the summary of findings.

Descriptive Analysis

Table 1 is the descriptive table. It contains the variables involved in the study, namely, endurance, engagement on computer-based fitness programs, and performance skills acquisition and their respective indicators. It contains the number of samples, the mean, and their corresponding interpretations.

Specifically, Table 1 shows the mean assessment of the respondents on the endurance of Junior High School Student-Athletes, the overall mean of 3.19, which is described as a *High* level. This indicates that the student-athletes' endurance is strong. Among the indicators, two are described as *Very High,* and the other one is *High.* In addition, in assessing the level of the computer-based fitness program of Junior High School student-athletes, the overall categorical mean of 3.02 was rated as *High*. This indicates that a computer-based fitness engagement program is good. Among all the indicators, it is categorized as *High*. Finally, the analysis of the level of performance skills acquisition among Junior High School student-athletes revealed an overall mean of 3.24, categorized as *High.* This denotes that performance skills acquisition is strong. Among the indicators, two are described as *Very High,* and the other one is *High.*

Table 1. ***Descriptive Table***

Variables		Mean	Descriptive Level
Endurance			
1.	Body Fitness	3.45	Very High
2.	Body strength	3.29	Very High
3.	Physical/ emotional strain	2.86	High
Overall		**3.19**	**High**
Engagement on Computer- Based Fitness Programs			
1.	Strategies	3.17	High
2.	Facility and equipment	2.96	High
3.	Motivation	2.95	High
Overall		**3.02**	**High**
Performance Skills Acquisition			
1.	Movement mechanics	3.29	Very High
2.	Athletics development	3.18	High
3.	Coaching practice	3.29	Very High
Overall		**3.24**	**High**

Correlation Analysis

Table 2 is the correlation table. It specifically contains the predictive variables namely, endurance and engagement on computer-based fitness programs. It also contains the criterion variable which is the performance skills acquisition among junior high school student athletes. Lastly, it contains the r-value, the p-value, the decision on the hypotheses, and the corresponding interpretation.

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Table 2. Correlation Table

	Performance Skills Acquisition of Junior High School Student-Athletes			
	R	**p-value**	**Decision on H_o**	**Interpretation**
Endurance	.526	.000	Accept H_o	Significant
Engagement on Computer-Based Fitness Program	.683	.000	Accept H_o	Significant

Table 2 specifically shows that the correlation between endurance and performance skills acquisition as outcome variables obtained a p-value of 0.000, which is less than 0.05 degree of confidence. Hence, the null hypothesis was rejected. It indicates that the correlation between endurance and performance skills acquisition is highly significant. The correlation of these variables obtained an r value of 0.526, which is denoted as a moderately high correlation.

Furthermore, the table shows that the correlation between engagement on computer-based fitness programs and performance skills acquisition as outcome variables obtained a p-value of 0.000, which is less than 0.05 degree of confidence. Hence, the null hypothesis was rejected. It indicates that the correlation between engagement in computer-based fitness programs and performance skills acquisition is moderately significant. The correlation of these variables obtained an r value of .683, which denotes a moderately high correlation.

Regression Analysis

Table 3 is the regression table. It contains the predictors namely, endurance and engagement on computer-based fitness programs. It also contains the criterion variable which is the performance skills acquisition. Finally, it contains the **β** coefficient, t-value, p-value, the decision on the hypotheses and the corresponding interpretation.

Table 3. Regression Table

	Performance Skills Acquisition of Junior High School Student-Athletes					
	Unstandardized Coefficients		Standardized Coefficients			
Independent Variables	B	Std. Error	Beta	Sig.	Decision on H_0	Interpretation
(Constant)	1.068	.213		.000		
Endurance	.154	.085	.142	.073	Failed Reject	Not Significant
Engagement on Computer-based Fitness Program	.556	.074	.591	.000	Reject	Significant

$R = .692$; $R^2 = .478$; F-value = 67.414; p-value = 0.000

Table 3 specifically shows that the endurance variable obtained a β coefficient of .591, which indicates that it has a 15.4 percent degree of influence on the performance skills acquisition of junior high school student-athletes. Such a degree of influence is not significant, as indicated by the p-value of 0.000, which is less than the 0.05 alpha level. It implies that for every 0.154 unit decrease in endurance, there is a corresponding unit decrease in acquired performance skills as outcomes.

Moreover, the engagement on computer-based fitness programs obtained a β coefficient of .556, indicating that it has a 55.6 % degree of influence on the performance skills acquisition as outcomes. This degree of influence is also significant as reflected by the p-value of 0.000, which is likewise less than the 0.05 alpha level for every .556 unit increase in engagement on a computer-based fitness program, there is a corresponding unit increase in performance skills acquisition.

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Finally, Table 3 shows that the two predictive variables obtained an $R^2 = .478$, which denotes that together they have 47.8% combined degree of influence on the criterion variable. This combined influence is statistically significant, as indicated by the f statistic 67.414 and a p- value of 0.000, which is below the 0.05 alpha.

Summary of Findings

1. Endurance, engagement on computer-based fitness programs, and performance skills acquisition of Junior High School student-athletes were demonstrated as high, which indicates that student-athletes always manifested.
2. Endurance and engagement on computer-based fitness programs are significantly correlated with the performance skills acquisition of Junior High School student-athletes.
3. Endurance does not significantly influence the performance skills acquisition of the Junior High School student-athletes. However, the computer-based fitness program does. Nevertheless, the combined degree of influence of the predictors (47.8%) is significant (p-value=0.000).

CHAPTER 4
DISCUSSIONS

This chapter presents the discussion of the results of the study. It specifically includes the reviews of previous published studies that were either supported or denied by this study.

Descriptive Analysis

This part presents a descriptive analysis of the levels of endurance, engagement on computer-based fitness programs, and performance skills acquisition of Junior High School student-athletes. The first independent variable comprises the physical/emotional strain, body fitness, and body strength; the second independent variable encompasses the motivation, facility and equipment, and strategies. Lastly, the dependent variable includes coaching practice, athletic development, and movement mechanics.

Endurance

Based on the results presented in Chapter 3, Table 1 specifically on the descriptive analysis, the respondents perceived the endurance as a *High* level. This is very evident in the study conducted by Dania et al. (2023), where student-athletes who participated in a 12-week physical training program showed a remarkable improvement in sprint times, verbal jumps, and overall athletic performance. Among the indicators, body fitness received the highest mean. This means that student-athletes' endurance is strong. Thus, this highlights the respondents' strong agreement that their training programs effectively enhance their fitness levels. Such findings suggest that endurance places significant emphasis on improving overall fitness, which is essential for enhancing performance skills. The focus on fitness aligns with Siramaneerat and Chaowilai (2020), which concluded that well-rounded fitness programs greatly contribute to athletes' endurance, agility, and stamina.

The second highest indicator is body strength which is described as *Very High*. This means that student-athletes' endurance is very strong. *Thus, the* result emphasizes the importance of strength training within the program, as it is vital for supporting the physical demands of competitive sports. The development of body strength allows athletes to execute skills more effectively and withstand the physical challenges of their sport. This finding aligns with Johnson and Lee (2021), who argued that body strength in training programs improves athletic performance and reduces the risk of injury among young athletes. Conversely, physical/emotional strain received the lowest mean. This means student-athletes' endurance is weak. Thus, this suggests that while respondents experience some degree of strain, it remains manageable and does not excessively hinder their performance. This manageable strain indicates that the training programs strike a balance between challenge and recovery, ensuring that athletes can adapt without experiencing burnout. (Marangoni et al., 2023)

These findings underscore the importance of prioritizing fitness and strength in training programs while carefully monitoring physical and emotional strain levels. Integrating fitness, strength-building exercises, and psychological resilience training contributes holistically to skill acquisition and overall well-being.

Engagement on Computer-Based Fitness Programs

In assessing the level of engagement on computer-based fitness programs on the performance skills acquisition of Junior High School student-athletes, the overall categorical mean rated as *High*. This means that engagement on computer-based fitness programs is good. Thus, it indicates that the respondents generally perceive the program as effective in contributing to their skills acquisition. This agrees

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with the study conducted by Garcia et al. (2019) that students who engaged in the computer-based program significantly improved their agility and strength, directly contributing to their enhanced performance in various sports.

Additionally, the computer-based program provided a more specialized and interactive approach to training, allowing the students to track their progress and receive immediate feedback on their performance. Among the indicators, the statement of strategies received the highest mean of 3.17, described as *High*. This means that engagement on the computer-based fitness program is good. Thus, this result highlights the effective implementation of computer-based strategies in guiding athletes through their training regimens. Using well-designed strategies in these programs provides structured pathways for skill improvement, ensuring alignment with athletic performance goals. This finding is supported by Neil-Sztramko et al. (2021), who found that interactive and adaptive computer-based fitness programs enhance athletes' engagement and performance outcomes.

The second to highest indicator is facility and equipment, rated with a mean also described as *High*. This means that engagement on the computer-based fitness program is good. Thus, this reflects the adequacy and accessibility of the tools and resources required to implement the computer-based fitness program. These findings also align with the study of Harrison et al. (2018) that the availability of proper facilities and advanced equipment ensures that athletes have the technological support necessary to optimize their training. However, while the rating is positive, it suggests potential areas for improvement in upgrading or expanding these resources to enhance the program's effectiveness further.

On the other hand, the lowest indicator is motivation which is categorized as *High*. This means that engagement on the computer-based fitness program is good. Thus, this suggests that the computer-based fitness program encourages student-athletes to participate actively and remain committed to their training. While effective in maintaining motivation, this aspect might benefit from enhancements such as gamification or personalized feedback, which have been shown to increase user engagement in digital fitness programs (Mokmin & Jamiat, 2020).

Overall, the findings indicate that the computer-based fitness programs significantly support Junior High School student-athletes performance skill acquisition through structured strategies, adequate facilities, and motivational elements.

Performance Skills Acquisition

The analysis of the level of performance skills acquisition among Junior High School student-athletes categorized as *High.* This means that performance skills acquisition is strong. Thus, this indicates that the respondents generally exhibit substantial skill acquisition in their athletic endeavours, influenced by various factors such as coaching practices, athletic development, and movement mechanics. This is also aligned with the study conducted by Sheets (2022) that improving one's talents or success in a particular area or skills being acquired in sports is a product of deliberate practice and implementation of different training programs.

The indicator movement mechanics received the highest mean and rated as *Very High.* This means that performance skills acquisition is very strong. Thus, this finding highlights the athletes' strong understanding and execution of biomechanical principles, which are essential for efficient and effective movement in sports. Mastering movement mechanics ensures that athletes can perform with greater precision and reduced risk of injury. This aligns with the findings of Cao et al. (2024), which emphasize the critical role of movement training in enhancing athletic performance and overall physical literacy.

Additionally, the second highest indicator, coaching practice, rated as *Very High*. Skills acquisition among Junior High School student-athletes categorized as High. This means that performance skills acquisition is very strong. Thus, this suggests that the quality of coaching practices significantly impacts student-athletes' skill acquisition. Effective coaching provides tailored guidance, feedback, and motivation, enabling athletes to refine their techniques and reach higher performance levels, Durst (2020). The high rating underscores the importance of having well-trained and supportive coaches who foster a conducive learning environment for young athletes.

On the other hand, the lowest indicator, athletics development categorized as *High*. skills acquisition among Junior High School student-athletes categorized as *High.* This means that performance skills acquisition is strong. While still a positive result, this indicator scored slightly lower than the others, suggesting room for improvement in fostering broader athletic growth, such as strength building, endurance, and versatility across multiple sports disciplines. This aligns with findings by Thompson et al. (2022), highlighting that targeted programs focusing on diverse athletic skills lead to more comprehensive performance development among student-athletes.

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In conclusion, the overall findings indicate that Junior High School student-athletes display commendable levels of performance skills acquisition, driven by effective coaching and advanced movement mechanics. However, targeted efforts to further enhance athletics development could bridge the gap and lead to a more holistic approach to skill acquisition.

Correlation Analysis

The findings reveal a significant relationship between endurance and the performance skills acquisition of Junior High School student-athletes. The result also suggests the rejection of the hypothesis and that as the quality and implementation of physical training improves, there is a corresponding enhancement in the students' skills, such as movement mechanics, athletics development, and overall athletic performance.

These findings align with the study conducted by Williams and Hodges (2023), which emphasizes the role of tailored endurance in enhancing athletic skill acquisition. Their research highlights that structured and progressive training programs, when coupled with appropriate coaching strategies, lead to measurable improvements in sports performance. The positive relationship demonstrated in this study further supports the notion that well-designed endurance programs are a critical component in developing the performance skills of young athletes. This underscores the need for schools and sports institutions to adopt comprehensive training methodologies catering to student-athletes' physical and technical demands.

On the other hand, the findings also indicate a significant relationship between engagement in computer-based fitness programs and the performance skills acquisition of Junior High School student-athletes. Supporting these results, a study by Cui et al. (2024) highlights the efficacy of integrating technology-driven fitness programs in enhancing athletes' performance skills. Their research underscores how gamified strategies, virtual coaching, and performance-tracking tools facilitate better engagement and measurable improvements in athletic skills. The significant findings in this study align with Slimani's conclusions and the Com-B theory of West, R. and Michie, S (2020) that emphasizes the importance of incorporating innovative, computer-based tools to optimize training outcomes and improve skill acquisition among student-athletes.

Regression Analysis

The study results indicate that, in contrast to expectations, endurance does not significantly influence the performance skills acquisition of Junior High School student-athletes. This suggests that it remains a foundational aspect of athletic development, but its current implementation may lack the specificity or innovation needed to produce measurable improvements in skill acquisition. According to Baker & Farrow (2018) effective skill development relies not only on physical conditioning but also on deliberate practice and feedback mechanisms, which may be underemphasized in traditional training approaches. Similarly, Renshaw et al. (2010) emphasized the value of integrating contextual learning and adaptive training methods, such as game-based and technology-supported modules, which allow athletes to transfer physical capabilities into sport-specific skills more effectively. These findings imply the need to enhance physical training programs through more targeted, feedback-rich, or technology-enhanced strategies to better support performance skills development.

In addition, the result found that the computer-based fitness program exhibits a statistically significant influence on the performance skills acquisition of Junior High School student-athletes. This indicates that digital training platforms, which often include structured modules, interactive feedback, and progress tracking, play a key role in enhancing athletes' skill development. According to Geisen and Klatt (2021), computer-based training systems provide real-time feedback and simulation environments that improve motor learning and allow for individualized skill correction, leading to more efficient acquisition of sport-specific techniques. Similarly, Martín-Rodríguez and Madrigal-Cerezo (2025) highlighted that technology-integrated fitness programs increase student engagement and motivation, which are crucial factors in sustaining practice and enhancing performance outcomes. These findings suggest that integrating technology into athletic training creates a more adaptive and engaging learning environment, thereby significantly supporting the development of essential performance skills.

However, the result also indicates that there is a combined influence of physical training and computer-based fitness programs on the performance skills acquisition of Junior High School student-athletes. This implies that while traditional physical training continues to be an essential element in athletic development, its effectiveness in skill acquisition may be amplified when integrated with technology-based approaches. These results support the study of Rincon-Flores et al. (2024), which highlights the greater efficiency of computer-based fitness programs in enhancing skill development through personalized feedback, real-time analytics, and targeted exercises. Furthermore, the integration of digital tools into training aligns with the findings of Blain et al. (2022) who noted that blended learning approaches in physical education improve both motivation and performance outcomes. Similarly, Carson and Collins (2016) emphasized

SJIF Impact Factor (2025): 8.688| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
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that skill acquisition is most effective when athletes are exposed to varied learning environments that include cognitive engagement and feedback-driven refinement—both of which are core features of computer-based programs. Thus, the combination of endurance and engagement on computer-based training programs creates a more holistic and adaptive framework that better supports the acquisition of athletic performance skills of student-athletes.

The limitation of this study is that there is no existing research examining the significant degree of influence of endurance and engagement on computer-based fitness programs on the performance skills acquisition of Junior High School student-athletes.

Conclusion

Based on the results, it is concluded that the engagement on computer-based fitness programs is a significant predictor of performance skills acquisition, but not in endurance. The combined degree of influence of the predictors is 47.8%. This conclusion partially affirms the Com-B Theory, which suggests a critical role of both predictors in enhancing the performance skills acquisition of student-athletes.

Recommendations

Based on the conclusion, it is recommended that further studies be conducted using other variables not covered in this study to trace the 52.2% variance in performance skills acquisition.

Thus, addressing global challenges in education requires innovative approaches to sports training that enhance student-athletes' skill development while promoting overall well-being. One key area for improvement is the enhancement of endurance. The findings shall be used to address the Sustainable Development Goals (SGDs) 3: Good Health and Well-being by implementing structured training methodologies such as periodization, rest, and recovery protocols can help minimize stress and reduce the risk of burnout or injury, ensuring sustainable athletic performance and (SDG) 4: Quality Education by integrating technology into curriculum and training programs which is crucial in adapting to modern educational and athletic demands.

Furthermore, improving resources for computer-based fitness programs is crucial to enhancing their effectiveness. Although these programs are highly rated, there is a need to upgrade facilities, technology, and access to digital tools. Investing in these areas will boost student-athletes' skill development by combining endurance training with technology. This approach supports global efforts to modernize education, innovate sports training, and prepare athletes for competitive environments.

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