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Intensified Fitness Exercise Routine: Its Effect on the Cardiovascular Endurance and Movement Efficiency of Students

Rutina intensificada de ejercicios físicos: su efecto sobre la resistencia cardiovascular y la eficiencia del movimiento de los estudiantes

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Abstract

This study aimed to identify the physiological impact of a high-intensity exercise training routine and how it benefits the students' cardiovascular endurance. The training routines were observed and evaluated using a quasi-experimental research method. It was found out that the measurements increased over ten days where only a few students had visible fluctuating observations. Furthermore, it was noted that only minimal progress recorded due to being underweight and having a low stamina. Generally, the Bpm increases over the succeeding days, with the highest Bpm in the one-minute category and a variance fluctuating being close to each other. The overall trend was increasing for the one-, two-, and three-minute categories; significant fluctuations can be observed. It was concluded that a high-intensity exercise training routine has a positive effect on the cardiovascular endurance of the students. During the days of conducting this study, the researchers observed an improvement in the participants' performance. Moreover, the researchers also found out that there was significant progress in the student's cardiovascular endurance.

Keywords: cardiovascular endurance, Cooper-run, fitness exercise, Harvard step-test, high-intensity training.

Resumen

Este estudio tuvo como objetivo identificar el impacto fisiológico de una rutina de entrenamiento con ejercicios de alta intensidad y cómo beneficia la resistencia cardiovascular de los estudiantes. Las rutinas de entrenamiento fueron observadas y evaluadas mediante un método de investigación cuasiexperimental. Se descubrió que las mediciones aumentaron durante diez días en los que sólo unos pocos estudiantes tuvieron observaciones fluctuantes visibles. Además, se observó que solo se registró un progreso mínimo debido al bajo peso y la baja resistencia. Generalmente, los Bpm aumentan durante los días siguientes, siendo los Bpm más altos en la categoría de un minuto y una variación fluctuante cerca uno del otro. La tendencia general fue creciente para las categorías de uno, dos y tres minutos; Se pueden observar fluctuaciones significativas. Se concluyó que una rutina de entrenamiento con ejercicios de alta intensidad tiene un efecto positivo en la resistencia cardiovascular de los estudiantes. Durante los días de realización de este estudio, los investigadores observaron una mejora en el rendimiento de los participantes. Además, los investigadores también descubrieron que hubo un progreso significativo en la resistencia cardiovascular del estudiante.

Palabras clave: resistencia cardiovascular, Cooper-run, ejercicio físico, prueba de pasos de Harvard, entrenamiento de alta intensidad.

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Introduction

A high-intensity training routine is a form of exercise that involves performing movements with greater intensity than usual. This type of training enhances core stability, strength, and mobility. Engaging in fitness exercises provides opportunities to experience a wide range of physical activities. Improving fitness levels involves setting achievable goals, applying exercise principles (such as frequency, intensity, time, type, progression, and volume), maintaining healthy eating habits, and conducting periodic assessments to track progress and enhance various fitness components.

It is generally accepted that engaging in physical activity is crucial for leading an active lifestyle (Tafuri et al., 2024; Akhmad et al., 2024; Sayekti et al., 2024; Wayoi et al., 2024). One of the most important steps a person can take to improve their health is to engage in regular exercise and maintain a balanced diet. However, many individuals fail to meet the exercise guidelines recommended by the World Health Organization and the American Heart Association. Since habits of physical activity often develop during adolescence, it is essential to examine the barriers that university students face in staying physically active. Experts define physical fitness as the ability to perform daily activities while effectively managing disease, fatigue, and stress, and minimizing sedentary behavior (Liu et al., 2023). Physical activity has been linked to better cardiovascular health (Yang et al., 2019), mental health, and academic performance (Hill & Quam, 2003 as cited by Husain, 2016) (Bang et al., 2017). The benefits of physical activity extend to various aspects of the body, including muscles, bones, the nervous system, and weight management. It also reduces the risk of disease, improves the ability to perform daily tasks, and enhances weight management skills. The World Health Organization (WHO) recommends conducting studies that consider both subjective and objective indicators of fitness, such as self-evaluations and the presence of disease. Promoting an appropriate perception of good health and physical wellness is encouraged. Regular physical activity has been shown to improve multiple dimensions of well-being, fostering more positive self-perceptions (Manzoor et al, 2021; Mohammad et al., 2024). Furthermore, physical inactivity among teenagers can lead to several consequences, including obesity, a sedentary lifestyle, an unhealthy routine,

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reduced motivation, difficulty concentrating, and an increased risk of certain diseases. These are just the immediate effects; over time, prolonged inactivity may result in more severe and lasting health issues as they age (Gula & Sumayang, 2022).

According to Rivera-Brown & Frontera (2012) as cited by Singh et al. (2023; Quintero et al., 2024) physical fitness (P.F.) is a broad concept encompassing physical and physiological characteristics, including power, rapid reaction, responsiveness, coordination, balance, flexibility, and cardiorespiratory endurance. P.F. and health are closely connected (Xu et al., 2020). Regular exercise's surge in energy use improves the body's various systems' ability to function effectively. Additionally, it promotes maintaining a healthy weight, lowers the risk of death, lowers the likelihood of developing chronic illnesses, and generally improves the general standard of life (Fontana & Hu, 2014). Physical activity improves the functioning of the heart's autonomic nervous system. Increased physical activity has also been associated with greater heart rate variability (HRV) (Tornberg et al., 2019).

Cardiorespiratory endurance is a domain that is frequently evaluated in national fitness evaluation batteries (like Fitness Gram) using calculated or estimated relative cardiovascular fitness (VO2 Peak) as the metric of evaluations (Pate et al., 2012) as cited by de Castro et al. (2024). Cardiorespiratory endurance refers to the ability of the respiratory and circulatory systems to deliver oxygen during prolonged periods of exercise. Cardiovascular diseases, a major public health concern, account for one-third of all deaths worldwide. Inactivity and poor dietary habits are the primary contributors to these illnesses. Engaging in cardiovascular endurance exercises can enhance overall exercise capacity, extend lifespan, and significantly reduce the risk of heart-related issues. Research has shown that cardiovascular health has a stronger inverse relationship with mortality compared to physical fitness alone (Dimarucot & Soriano, 2020). According to Dasso (2018), exercise is defined as "a physical activity that is planned, structured, and repetitive, aimed at conditioning any part of the body to improve health and maintain fitness." Physical activity (P.E.) has long been recognized for its positive impact on health and its essential role in promoting a healthy lifestyle. However, the prevalence of sedentary behavior and physical inactivity has contributed

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to an increase in health issues affecting modern society (Assah et al., 2015) as cited by Musau et al. (2023).

On the other hand, individuals who are not in good physical shape or are malnourished tend to tire more easily. College students, who are at a critical stage of life following adolescence, have unique characteristics. They undergo various emotional, physiological, and environmental changes that influence their habits and lifestyle choices, including physical activity. The transition from the structured environment of high school to the more independent routines of higher education may contribute to the sudden changes in behavior and lifestyle (Deforche et al., 2015) as cited by Ferrara et al. (2022). Physical fitness can deteriorate if levels of physical activity decrease. Other factors that influence physical fitness and health include total body fat and socioeconomic status. Several studies have explored the relationship between body mass index (BMI) and various aspects of physical fitness in children and teenagers (Jin & Jones-Smith, 2015) as cited by Yao et al (2024).

The jumping rope or skip test requires exact timing and rhythmic motions, and these abilities—balance and coordination—allow you to maintain these motions while minimizing energy expenditure. (Yang et al., 2020). It also enhances muscular strength, neuromuscular coordination, and cardiovascular endurance. The course highlights cardiovascular endurance, also known as cardiorespiratory or cardiopulmonary endurance, as a key measure of physical fitness. It "represents the combined ability of the circulatory system to transport oxygen to the muscles being engaged, the pulmonary system's capacity to exchange oxygen between the external air and blood flowing through the lung capillaries, and the muscular system's ability to utilize oxygen" (Faoro & Forton, 2019). While more research is needed on college students in China, it is difficult to thoroughly analyze the levels of physical fitness reported in existing studies, as only a limited number of fitness tests have been used to assess physical health among college students. The 50-m test was studied as a fitness test by (Hou et al., 2020). The 50-meter run test only measured the students' speed and explosive power. Spain remains to rank as Europe's ranked second rate of overweight and obesity among children. For various reasons, college students frequently need to catch up to the daily recommended amount of physical activity (Spinelli et al., 2019).

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The development of healthy behaviors significantly declines as individuals enter young adulthood. This decline is often linked to the increasing independence of college students and reduced parental control (Sogari et al., 2018). Physical inactivity negatively affects individuals on physical, mental, spiritual, and social levels. It is commonly driven by factors such as lack of motivation, physical illiteracy, excessive screen time, and health challenges. Junior high students are particularly susceptible to physical inactivity due to the numerous distractions in their environment (Gula, 2022). Studies on different exercise intensities, such as walking and interval training, show varied fitness outcomes related to both overtraining and undertraining. Therefore, it is essential to distinguish between the two. College students often exhibit poor physical fitness levels (Wiriawan et al., 2020), and their fitness is frequently determined by body size alone. Additionally, it was observed that physically healthy children participate more in extracurricular activities and experience fewer injuries. Research conducted by Tian et al. (2012), as cited by Martinez-Gomez et al. (2024) in China, found that students aged 9 to 22 had a high incidence of engaging in less than 1 hour of physical activity per day. The study revealed that 18-year-old male students had the highest incidence of physical activity lasting less than 1 hour per day, at 82.5%, compared to 89.8% for 21-year-old female students.

Active recreational activities in schools should be promoted not only to encourage participation but also to genuinely motivate students. Moreover, involvement in these activities should extend beyond school grounds, encouraging engagement at home and within the community (Gula, 2022). According to Wiriawan et al. (2020), university students tend to have low levels of physical fitness. It was also observed that students with higher levels of physical fitness are more actively engaged in various activities and are less prone to injuries.

This study aimed to identify the physiological impact of a high-intensity exercise training routine and how it benefits the students' cardiovascular endurance. Understanding the characteristics of students in terms of the following demographics like age, sex, BMI. It also delves how does the FITT principle on Intensified Fitness Exercise Routine impact the cardio-vascular endurance of the students. It aims to uncover the potential benefits of intensified fitness exercise on the cardiovascular

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endurance of the students. It will investigate as well if there is a positive correlation between Cooper Run & Walk Test and Harvard Test on the following measurements.

Statement of the Hypothesis

The students' cardio-vascular endurance is positively affected by intensified fitness exercise routine.

Methodology

Research Design

The quasi-experimental research design was used to test if the intensified fitness exercise routine improves the cardiovascular endurance of the students. A quasi-experimental is a type of research design that aims to show that there is a relationship between cause and effect. The researchers used a quasi-experimental design since some factors cannot be controlled (Maciejewski, 2020).

The statistical procedures that were used to interpret the collected data are Descriptive Statistics and Correlation Analysis (Pearson Correlation Coefficient).

Data were gathered using an evaluation tool for the respondents. Permission was asked first before the Date and time for the evaluation. A letter of invitation was sent to the respondents for their participation. Before they signed out and performed the test, proper consent was sent, and they provided us with "informed consent" indicating their participation in the study. After the instruments were used to secure the secrecy of the research process, the researcher ensured that the replies were kept in complete trust and utilized solely for the study's goals. Names are not included in the personal profile section of inquiries, further than their ages, BMI, and sex; no additional details about them were disclosed.

Research Respondents

The respondents in this study were limited to students from Visayas State University. A total of 20 students were selected to participate, with ten male respondents and ten female respondents. The average weight classification was not considered an indicator for participation in the fitness routine. Athletes and runners were excluded from the study. Stratified random sampling was used to collect the data, with a total of 20 respondents. Individuals with disabilities, those who are

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immunocompromised, and those with a history of cardiovascular problems were also excluded from participating, as they have different methods of managing their health. This chapter includes several data gathering and analysis techniques relevant to the study, covering the setting, respondents, instruments, data collection procedures, and statistical analysis of the collected data.

Research Instruments

The instruments used in conducting this survey was the Physical Fitness Test adapted on General Certificate of Secondary Education Physical Education (GSCE PE) Fitness Testing, where the process is faster, and it is easier for both researcher and respondents to communicate with each other. The researchers agreed that for better results and detailed answers, the researchers used the Physical Fitness Test, which focuses on improving the cardiovascular endurance of the students.

Statistical Treatment of the Data

The study is based on a quantitative research design known as a quasi-experimental research design, which tries to collect data from the respondents' responses.

Data will be gathered using survey criteria, and the results will be simplified into a comprehensible form.

These statistical procedures were used to interpret the collected data:

1. Descriptive Statistics (Data Visualization: Graphs and Tables, Summary Measures: Mean and Standard Deviation)
2. Correlation Analysis (Pearson Correlation Coefficient)

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Results and Discussion

1. Cooper & Walk Run Test

Table 1. Mean Response Over Time

Day	Variable	n	Mean	Standard Deviation
1	Distance	20	1, 024.25	155.580
2	Distance	20	1, 156.20	177.670
3	Distance	20	1, 210.45	198.938
4	Distance	20	1, 252.65	208.115
5	Distance	20	1, 261.95	198.694
6	Distance	20	1, 316.00	201.654
7	Distance	20	1, 324.60	195.092
8	Distance	20	1, 318.85	181.968
9	Distance	20	1, 369.85	203.701
10	Distance	20	1, 401.80	218.549

The data reveals a consistent increase in the mean distance covered over 10 days, starting from 1,024.25 on Day 1 to 1,401.80 on Day 10, suggesting a gradual improvement in performance or capacity. The standard deviations, which range from 155.580 to 218.549, indicate varying levels of spread in the data, with greater variability in later days. This suggests that while the group overall improved, individual performance became more varied, potentially due to differences in adaptation, endurance, or fatigue. The trend implies positive progress, but the increased variability may require further analysis to understand the factors influencing individual differences in performance.

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Table 2. Mean Response Over Time by BMI

BMI	Day	Variable	n	Mean	Standard Deviation
Normal	1	Distance	12	1, 040.750	187.344
Normal	2	Distance	12	1, 148.250	198.214
Normal	3	Distance	12	1, 223.250	218.496
Normal	4	Distance	12	1, 301.833	240.796
Normal	5	Distance	12	1, 286.417	218.525
Normal	6	Distance	12	1, 331.917	230.499
Normal	7	Distance	12	1, 328.833	210.686
Normal	8	Distance	12	1, 319.917	194.796
Normal	9	Distance	12	1, 374.250	215.910
Normal	10	Distance	12	1, 386.500	221.357
Overweight	1	Distance	3	1, 102.000	31.177
Overweight	2	Distance	3	1, 268.333	159.400
Overweight	3	Distance	3	1, 256.667	116.762
Overweight	4	Distance	3	1, 273.333	161.658
Overweight	5	Distance	3	1, 390.000	117.898
Overweight	6	Distance	3	1, 431.333	125.301
Overweight	7	Distance	3	1, 439.333	132.323
Overweight	8	Distance	3	1, 411.000	119.929
Overweight	9	Distance	3	1, 508.333	84.441
Overweight	10	Distance	3	1, 579.667	170.940
Underweight	1	Distance	5	938.000	57.619
Underweight	2	Distance	5	1, 108.000	129.112
Underweight	3	Distance	5	1, 152.000	208.614
Underweight	4	Distance	5	1, 122.200	66.047
Underweight	5	Distance	5	1, 126.400	110.430
Underweight	6	Distance	5	1, 208.600	118.511
Underweight	7	Distance	5	1, 245.600	179.550
Underweight	8	Distance	5	1, 261.000	187.579
Underweight	9	Distance	5	1, 276.200	199.827
Underweight	10	Distance	5	1, 331.800	216.285

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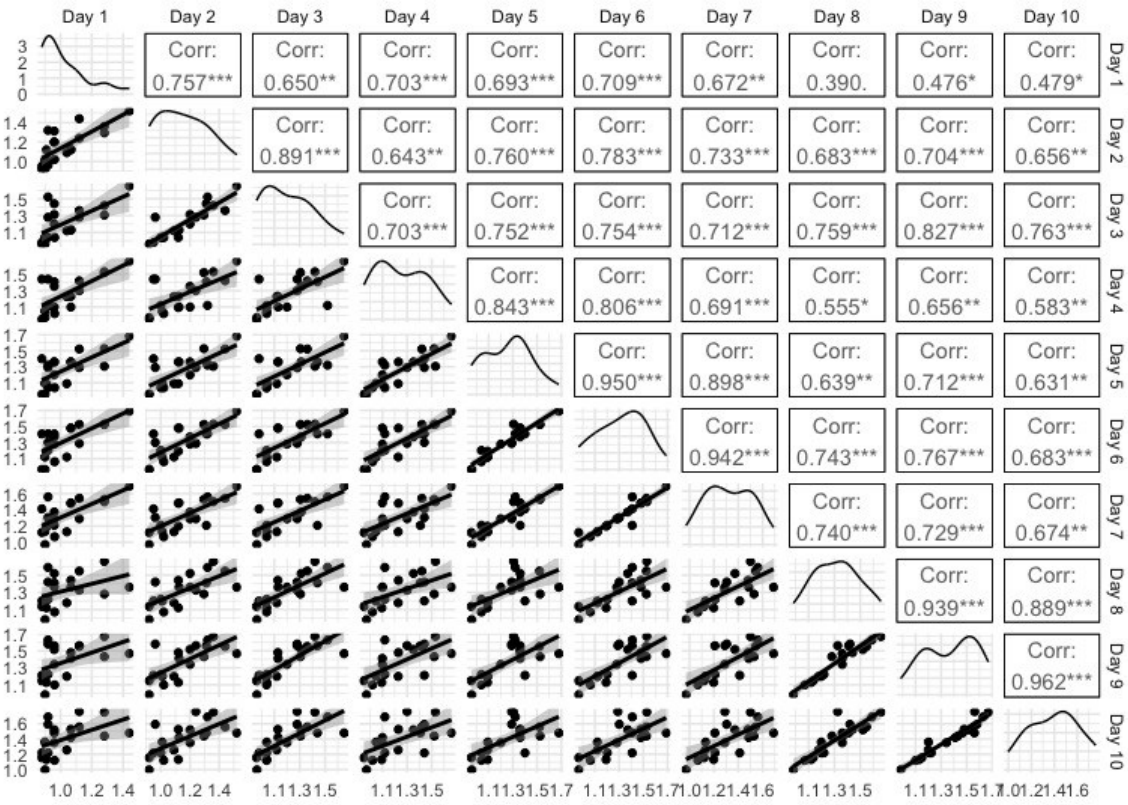
The data compares the mean distances covered by individuals with different BMI categories (Normal, Overweight, and Underweight) over 10 days. Participants in the Normal BMI category consistently increased their distance from 1,040.75 on Day 1 to 1,386.50 on Day 10, with growing variability in performance, as indicated by increasing standard deviations. Overweight individuals showed a more significant improvement, starting at 1,102.00 on Day 1 and reaching 1,579.67 on Day 10, with lower variability initially but increased fluctuation toward the end. Underweight participants started lower, at 938.00 on Day 1, and exhibited a more gradual increase, peaking at 1,331.80 on Day 10, with moderate fluctuations. The Overweight group exhibited the highest improvement in distance, while the Underweight group showed the slowest and most variable progression. These results may reflect differences in physical capacity and adaptation based on BMI.



The Correlation on the Repeated Measurements

Figure 1. Correlation Plot

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The correlation matrix plot shows strong positive relationships between distances covered on consecutive days, with high and statistically significant correlations (e.g., 0.757 between Day 1 and Day 2). These correlations tend to weaken over time, as seen in the decrease from 0.757 on Day 1 and 2 to 0.479 between Day 1 and Day 10, indicating that early performance has a diminishing influence on later days. Most relationships in the early days are highly significant, demonstrating consistent performance trends across the group. The scatter plots reveal a positive trend, but variability increases as the days progress, reflecting that while the group generally improved, individual performance diverged more as time went on.

Individual Measurements of Students' Performance

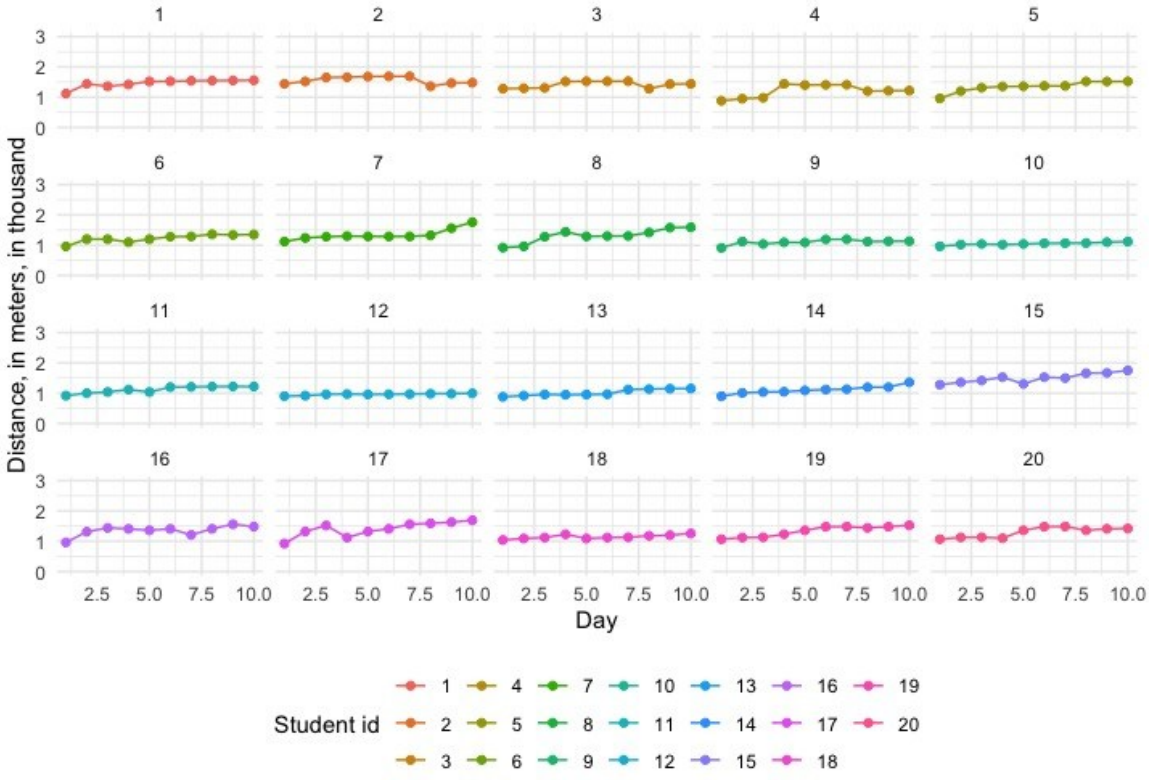

Figure 2. Individual Plot of Student's Measurements

The plot illustrates the distance progression of 20 students over 10 days, with varying trends in performance. While most students show a gradual improvement in distance, the rate of progress differs significantly. Some students, like 4, 7, and 8, exhibit noticeable increases over time, while others, such as 1, 12, and 15, display

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relatively stable performance with minimal gains. There are also variations in starting distances, with some students beginning at higher levels (e.g., 5 and 16), while others (e.g., 12 and 18) start lower. This suggests differences in baseline fitness and individual adaptation rates, with most students improving but at different paces and levels.

2. Harvard Step Test

Table 3. Mean Response Over Time by Minutes

Minutes	Day	Variable	n	Mean	Standard Deviation
One	1	BPM	20	91.95	19.462
One	2	BPM	20	96.35	21.820
One	3	BPM	20	99.65	22.539
One	4	BPM	20	103.35	21.246
One	5	BPM	20	110.75	19.352
One	6	BPM	20	118.45	24.427
One	7	BPM	20	126.70	26.065
One	8	BPM	20	140.10	36.488
One	9	BPM	20	150.55	34.073
One	10	BPM	20	165.15	37.021
Three	1	BPM	20	131.80	79.757
Three	2	BPM	20	84.40	37.417
Three	3	BPM	20	86.75	29.638
Three	4	BPM	20	91.65	35.962
Three	5	BPM	20	95.40	38.511
Three	6	BPM	20	101.75	40.585
Three	7	BPM	20	108.05	37.959
Three	8	BPM	20	117.40	43.178
Three	9	BPM	20	123.65	39.365
Three	10	BPM	20	141.65	43.178
Two	1	BPM	20	110.30	45.488
Two	2	BPM	20	85.45	18.791
Two	3	BPM	20	92.55	20.592
Two	4	BPM	20	96.20	23.453

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Two	5	BPM	20	101.35	22.586
Two	6	BPM	20	109.70	25.022
Two	7	BPM	20	117.25	26.844
Two	8	BPM	20	128.00	33.899
Two	9	BPM	20	137.60	32.181
Two	10	BPM	20	155.40	36.932

The data presents the average beats per minute (BPM) measured at different time intervals—one, two, and three minutes—across 10 days. For the **one-minute** interval, there is a steady increase in BPM from 91.95 on Day 1 to 165.15 on Day 10, with growing variability reflected in the increasing standard deviation. Similarly, for the **two-minute** interval, the BPM starts at 110.30 on Day 1 and rises to 155.40 by Day 10, again showing increasing variability over time. The **three-minute** interval shows more fluctuation, starting at 131.80 on Day 1, dipping to 84.40 on Day 2, and gradually increasing to 141.65 on Day 10. The increasing heart rates and variability in all intervals suggest a heightened physical exertion as the days progress, likely reflecting the body's adaptation to increasing physical demands or intensity of the activities involved.

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Correlation on the Repeated Measurements

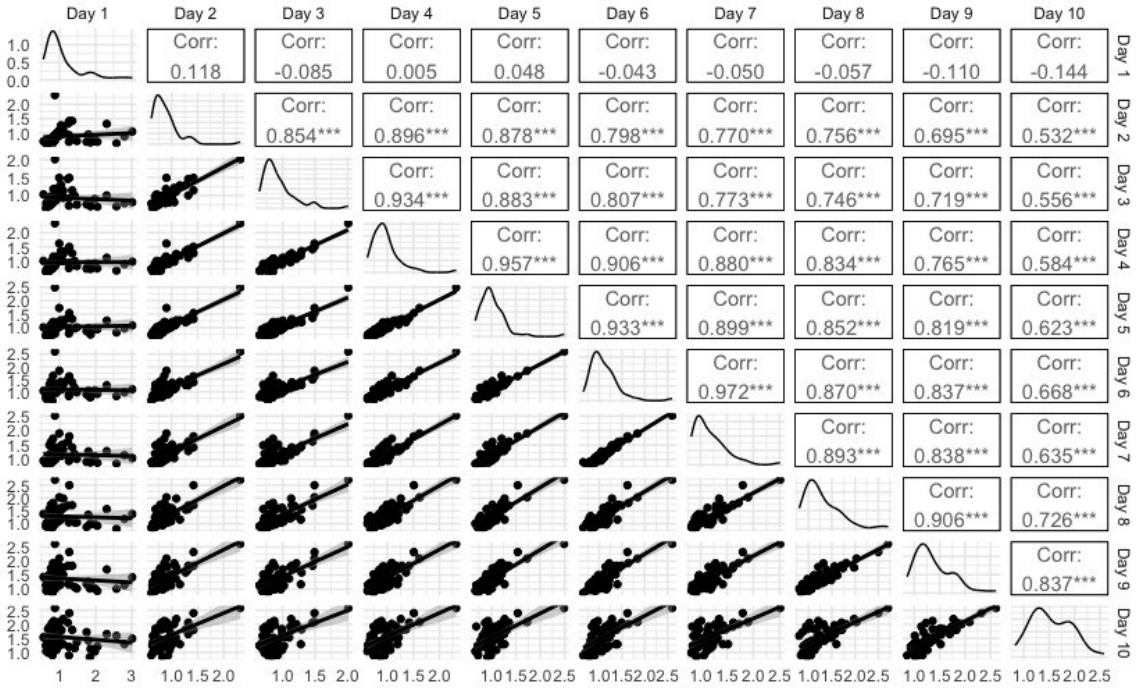

Figure 4: Correlation Plot (in hundred)

The matrix scatterplot displays the correlation between different days in terms of the measured variable. Strong correlations (denoted by high values and significance indicators such as "***") are observed mostly from Day 2 onwards, with particularly high correlations between adjacent days. The trend indicates that from Day 3 onward, a stable relationship forms between the data across consecutive days, as demonstrated by the values ranging from around 0.75 to 0.97. The initial days (Days 1 and 2) show little to no correlation with other days, suggesting variability or inconsistency in the measured variable early on. By the latter half (Days 5-10), the correlations stabilize, indicating a strong relationship between the performances over time. This suggests that after the initial adaptation phase, the measurements became more predictable and consistent.

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Individual Measurements of Students' Performance

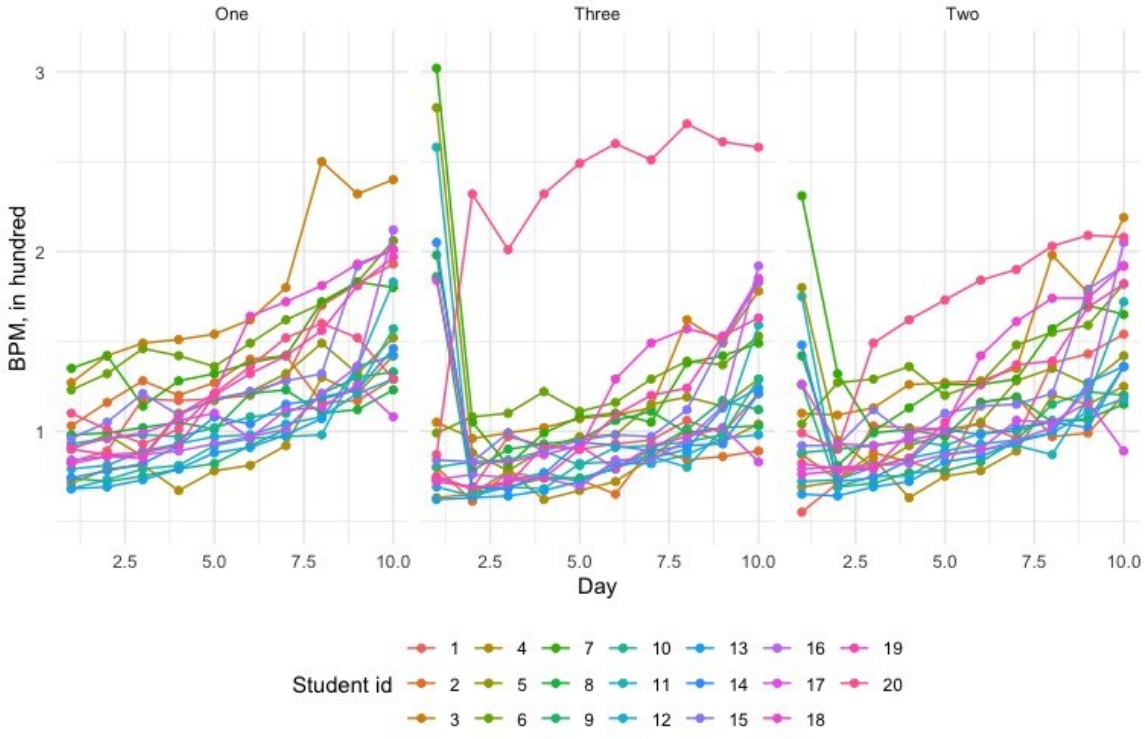

Figure 5: Individual Plot

The graph illustrates the fluctuations in heart rate (BPM) over time for 20 students. The data is categorized into three groups: One, Two, and Three. Each group shows distinct patterns of heart rate variability. Group One demonstrates a general upward trend, suggesting increasing heart rates over time. Group Two exhibits a more erratic pattern, with both increases and decreases in heart rate. Group Three shows a downward trend, indicating decreasing heart rates. These findings suggest that individual students may have unique heart rate responses to daily activities or environmental factors. Further analysis could explore factors influencing these variations, such as stress levels, physical activity, or health conditions.

The overall trend shows an increase in BPM for the one-, two-, and three-minute categories. This upward trend suggests a general improvement in cardiovascular

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response or endurance over time. However, the data also reveal significant fluctuations within these categories, indicating that while there is a progressive increase, performance varies from day to day. These fluctuations could be attributed to various factors such as changes in physical condition, intensity of effort, or external influences. Understanding these variations may provide insights into the stability of performance and the factors affecting consistency in BPM across different time intervals.

Summary of Results

This study aimed to evaluate the performance trends in students using two distinct physical tests: the Cooper run & walk test and the Harvard step test, while examining variations across different factors such as sex, BMI, and time intervals. The results from the tables and figures provide a comprehensive overview of how these variables influence performance over a ten-day period.

1. Cooper Run & Walk Test

The Cooper run & walk test results indicate a general increase in the average distance covered by students over the ten days, with a notable decrease between days 7 and 8. This temporary decline can be attributed to the students engaging in heavy work on day 8, which likely impacted their performance. Despite this fluctuation, the overall trend is positive, with an increase of approximately 377 meters, demonstrating an improvement in endurance over time. The variability in daily performance, while present, suggests a consistent overall enhancement in physical fitness, although specific days may be affected by factors such as fatigue or altered exercise intensity.

When examining performance by sex, both males and females show a general improvement in distance covered. However, a decline in performance was observed among males between days 7 and 8, likely due to fatigue. The fluctuations in performance reflect natural variability in physical exertion and endurance, influenced by daily conditions and individual differences.

BMI-related analysis shows that students across all BMI categories (normal, overweight, and underweight) experienced an increase in distance covered. Specific

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declines were noted at different points: average weight students from day 4 to 5, overweight students from day 2 to 3, and underweight students from day 3 to 4. These fluctuations suggest that BMI may influence temporary performance setbacks, though all groups demonstrated overall progress.

The positive linear correlation observed in Figure 1 between the Cooper test and variables such as Time, BMI, and Age reinforces the idea that improvements in performance are consistently related to these factors. However, individual performance variations, particularly noticeable in respondents 10 and 12, may be influenced by factors such as being underweight or having lower stamina.

2. Harvard Step Test

For the Harvard step test, Table 4 indicates a general increase in BPM over the ten-day period, with a notable drop from day 1 to 2. This initial decrease likely reflects an adjustment period where students moved from a highly competitive effort on day 1 to a more stable and sustainable performance on day 2. The overall trend shows an increase in BPM, suggesting improved cardiovascular endurance, though initial fluctuations are evident. When analyzing by sex, Table 5 shows that BPM generally increases over time for both males and females, with a decrease observed from day 1 to 2. The variance in BPM reflects natural variations in exertion and individual responses, emphasizing that performance stability may be affected by initial effort levels and adjustment periods.

BMI analysis from Table 6 indicates a similar trend of increasing BPM across all BMI categories, with a consistent decrease from day 1 to 2. This adjustment is evident across normal, overweight, and underweight students, pointing to a common pattern of initial high effort followed by stabilization.

Table 7 shows that while BPM increases over time, measurements from day 1 to day 2 generally decline, except for the one-minute category. The highest BPM is recorded in the one-minute category, with fluctuations indicating varying performance levels influenced by time and measurement periods.

Figure 3 supports a positive linear correlation between the Harvard step test and variables such as Time, BMI, and Age, though some exceptions are noted due to

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significant drops between specific days. This correlation underscores the relationship between these factors and test performance, despite the observed deviations.

Conclusions and Recommendations

FITT on Intensified Fitness Exercise Routine impacts the cardio-vascular endurance of the students. It is for the students to follow a gradual process for them to get successful improvements and for them to avoid injuries due to an incorrect intensity of exercise that is not fit for their capabilities. Based on the result of the study, the researchers concluded that an intensified fitness exercise routine positively impacts the cardiovascular endurance of the students who studied at Visayas State University. In the ten days of conducting this research, we observed an improvement in the respondent's performance. Moreover, the researchers also found significant progress in the student's cardiovascular endurance.

Future researchers are encouraged to conduct similar studies and engage in a broader scope to replicate the findings. For the respondents' performance to provide reliable results, the researchers recommended that they avoid doing heavy work and maintain an average pulse rate before attempting or conducting the study. Additionally, the researchers recommend using accurate tools or reliable equipment in determining the pulse rate of the respondents because it is better to use reliable equipment than manually finding the pulse rate in conducting the Harvard step test to ensure that the results are accurate. The researchers recommend to future researchers that when conducting this kind of study, it would be better if they conduct more time on this study because these activities greatly help people, especially students studying at the Visayas state university. And also, to check the respondent’s vital signs before the activity.

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