Journal of Physical Education Research, Volume 11, Issue IV, December 2024, pp.01-10
ISSN: Print-2394 4048, Online-2394 4056

EFFECTIVENESS OF MYFITNESSPAL APPLICATION AMONG THE SENIOR HIGH SCHOOL STUDENTS

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How to cite this article: Martin, B.J.M. (December 2024). Effectiveness of myfitnesspal application among the senior high school students. Journal of Physical Education Research, Volume 11, Issue IV, 01-10.

Received: August 10, 2024 **Accepted:** November 21, 2024

ABSTRACT

This study aimed to test the effectiveness of a six-week intervention using a smartphone application to promote overall wellness among the participants. The study utilized a Quantitative Pre-experimental One Group Pre-test Post-test Research Design among the senior high school students of Western Mindanao State University (n=51) who were officially enrolled during the academic year 2022-2023. The findings of this study contributed to the growing literature on the use of technology in health promotion interventions and provide insights into the effectiveness of using smartphone applications to promote fitness lifestyle. The data showed that all individuals, regardless of demographics, had improved their cardiovascular and muscular endurance significantly. Notably, weight changes varied by sex, with men having gained weight and females having maintained their weight. Based on these findings, the author advocated adding a muscular endurance category to the MyFitnessPal program, as well as offering flexibility training for free alongside cardio and strength activities. Additionally, physical educators and gym instructors were encouraged to use MyFitnessPal as an innovative teaching tool. Further research should focus on the long-term impact of MyFitnessPal usage on health outcomes.
Keywords: *MyFitnessPal, mHealth App Intervention, Fitness App, Health-Related Fitness.*

1. INTRODUCTION

The rising ubiquity of sluggish habits and accompanying health issues needs creative measures to enhance healthy lifestyle. Digital health solutions, like fitness apps, provide a potential path for boosting health-related fitness of individuals. Statistics on students' fitness levels has indicated a troubling trend. Syamsuramel (2020) discovered that the majority of Physical Education students were in low physical condition, with no students falling into the good or exceptional categories. Similarly, Anggita (2019) reported that, although the average fitness level of sports science students was high, a significant proportion of them lacked fitness. Nurhasan (2020) backs this viewpoint, stating that male students' musculoskeletal fitness and female students' cardiorespiratory fitness both required to improve. Shakhyan (2022) noted that high school students had a propensity to overestimate their physical fitness, suggesting a probable lack of understanding of their true fitness levels. According to the World Health Organization's physical activity report card covering 15 Asian jurisdictions, the Philippines should increase physical activity levels among children and adolescents. The government should develop a national plan or strategy aimed at encouraging physical activity among youth. (Huang 2022). Furthermore, a study was conducted which indicated that despite government regulations linked to dequantity of physical exercise for health. The report card underlines the need to strengthen efforts in converting current regulations into

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quantifiable programs, establish better physical activity possibilities for young people, and build national physical activity monitoring methods. Also, it offers a baseline for tracking changes in physical activity among children and adolescents in the Philippines (Cagas 2022). Experts advise creating a thorough national strategy that supports many types of physical activity, lowers sedentary behavior, and uses a whole-of-systems approach to inspire active healthy lives among young Filipinos (Palad 2023). Collectively, these studies emphasize the necessity for programs to improve students' fitness levels. By developing interventions that address these challenges, we can help students become healthier and more active.

With a large share of deaths (Belarga 2022), noncommunicative disorders (NCDs) pose a major health threat to the Philippines. Affecting millions of Filipinos, common NCDs include hypertension, diabetes, and chronic obstructive pulmonary disease (Belarga 2022) impact Poor nutrition, physical inactivity, tobacco smoke exposure, and environmental contaminants include NCD risk factors (Belarga 2022; Santiago, 2015). To handle the NCD load, the Philippine government has instituted regulatory rules and preventive plans (Belarga 2022). Particularly in poor and moderate-income nations, the co-occurrence of health costs in populations experiencing transition presents major economic difficulties (Belarga 2022).

With research suggesting that 61–83% of individuals use smartphones (Ernsting 2017); (Paradis 2021), smartphone use and health applications have been very common in recent years. Mostly focused on wellness, prevention, exercise, and medication management, health applications also address Health applications are more frequently used by younger people, social media users, urbanites, and younger people (Paradis 2021). These programs provide chances for health behavior modification, self-monitoring, and patient empowerment as well as for (Kratzke & Cox, 2012); (Seçkin & Kahana, 2015); App use varies, nevertheless, depending on age, socioeconomic level, and health literacy (Ernsting 2017). Commonly found in health applications include planning, reminders, motivation, and information providing (Ernsting 2017). More study is required to grasp their efficacy and possible influence on healthcare delivery even if smartphone health apps show promise for improving health outcomes and supporting treatments (Kratzke & Cox, 2012); (Seçkin & Kahana, 2015).

Leveraging mobile technology for healthcare delivery and monitoring, mobile health—mHealth—represents the progression of telemedicine and eHealth (Raskovic 2008). It includes blood glucose tracking, vital sign monitoring, and smartphone-based sensor systems among other uses (Baig 2014). In resource-constrained environments, mHealth has several advantages including better service delivery, more patient-doctor interaction, and preventive behavior promotion (Paglialonga 2019). Driven by interactions and synergies between many stakeholders, the mHealth industry is changing (Adibi, 2014).

In mHealth apps, gamification has showed potential for enhancing management of chronic diseases and encouraging long-term health practices. Particularly among healthier and younger people, studies have demonstrated that adding game components such points, badges, challenges, and social interaction might raise user motivation and intention to use mHealth applications (Miller et al., 2016; Lee et al., 2017). By improving perceived behavioral control and intrinsic motivation, gamification has shown promise in helping attempts at smoking cessation (Sherwani et al., 2016). Effective gamification implementation depends critically on functional usefulness, user alignment, and goal. But as gamification in mHealth calls for analyzing personal health and usage data, its incorporation poses privacy issues as well (Schmidt & Schiering, 201). Notwithstanding these difficulties, gamification in mHealth apps presents chances to augment conventional behavioral support elements in healthcare treatments and promote regular app use, thus perhaps improving the health results (Miller et al., 2016; Sherwani et al., 2016).

Popular smartphone software MyFitnessPal (MFP) helps with weight control objectives by monitoring nutritional consumption (Evans, 2016). This emphasizes how

mHealth applications may help encourage healthy lives and perhaps even prevent non-communicable diseases.

This study was guided by Health Behavior Theory, it is essential for analyzing and predicting people's health-related actions. Among the different theories, the Transtheoretical Model (TTM), often known as the Stages of Change model, was created in the late 1970s by psychologists James O. Prochaska and Carlo C. DiClemente. It is a well-known concept in the field of health behavior change. According to this theoretical paradigm, individuals go through several stages while adopting new behaviors, such as starting to use a fitness app. Researchers can use the pre-test post-test design to analyze changes in participants' stage of change, self-efficacy, attitudes, or other relevant domains to evaluate the influence of the fitness application on behavior change.

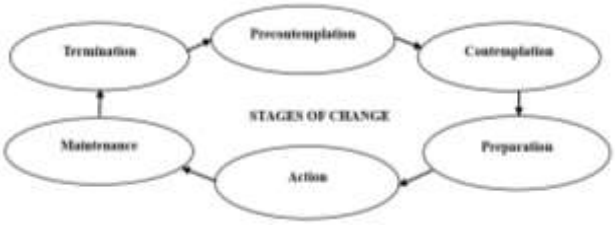

Figure 1: Transtheoretical Model

The Transtheoretical Model (TTM) is a health psychology paradigm that categorizes behavior change into six stages: precontemplation, contemplation, preparation, action, maintenance, and termination. It seeks to comprehend elements like as decisional balance and self-efficacy in the context of behavior change, such as the adoption of new habits. According to the approach, in order to effectively modify their health habits, people need a variety of intervention options suited to each stage.

Precontemplation: Learn about the advantages and get motivated with instructional information and positive words.

Contemplation: To overcome uncertainties, make educated judgments by creating objectives, evaluating progress, and reviewing success stories.

Preparation: Prepare for action with training regimens, exercise demonstrations, and food recommendations.

Action: Maintain engagement with individualized exercises, reminders, and performance feedback.

Maintenance: Use habit monitoring, social support elements, challenges, and incentives to stay motivated.

Termination: Make exercise a habit with regular coaching to sustain the beneficial transformation.

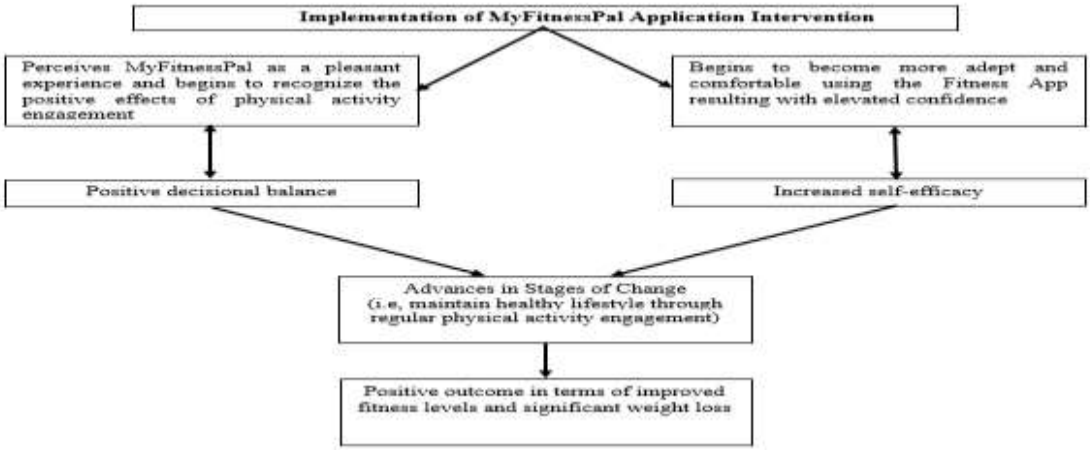

Figure 2: Hypothesized effect of MyFitnessPal Application intervention on stages of change and fitness levels

`Figure 3: Conceptual Framework of the Study

The conceptual paradigm showed the interrelationships of the different variables of the study. The first box referred to the INDEPENDENT VARIABLE in the study, MyFitnessPal. This was the intervention being examined to see how the intervention affected the students' cardio and muscular endurance. The second box represented the study's DEPENDENT VARIABLE, Cardio and Muscular Endurance. These outcomes were examined to see if MyFitnessPal would increase the students' cardio and muscular endurance. The last box held the respondents' age, gender, height, weight profile program, which served as the MODERATING VARIABLES for the study. These factors established the significant differences and relationship on the effectiveness of MyFitnessPal application in improving cardio and muscular endurance in relation to senior high students' health-related fitness.

2. MATERIAL AND METHODS

2.1 Research Design

This study employed a quantitative research design, specifically adopting the pre-experimental one group Pre-Test Post-Test. This quantitative methodology was selected because it enabled the researcher to track and evaluate changes in a variable over time using statistical methods. The quantitative approach involves scrutinizing a concept by establishing specific assumptions and gathering evidence to either validate or challenge those assumptions (Creswell, 2014). In the realm of quantitative research, data collection revolves around measuring attitudes and subsequently analyzing the gathered information through statistical methods and assumption testing.

2.2 Research Locale

The study setting was carefully selected at a public university in Zamboanga City. Because of the researcher's university connection, this choice made the study simpler to conduct, making it easier for participants to participate and perhaps enhancing the quality of responses from school heads. Additionally, the site complements the research's emphasis on Region IX senior high school students, enabling the researcher's community to directly benefit from the results.

2.3 Research Respondents

The study's target population was WMSU Grade 12 HUMSS Senior High Students for the academic year 2022–2023. 51 students from grade 12-Garganera were selected as participants using Purposive Sampling, out of 94 HUMSS students in total. To guarantee a feasible research design, the study only used one portion. Ages 17 to 20, official WMSU registration, voluntary signing of the informed consent form (ICF), and participation in the physical education and health courses were the inclusion criteria. This procedure guaranteed that the chosen participants closely matched the goals of the study and could provide insightful opinions on the designated topic.

2.4 Research Instrument

For both pre-test and post-test data collection, the researcher used a self-structured questionnaire that corresponded to the MyFitnessPal Application Initial Profile Goals and Health-Related Fitness Components. An expert committee assessed the instruments' content validity to assure their dependability and relevance. The questionnaire included two primary sections:

Part I: Respondent's Profile, which collects demographic information such as age, gender, height, weight, and the weight profile program.

Part II: Fitness Assessment is broken into three sections:

(a) Pre-test criteria result without the intervention, with an emphasis on cardio and muscular endurance.

(b) Treatment is examined to verify changes in criterion findings following the intervention.

(c) Post-test findings for the criteria with the intervention, measuring the effect of MyFitnessPal on cardio and muscular endurance.

2.5 Data Gathering Procedure

The data collecting procedure followed strict ethical requirements. Participants were recruited after receiving consent from the school administration and obtaining ethical clearance from the Philippine Normal University, Educational Policy Research and Development Center (PNU EPRDC) office, ensuring that ethical considerations were addressed. Inclusion requirements guaranteed that Grade 12 HUMSS students fell within a certain age range and were enrolled in appropriate courses. To improve data collection, participants received a virtual orientation that explained the project and answered any questions they had. We got informed consent forms, with minors requiring parental approval. Baseline data was collected using a self-administered pre-test questionnaire created using Google Forms. The data gathering technique was conducted with strict respect to health regulations. After a 6-week intervention phase in which individuals used the MyFitnessPal app, a post-test replicated the pre-test methods. This resulted in consistent data collecting for comparative analysis. The researcher gathered and kept all participant data securely.

2.6 Statistical Tools

The data were analyzed using the following statistical tools:

The researcher utilized frequency count and percentage to determine the demographic profile of the respondents to answer and solve research question number one (1).

To answer and solve research question number two (2), the researcher utilized the mean to determine What is the fitness level among Senior High School Students before and after intervention of MyFitnessPal Application in terms of cardio and muscular endurance.

To answer research question number three (3), T-test was used to determine if there was a significant difference in the fitness level of Senior High School Students before and after intervention when grouped according to sex. Meanwhile, ANOVA test was used for variables age, height, and weight.

To answer research question number four (4), Regression Analysis test was used to determine if there was a significant relationship in the fitness level of the Senior High School Students after intervention when grouped according to profile.

2.7 Ethical Considerations

In the conduct of the study, the researcher considered and gave priority to ethical and moral issues and addressed the study protocol in conducting research. The study protocol was submitted to the Philippine Normal University Technical Review Board for review and approval. The proposed study was implemented after its approval from the Technical as well as Ethics Review Boards. All information derived from this study was treated confidentially. An informed assent was secured from the respondents. Results of the study were readily available for those interested in the outcome of the study.

2.8 Conflict of Interest

The proponent's workplace was included in the research site. To reduce or avoid conflicts that could have occurred as a result of this, the researcher closely adhered to the set procedures throughout the course of the investigation. Also, the researcher is the teacher of the class.

2.9 Voluntary Participation

This study ensured that participation of the participants was entirely voluntary. Before the interview, the participants were informed that their participation would be of their willingness, and they were not obliged to answer questions that they felt objectionable or uncomfortable. At any point during the study, if the participants wanted to withdraw from participating, they were also allowed to do so without any consequences or penalties. Furthermore, there was no monetary or material remuneration in exchange for their individual cooperation to the benefit of the researcher.

2.10 Privacy and Confidentiality

All data gathered, including the participant's identifying data, were treated with utmost privacy and confidentiality. To ensure privacy, each interview was held at an undisclosed site. To ensure confidentiality, pseudonyms were used in the data and were not disclosed to anyone. The data from the survey questionnaire and the proceedings from the interview were utilized for research purposes only. All information provided remained confidential and was reported with no identifying information.

2.11 Vulnerability

Special consideration was given to vulnerable participants, considering their comfort level during research participation. They were guaranteed the safeguarding of their rights and were not subjected to coercion, exploitation, or manipulation to express their ideas and beliefs. Additionally, those who chose not to engage were free to do so without any negative consequences.

2.12 Risks and Benefits.

The research participants were notified that there may have been a foreseeable risk associated with their involvement in this research project, such as discomfort or annoyance while disclosing information about their institution's accreditation status. If this occurred, they would not have been coerced or compelled to do so. They were cautioned, however, that their identity would be kept private. If participants chose to withdraw from the study at any time throughout the study, they could have done so without any consequences or sanctions.

2.13 Informed Consent/Assent Process.

The researcher disclosed the entire purpose, the process of the research study, as well as the potential benefits to the respondents and the institution. To guarantee voluntary and informed involvement, the researcher also sought informed consent from all survey takers and interview participants. To do this, the researcher first informed and explained to the participants the goal of the Informed Consent/Assent Form, as well as its advantages and impact. Throughout this procedure, participants were allowed to seek explanations and raise concerns about the study. The Informed Consent/Assent Form had to be completed before participants could answer the survey questionnaire and interview questions.

3. RESULTS AND DISCUSSION

Table 2.1: Cardio

	Before	Descriptor	After	Descriptor
Male	106.54	Below Average	88.85	Good
Female	116.24	Average	98.6	Good

The table shows the cardio-heart rate test before and after intervention for the male and female senior high school students. Before intervention, in males the average cardio heart rate was

106.54 with an equivalent descriptor of "below average", and after intervention, it was 88.85 with an equivalent descriptor of "good". And for females before intervention, the average cardio heart rate was 116.24 with an equivalent descriptor of "average", and after intervention, it was 98.6 with an equivalent descriptor of "good".

Table 2.2: Muscular Endurance

	Before	Descriptor	After	Descriptor
Male	16.58	Below Average	27.77	Average
Female	7.28	Average	12.88	Above Average

As can be seen in the table, before the intervention, the average muscular endurance test for males was 16.58 with a corresponding description of "below average", while after the intervention, the muscular endurance test was 27.77 with a corresponding description of "average". In Females before the intervention, the average muscular endurance test was 7.28 with a corresponding description of "average," while after the intervention, the average muscular endurance test was 12.88 with a corresponding description of "above average."

Table 3.1 a: Age

Age	N	P-value	Interpretation	Decision
17 years old	21	0.060	Not Significant	Accept Ho
18 years old	20			
19 years old	2			
20 years old	8			

**Significant @ $\propto = 0.05$*

When grouped according to age, The ANOVA test result showed a significant value of 0.060 which was greater than the alpha level of 0.05, so the null hypothesis was accepted.

Table 3.1 b: Sex

Sex	N	P-value	Interpretation	Decision
Male	26	0.587	Not Significant	Accept Ho
Female	25			

**Significant @ $\propto = 0.05$*

When categorized according to sex, the T-Test test result shows a significant value of 0.587, which was greater than the 0.05 level of significance, so the null hypothesis was accepted.

Table 3.1 c: Height

Height	N	P-value	Interpretation	Decision
150-160 cm	22	0.912	Not Significant	Accept Ho
161-170 cm	18			
171-180 cm	10			
181-190 cm	1			

**Significant @ $\propto = 0.05$*

When grouped according to height, the ANOVA test result shows a significant value of 0.912, which is greater than the 0.05 alpha level, so the null hypothesis is accepted.

Table 3.1 d: Weight

Weight	N	P-value	Interpretation	Decision
40-50 kgs	15	0.937	Not Significant	Accept Ho
51-60 kgs	20			
61-70 kgs	13			
71 kgs above	3			

**Significant @ $\propto = 0.05$*

The ANOVA test result shows a significant value of 0.937, which is greater than the alpha level of 0.05, so the null hypothesis is accepted.

Table 3.2 b Sex

Sex	N	P-value	Interpretation	Decision
Male	26	0.000	Significant	Reject Ho
Female	25			

**Significant @ ∝ = 0.05*

When grouped according to sex, The ANOVA test result showed a significant value of 0.000 which was less than the 0.05 level of significance, so the null hypothesis is rejected.

Table 3.2 c Height

Height	N	P-value	Interpretation	Decision
150-160 cm	22	0.039	Significant	Reject Ho
161-170 cm	18			
171-180 cm	10			
181-190 cm	1			

**Significant @ ∝ = 0.05*

When grouped according to height, The ANOVA test result showed a significant value of 0.039 which was less than the 0.05 level of significance, so the null hypothesis is rejected.

Table 3.2 d Weight

Weight	N	P-value	Interpretation	Decision
40-50 kgs	15	0.130	Not Significant	Accept Ho
51-60 kgs	20			
61-70 kgs	13			
71 kgs above	3			

**Significant @ ∝ = 0.05*

When grouped according to weight, The ANOVA test result showed a significant value of 0.130 which was greater than the 0.05 level of significance, so the null hypothesis is accepted.

Table 4.1 Age

Variable	Correlation Value (R-value)	Sig. Value (P-value)	Interpretation	Decision
Fitness Level *Age	0.337	0.127	Not Significant	Accept Ho

**Significant @ ∝ = 0.05*

The regression analysis result showed a significant value of 0.127, which is greater than the alpha level of 0.05, and, thus, there was no statistically significant relationship between the fitness level and the age of the respondents.

Table 4.2 Sex

Variable	Correlation Value (R-value)	Sig. Value (P-value)	Interpretation	Decision
Fitness Level *Sex	0.187	0.190	Not Significant	Accept Ho

**Significant @ ∝ = 0.05*

The regression analysis result showed the significant value of 0.190, which was greater than the alpha level of 0.05, and, thus, there was no statistically significant relationship between the fitness level and the gender of the respondents.

Table 4.3 Height

Variable	Correlation Value (R-value)	Sig. Value (P-value)	Interpretation	Decision
Fitness Level *Height	0.348	0.106	Not Significant	Accept Ho

**Significant @ $\propto = 0.05$*

The regression analysis result showed the significant value of 0.106, which was greater than the alpha level of 0.05, and, thus, there was no statistically significant relationship between the fitness level and the height of the respondents.

Table 4.4 Weight

Variable	Correlation Value (R-value)	Sig. Value (P-value)	Interpretation	Decision
Fitness Level *Weight	0.513	0.002	Significant	Reject Ho

**Significant @ $\propto = 0.05$*

The regression analysis result showed the significant value of 0.513, which was greater than the alpha level of 0.002, indicating that there was a statistically significant relationship between the respondent's fitness level and weight.

4. CONCLUSION

Based on the findings of the study, it can be concluded that in general, the effect of a six-week smartphone application intervention on the fitness level of the Senior High School Students had showed greater performance with regards to the Cardio (3-minute step test) and muscular endurance test respectively (push-ups), which is very encouraging and significant. In addition, it also shown promising results to the body weight of the participants, whether the target was to gain weight or lose weight, they were able to achieve a consequential amount of the ideal weight goal. Thus, it can be evidently concluded that the intervention of the Fitness Application MyFitnessPal to the Cardio and Muscular Endurance of the Senior High School Students was effective.

5. RECOMMENDATIONS

The following recommendations were formulated:

(1) MyFitnessPal Application should create a separate Muscular Endurance listing in the choices of exercise since some of the exercises were mixed in the Muscular Strength category.
(2) MyFitnessPal Application should offer Flexibility as one of the free choices in the Exercise dashboard together with Cardio and Strength.
(3) Evaluate user experience by examining factors such as overall design, user satisfaction, accessibility, personalization, functionality, social features, gamification and many more if it affects the usage duration of an Individual.
(4) Physical Education Teachers and Gym Instructors are invited to use the MyFitnessPal Application integrating it to their teaching method as means of innovative strategy.
(5) For future researchers, consider anticipating the intent of the respondent's fitness program with the most appropriate tests.

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