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Development of a Fitness Plan for PATHFit Students Based on Physical Fitness Profile

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Abstract*—This study examined the physical fitness profiles of first-year Physical Activities Towards Health and Fitness 2 students as a basis for developing a fitness plan. A nonexperimental descriptive study with group comparisons was conducted among 228 students selected through stratified random sampling from a population of 312 students at a city college in Quezon Province, Philippines. The respondents represented four academic programs. Data were gathered using a demographic profile form and six physical fitness assessments: the 45-second squat test, plank test, push-up test, sit-and-reach test, agility T-Test, and standing long jump. Frequency, percentage, mean, standard deviation, and one-way analysis of variance were used to summarize and compare the results. Most respondents were aged 17 to 25 years, and the sample included 118 males and 110 females. The reported fitness profile identified muscular endurance, flexibility, and lower-body power as priorities for the proposed program. The reported omnibus analyses indicated differences across age groups in all six fitness assessments. However, the available sex-specific statistical outputs were insufficient to establish differences between male and female respondents. An eight-week fitness plan was developed using progressive bodyweight exercises, flexibility activities, power development, aerobic activities, and movement drills. Exercise difficulty and progression were organized around individual readiness and performance. The plan remains a proposed instructional output, and its effectiveness requires evaluation through implementation and repeated assessment. Some scoring details and summary values also require confirmation before the findings are finalized.*

***Keywords*—** *Differentiated instruction: Fitness plan: Health-related fitness: PATHFit: Physical fitness profile: Skill-related fitness.*

I. INTRODUCTION

Physical education in higher education provides opportunities for students to develop movement skills and maintain regular physical activity. In the Philippines, the Commission on Higher Education established policies, standards, and guidelines for tertiary physical education through Memorandum Order No. 39, series of 2021. These guidelines cover Physical Activity Towards Health and Fitness courses, commonly known as PATHFit, which provide a curricular setting for developing fitness knowledge and participation in physical activities.

The need to strengthen physical activity participation is supported by national research. Cagas and colleagues reported concerns about physical activity among Filipino children and adolescents, showing the importance of opportunities and support for active living. Although their findings concern a younger population, they provide relevant background for promoting continued participation as learners enter higher education.

Research within tertiary physical education has also examined students' fitness under the PATHFit curriculum. Dimarucot and colleagues investigated the physical fitness status of tertiary students taking the new PATHFit course, providing a relevant basis for further assessment of college learners. [3] In another study, Masagca reported improvements in muscular endurance following a ten-week calisthenics program among untrained collegiate students. This finding supports investigating structured bodyweight activities as an option for college fitness instruction.

Fitness assessment can help instructors identify students' starting abilities and select appropriate activities. Students may perform well in one assessment while experiencing difficulty in another. Consequently, an instructional plan should consider the specific components measured, differences in individual performance, and the demands of the proposed exercises.

The present study focused on first-year PATHFit 2 students at a city college in Quezon Province. It examined their demographic characteristics and physical fitness results to identify priorities for a proposed fitness plan. Its contribution is the organization of assessment findings into a practical instructional guide with activity selection, progression, and monitoring procedures.

A. Objectives of the Study

The study aimed to develop a fitness plan for PATHFit students based on their physical fitness profiles. Specifically, it sought to describe the respondents according to age and sex, summarize their selected health-related and skill-related fitness results, examine differences in performance across demographic groups, and prepare a fitness plan responsive to the findings.

B. Theoretical and Conceptual Basis

The study was guided by Tomlinson's differentiated instruction framework, which recognizes differences in learners' readiness, interests, and learning profiles. Within this study, readiness was represented by students' physical fitness results. The framework informed the proposed adjustment of exercise difficulty, duration, repetitions, and support according to individual performance.

An Input–Process–Output model organized the study. The inputs consisted of demographic information and fitness assessment scores. The process involved administering assessments, summarizing results, comparing groups, and identifying instructional priorities. The output was a proposed

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eight-week PATHFit 2 fitness plan. The model guided plan development; it did not establish that the proposed activities had already improved students' fitness.

II. Methodology

A. Research Design and Setting

The study used a nonexperimental descriptive approach with comparisons of fitness performance across demographic groups. It was conducted among first-year students enrolled in PATHFit 2 at a city college in Quezon Province, Philippines.

The investigation focused on the students' assessed fitness profiles. It did not include an experimental implementation of the proposed fitness plan or a comparison of outcomes before and after that plan.

B. Population and Sampling

The population consisted of 312 first-year PATHFit 2 students from four academic programs. Stratified random sampling was used to select 228 respondents. Academic programs served as the strata, and students were randomly selected within each program.

TABLE I. Distribution of the population and sample by academic program.

Academic Program	Population	Sample
Bachelor of Culture and Arts Education	45	34
Bachelor of Science in Tourism Management	110	77
Bachelor of Science in Entrepreneurship	79	59
Bachelor of Science in Computer Science	78	58
Total	**312**	**228**

The sample included students from all four programs. The study's findings therefore describe the participating students within the selected institution and should not automatically be generalized to other colleges.

C. Research Instruments

A profile form gathered information on age and sex. Physical fitness was assessed using six field tests: the 45-second squat test, plank test, push-up test, sit-and-reach test, agility T-Test, and standing long jump.

The assessment procedures drew on fitness testing resources identified in the study, including Fukuda's Assessments for Sport and Athletic Performance and the American College of Sports Medicine's Guidelines for Exercise Testing and Prescription. These resources informed the use of structured assessment procedures and the application of fitness information to exercise planning.

The 45-second squat test served as the study's designated cardiovascular endurance indicator. The plank test recorded holding time, the push-up test recorded completed repetitions, and the sit-and-reach test recorded distance in centimeters. The agility T-Test recorded completion time in seconds, while the standing long jump recorded distance in centimeters.

Although the original study placed the plank test under muscular strength, holding time reflects performance in a sustained isometric task. Accordingly, the present discussion refers to plank performance without treating it as a direct measurement of maximal muscular strength.

D. Data Gathering Procedure

Permission was obtained from the college administration and the PATHFit program head before data collection. Students were informed about the study's purpose and procedures, and written consent was obtained before participation.

Demographic information was collected first. The fitness assessments were then administered under the supervision of PATHFit instructors. According to the study procedure, each assessment was performed twice, and the mean of the two measurements was used for analysis.

The researcher reviewed, coded, and organized the results for statistical treatment. Participant information was kept confidential, and findings were presented in aggregate form.

E. Statistical Analysis

Frequency and percentage described the respondents' demographic characteristics. Means and standard deviations summarized fitness performance. One-way analysis of variance examined differences across the three age groups at a significance level of 0.05.

A significant omnibus analysis was interpreted as evidence that at least one age-group mean differed from another. It did not identify which specific groups differed. Such conclusions require clearly labeled pairwise comparisons.

The available sex-specific outputs were reviewed separately. Because they presented individual p-values for males and females without clearly identifying the statistical comparison, they were not treated as sufficient evidence of a difference between the two groups.

III. Results and Discussion

A. Demographic Profile

Table II presents the respondents' distribution according to age and sex.

TABLE II. Demographic profile of the respondents

Variable	Category	Frequency	Percentage (%)
Age	17–25 years	198	86.84
Age	26–35 years	20	8.77
Age	36 years and above	10	4.39
Age total		**228**	**100.00**
Sex	Female	110	48.25
Sex	Male	118	51.75
Sex total		**228**	**100.00**

Most respondents were aged 17 to 25 years. Students aged 26 years and above represented a smaller portion of the sample. The distribution shows that the proposed fitness plan must accommodate learners with different starting abilities within the same course.

Male and female students were both represented in the sample. However, representation alone does not establish differences in their fitness performance. Exercise adjustments should therefore be guided by individual assessment results and observed ability.

B. Physical Fitness Profile

Table III summarizes the overall fitness results and the classifications reported in the study.

Shaina P. Pabellano, "Development of a Fitness Plan for PATHFit Students Based on Physical Fitness Profile," *International Journal of Multidisciplinary Research and Publications (IJMRAP)*, Volume 9, Issue 4, pp. 110-115, September 2026.

TABLE III. Summary of physical fitness assessment results

Assessment	Mean	Standard Deviation	Reported Classification
45-second squat test	45.34*	16.50*	Typical
Plank test, seconds	90.64	55.42	Typical
Push-up test, repetitions	18.62	11.87	Low
Sit-and-reach test, centimeters	22.00†	13.33	Low
Agility T-Test, seconds	10.89†	2.99	Typical
Standing long jump, centimeters	182.79	42.61	Low

The flexibility and agility means shown here follow the detailed age-group tables. The summary tables elsewhere in the original manuscript report 23.12 centimeters and 10.88 seconds, respectively. Confirm these values against the original statistical output.

The push-up mean was 18.62 repetitions, which the study classified as low. This result informed the inclusion of progressive bodyweight exercises in the proposed plan. Exercise variations and starting repetitions should reflect each student's ability to complete movements with proper technique.

The reported flexibility results also supported including regular stretching and mobility activities. The detailed age-group analysis gave an overall sit-and-reach mean of 22.00 centimeters. Because another section reported a different overall mean, the final value requires confirmation. Individual scores should guide the selection and progression of flexibility activities.

The standing long jump mean was 182.79 centimeters and was classified as low in the study. This result informed the inclusion of lower-body strengthening and introductory power activities. It does not, by itself, explain the cause of the reported performance.

Plank holding time averaged 90.64 seconds. The standard deviation of 55.42 seconds indicates considerable variation around the mean, supporting the use of different starting durations across students.

The agility T-Test mean was 10.89 seconds in the detailed analysis. For this timed assessment, shorter completion times represent better performance. Direction-change drills were included in the proposed plan to support continued practice of controlled movement.

The squat-test results require clarification before they can support a physiological interpretation of cardiovascular endurance. The recorded score should be reported using one clearly defined outcome and unit throughout the manuscript.

C. Fitness Performance According to Age

Table IV presents the means and standard deviations for the three age groups.

The youngest group recorded higher mean plank holding time, push-up repetitions, sit-and-reach distance, and standing long jump distance. It also recorded the shortest mean agility T-Test time.

These findings describe differences between the age groups assessed. They do not demonstrate that the same individuals experienced a decline as they became older. Previous exercise participation, health conditions, lifestyle, and other characteristics were not controlled in the analysis.

TABLE IV. Physical fitness assessment results by age group

Assessment	17–25 years, n = 198	26–35 years, n = 20	36 years and above, n = 10
45-second squat test*	46.49 ± 16.55	37.91 ± 11.01	37.58 ± 19.88
Plank test, seconds	96.67 ± 56.45	54.80 ± 22.23	42.80 ± 21.74
Push-up test, repetitions	19.74 ± 11.57	12.85 ± 12.83	7.90 ± 6.79
Sit-and-reach test, centimeters	23.75 ± 13.30	13.15 ± 4.49	5.00 ± 2.36
Agility T-Test, seconds	10.68 ± 2.98	12.19 ± 2.31	12.34 ± 3.52
Standing long jump, centimeters	185.93 ± 43.74	163.15 ± 24.44	159.70 ± 31.58

The unequal group sizes also require consideration. Only ten respondents belonged to the group aged 36 years and above. Findings for this group should therefore be interpreted cautiously and should not be used to assign identical exercise restrictions to all learners in that age range.

TABLE V. Reported one-way analysis of variance results across age groups

Assessment	F-value	p-value	Interpretation at 0.05
45-second squat test	3.70	0.026182	Significant
Plank test	9.78	0.000084	Significant
Push-up test	7.76	0.000550	Significant
Sit-and-reach test	16.15	< 0.000010	Significant
Agility T-Test	3.65	0.027413	Significant
Standing long jump	4.25	0.015436	Significant

The reported p-values were below 0.05 for all six assessments. Accordingly, the null hypothesis of equal age-group means was rejected for each assessment under the study's stated significance criterion.

These omnibus findings do not identify the particular pairs of age groups that differed. The pairwise tables in the original report did not clearly name both groups in each comparison. Consequently, specific pairwise conclusions cannot be drawn from those tables as presented.

The results support considering differences in starting performance when planning instruction. They do not support using age alone to determine exercise intensity or establish a learner's capacity.

D. Fitness Performance According to Sex

The available tables reported separate p-values for male and female respondents. However, the statistical procedure associated with those values was not sufficiently described to establish a direct comparison between the groups.

A significant result within one group and a nonsignificant result within another does not, by itself, demonstrate that the groups differ. Therefore, the available outputs do not support a conclusive statement that male and female respondents differed in any particular fitness component.

Verified group means, measures of variability, the test statistic, and the p-value for the actual between-group comparison are needed to address this objective fully. Pending that verification, the proposed plan uses individual performance to guide exercise modifications.

E. Implications for Fitness Planning

The reported fitness profile identified muscular endurance, flexibility, and lower-body power as priorities for the

Shaina P. Pabellano, "Development of a Fitness Plan for PATHFit Students Based on Physical Fitness Profile," *International Journal of Multidisciplinary Research and Publications (IJMRAP)*, Volume 9, Issue 4, pp. 110-115, September 2026.

proposed program. These areas can be addressed through structured activities whose difficulty increases according to demonstrated readiness.

Masagca's findings support further investigation of calisthenics for muscular endurance development among collegiate students. However, the outcomes of that separate study do not establish the effectiveness of the present eight-week plan.

The practical implication is to use assessment results as a starting point for selecting activities and monitoring progress. Students should receive exercise options that allow meaningful participation while maintaining appropriate technique and manageable effort.

IV. PATHFIT 2 FITNESS PLAN

A. Rationale and Objectives

The proposed plan translates the reported physical fitness profile into an eight-week instructional guide. It prioritizes muscular endurance, flexibility, and lower-body power while retaining aerobic activities, core exercises, and movement drills.

The plan aims to improve individual performance in the selected fitness assessments, encourage regular participation, develop correct exercise technique, and establish a simple system for tracking progress.

The activities and expected outcomes are proposals. Improvements were not measured through an implementation of this plan during the study.

B. Fitness Activities and Monitoring

PATHFit instructors should demonstrate the movements, observe technique, and adjust the workload. Students should record completed activities, repetitions, holding times, and difficulties encountered.

TABLE VI. Proposed fitness activities based on the reported profile

Focus	Objective	Suggested Activities	Proposed Frequency	Progress Indicator
Muscular endurance	Improve the ability to repeat controlled movements	Wall or incline push-ups, modified push-ups, bodyweight squats, and resistance-band exercises	Two to three sessions weekly, allowing recovery between demanding sessions	More correctly completed repetitions at a comparable difficulty
Flexibility	Improve controlled movement through the available range	Hamstring stretches, shoulder stretches, gentle lower-back mobility, and suitable yoga movements	Five to seven brief sessions weekly	Improvement in sit-and-reach performance using the same protocol
Lower-body power	Develop strength and controlled force production	Bodyweight squats, step-ups, landing practice, and low-volume jumps when appropriate	One to two focused sessions weekly	Improvement in standing long jump performance
Core endurance	Improve the ability to maintain a controlled trunk position	Modified planks, short plank holds, and other suitable core exercises	Two to three sessions weekly	Longer correctly performed holds
Aerobic activity	Support regular participation in sustained movement	Brisk walking, comfortable cycling, or other suitable low-impact activities	Three to five days weekly, adjusted to readiness	Increased activity duration at a manageable effort
Change-of-direction performance	Improve controlled changes in movement direction	Side steps, cone drills, controlled shuttle movements, and simple footwork patterns	One to two sessions weekly	Shorter agility T-Test time using the same procedure

C. Application of the FITT Principle

The plan uses frequency, intensity, time, and type to organize exercise participation. These variables provide a practical way to adjust activities to individual capacity and progression.

Frequency refers to how often each activity is performed. Strength and endurance activities should be distributed across the week with opportunities for recovery. Brief flexibility activities may be practiced more frequently.

Intensity should begin at a manageable level. Instructors should consider movement quality, perceived effort, previous activity experience, and any relevant health limitations before increasing difficulty.

Time should also reflect readiness. Main sessions may begin at approximately 20 to 30 minutes and increase gradually when students can complete the activities comfortably and correctly. Each main session should include preparation and a gradual cool-down.

Type refers to the activities selected for each fitness goal. The proposed combination includes bodyweight exercises, stretching, aerobic activities, and movement drills. More demanding activities should be introduced only when learners demonstrate appropriate control.

D. Suggested Weekly Schedule

TABLE VII. Suggested weekly schedule

Day	Main Focus	Suggested Activities
Monday	Muscular and core endurance	Appropriate push-up variations, short plank holds, and controlled bodyweight exercises
Tuesday	Flexibility and light activity	Gentle stretching, mobility activities, and comfortable walking
Wednesday	Lower-body strength and introductory power	Squats, step-ups, landing practice, and suitable low-volume jumps
Thursday	Active recovery	Comfortable walking or cycling with brief mobility activities
Friday	Whole-body conditioning	A manageable circuit of bodyweight exercises with suitable rest periods
Saturday	Optional movement practice	Controlled cone drills, side steps, or a preferred recreational activity
Sunday	Rest and recovery	Rest from structured training

This schedule is a guide. Instructors may adjust it according to class schedules, available equipment, student readiness, and recovery needs.

E. Progression Across Eight Weeks

Shaina P. Pabellano, "Development of a Fitness Plan for PATHFit Students Based on Physical Fitness Profile," *International Journal of Multidisciplinary Research and Publications (IJMRAP)*, Volume 9, Issue 4, pp. 110-115, September 2026.

During Weeks 1 and 2, instruction should emphasize familiarization and proper technique. Students may begin suitable dynamic exercises with approximately two sets of eight to twelve repetitions when manageable. Holding exercises should use individually appropriate durations.

During Weeks 3 and 4, instructors may increase repetitions or activity duration when students consistently demonstrate proper technique. A reassessment at the end of Week 4 can guide further adjustments.

During Weeks 5 and 6, progression may involve additional repetitions, longer duration, or a more demanding exercise variation. Only one major workload variable should be increased at a time so that the student's response can be observed.

During Weeks 7 and 8, students should continue an appropriate routine and complete the final reassessment. The objective is measurable improvement from individual baseline performance. Achievement of a particular classification should not be guaranteed.

F. Individual Adaptation and Safety

Exercise modifications should be based on performance and readiness. A student who has difficulty performing a floor push-up may use a wall or elevated surface. A student who cannot maintain a full plank with proper control may begin with a modified position or shorter holds.

Jumping activities should follow suitable preparation and instruction in controlled landing. Students who are not ready for jumping may use lower-impact strengthening activities. The same principle applies across age and sex groups.

Students should stop an activity that causes pain or unusual symptoms and inform the instructor. Further participation should follow appropriate assessment and guidance.

G. Monitoring and Evaluation

Each student should maintain an activity record containing attendance, exercises completed, repetitions, sets, duration, and brief observations about effort or difficulty.

The selected fitness assessments should be repeated at baseline, Week 4, and Week 8 using consistent procedures. Each learner's progress should be compared with their own baseline.

Evaluation should consider participation, movement quality, changes in test performance, and difficulties encountered. These findings would help instructors determine whether to continue, modify, or replace particular activities.

A future study should evaluate the proposed plan using a clearly described intervention design, verified scoring procedures, and appropriate comparisons.

V. CONCLUSION

The study provided a physical fitness profile of 228 first-year PATHFit 2 students from a city college in Quezon Province. Most respondents were aged 17 to 25 years, and the sample included both male and female students.

The reported profile identified muscular endurance, flexibility, and lower-body power as priorities for the proposed fitness plan. The reported omnibus analyses indicated differences across age groups in all six assessments. These findings describe group differences and do not establish that age caused the observed performance patterns.

The available sex-specific outputs were insufficient to establish differences between male and female respondents. Scoring inconsistencies and conflicting summary values also require verification before the findings are finalized.

An eight-week fitness plan was developed to organize activities, progression, and monitoring around the identified priorities. Its value as an instructional intervention remains to be evaluated through implementation and repeated assessment.

VI. RECOMMENDATIONS

PATHFit instructors should use individual fitness assessment results to select suitable starting activities and adjust exercise difficulty. Workload decisions should consider movement quality, readiness, and progress.

The institution should review the proposed plan for feasibility and suitability before implementation. Initial use should include instructor supervision, consistent assessment procedures, and documentation of participation and outcomes.

The researcher should verify the original fitness scores, assessment units, and classification rules. Statistical reporting should include clearly identified comparisons and complete supporting outputs, particularly for the analyses involving sex and pairwise age-group differences.

Future researchers should evaluate the eight-week plan through a design that measures changes over time and, where feasible, includes an appropriate comparison group. Studies may also consider previous physical activity, nutritional status, body composition, health conditions, and other factors that may help explain differences in fitness performance.

Research involving additional institutions and more balanced age-group samples would help determine whether similar instructional priorities are observed in other PATHFit populations.

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