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# Enhanced Physical Fitness Training Modelfor Physical Education Students

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**Abstract**
Right practice makes perfect – best outcomes emerge from right training. The study aimed to propose a physical fitness training program for the third and fourth year high school students of Palompon Institute of Technology. This study the examined: the profile of the students (speed, strength, flexibility, agility, endurance), the physical activities undertaken, the extent of the training techniques employed (Circuit Training, Fartlek Training, Interval Training), and the problems met by the teachers. The descriptive method of research was used in the study. A total number of 105 students composed of 48 third year and 57 fourth year high school students and three Physical Fitness Test developed by DEC-BPESS. The results reveal that students have low fitness level as evidenced by the physical fitness test result, wherein the majority of 105 students respondents performed below the target set. The activities most often undertaken were jogging, for speed and endurance, ball passing for agility, and aerobic for endurance, while the rest of the other exercises were either only satisfactorily undertaken or poorly undertaken and a few were very poorly undertaken. The circuit and interval training techniques were "seldom" applied and the Fartlek was sadly "never" used. Problems on inadequacy of facilities and exercise materials; lack of support from parents; the failure of the students to follow instructions, as well as the lack of interest on the part of students to do the exercises were only "seldom" and "sometimes" met.

**Keywords:** physical education, fitness training program, physical fitness, descriptive design, Palompon, Leyte, Philippines.

## Introduction

The development of strong and healthy bodies requires many challenges for the growing child. Meeting these challenges takes effort and energy, but the end result is a growth for all who make the effort. Physical fitness is one such challenge. It is a challenge which is continuous and lifelong. Undoubtedly, the country's most precious resources are our children, so that their health and physical fitness must be the concern of all. This concern has been articulated by Padilla, the President of the Philippine Amateur Athletic Federation when he said thus: "As educators and mentors, you fully appreciate the correction between mental ability and physical fitness. Yours is the challenge of creating opportunities for our school children for hard physical

exercises so necessary to develop and maintain good muscle tone and cardiovascular fitness.'"The preceding statement underscores physical fitness as the ultimate goal of physical education.

Palompon Institute of Technology, one of the hundreds of schools in the Philippines takes this objective seriously. The school's aim for excellence include producing elite athletes aside from its main objective of producing academically prepared, globally competitive, and competent technologists, teachers and seafarers (Palompon Institute of Technology, 2013). The aforementioned aim for competence in their graduates means that the students should not only be equipped with the necessary technical, teaching and maritime skills, but should likewise; possess a high physical demand of the technical, teaching and seafaring professions. The school administration's support in attaining these goals of producing champion athletes and physical fit graduates is apparent in its holding of the school intramurals, organizing varsity teams and participating in the State Colleges and Universities Athletes Association (SCUAA) Meet which is held every year. Unfortunately, the school has produced only a few winners, much less champions in the different sports events since the SCUAA Meets started decades ago. In an observation made by the researcher, being a Physical Education instructor and coach in men's baseball during intramurals and SCUAA meet, it was noted that the student-athletes were performing poor in track and field events and ball games which implies that the third year and fourth year high school students have poor physical fitness level. Moreover, in the 2008 SCUAA meet, the 400 and 800 meter run athletes could hardly reach the finish line which indicates that they have poor endurance fitness level. Likewise, ballgame players in basketball, volleyball, soccer and batted balls could not maintain playing at peak performance for the duration of the game. A casual interview by the researcher of the third year and fourth year students revealed that they lacked the power of speed and easily get tired and fatigued. They are waiting for a physical fitness training program.

The lack of speed and physical endurance would result in a mediocre performance of the athletes which is probably due to the lack of good physical fitness training program in all of the different team. Coaches most often urge their athletes to concentrate more on practicing and mastering the different skills necessary for the sport event that they are involved in, without first giving emphasis on developing that basic physical fitness skills, namely: speed, strength, agility, flexibility and endurance. This lack of physical preparedness puts the school's student-athletes at a disadvantage during athletic competitions.

Hence, the researcher strongly believes that in order for Palompon Institute of Technology to realize its goals in sports, a good approach and training program is needed. However, before a good training program is given, assessment of the physical fitness level of the students is essential and necessary to determine their strengths and weaknesses in the physical fitness components which would be the target of their training program.

Accordingly, the physical skills being assessed are the values on agility, flexibility, speed, strength and cardiovascular endurance. The South Carolina Department of Education (2004) defines agility as the ability to move and change direction quickly, muscular strength is the ability of the muscles to produce or exert maximum force. Muscular strength becomes muscular endurance when the force is exerted repeatedly over a period of time. Ultimately, being able to do and continue physical activity involving the whole body for a long period of time is called cardio-respiratory endurance. It is the ability of the heart, lungs and vascular system to function efficiently at moderate to high intensity exercises over extended period of time. It is also the capacity of the body to postpone the onset of fatigue and persist in a given strenuous task involving total body movement (South Carolina Department of Education, 2004).

According to Bucher (1983), to bring the athletes to peak performance, training and physical fitness must be worked out. As Bucher (1983) put it, training and physical fitness are essential in helping the students achieved peak performance in sports and other forms of physical activity. Hence, this study was conducted.

**Statement of the Problem**

This study aimed to propose a physical fitness training program for third and fourth year high school students of Palompon Institute of Technology.

Specifically, this study sought to answer the following questions:

1. What is the profile of the third and fourth year students in terms of the following fitness components?

1.1 speed
1.2 strength
1.3 agility
1.4 endurance
1.5 flexibility

2. What are the physical activities undertaken by the Physical Education teachers to develop the physical fitness level of the students?

3. To what extent are the following training techniques employed by the teachers in improving the physical fitness level of the students?

3.1 Circuit Training
3.2 Fartlek Training
3.3 Interval training

4. What are the problems met by the teachers in developing the physical fitness skills of the students?

5. What physical fitness training program for third year and fourth year high school students may be proposed based on the findings of the study.

**Theoretical Framework**

The theoretical framework of the study is anchored on the theories and principles in training for physical fitness compiled by Bucher (1983). These principles and theories are helped to the physical educator who is interested in helping students achieve peak performance in sports and other forms of physical activity. These are: (1) the training load should follow the principles of frequency and intensity. The load must be severe and frequently applied so that the body can adapt to its maximum in a particular activity; (2) Training is an individual problem. Factors such as gage, work and study load, physical make up, time available for sleep and rest, and training facilities available are important considerations in arranging a training schedule; (3) Excessive stress on the individual will lower the performance level and therefore attention should be constantly given to manifestation of stress; (4) Period of rest and physical and mental relaxation must be interwoven with doses of exercises to get the best results; (5) Flexibility and strength are two components that are essential to free-flowing movements and efficiency in sports performance. There should be provision for exercises that develop these qualities especially during off season. Scientifically designed weight-training exercises are specially good; (6) Interval has been found to be one of the best procedures for a modern training schedule. This consists of rhythmically carrying out an activity from 30 to 60 seconds at a fairly intense effort. Each period

of exercise is followed by 10 seconds to 2 minutes of slow recuperative activity and (7) the popular conditioning and training techniques which are: (a) circuit training which is a series of exercises, usually 10 that are performed in a circuit and in a progressive manner, doing a prescribed allocation of work at each station and then checking the progress against the clock. A s the performer becomes stronger, the number of repetitions and the quality of the exercises and increased; (b) Fartlek (Swedish for speed play) is a free relaxed running and (c) Interval training which utilizes four considerations: (1) distance (2) speed running (3) number of repetitions and (4) rest and recovery.

Indeed, Bucher (1983) emphasized that the most important fact in program of training is to achieve the goals of physical readiness and psychological readiness when the schedule indicates it is important. Thus, these guiding principles become the guiding concepts in the preparation of the physical fitness training program for third and fourth year high school students of Palompon Institute of Technology.

**Conceptual Framework**

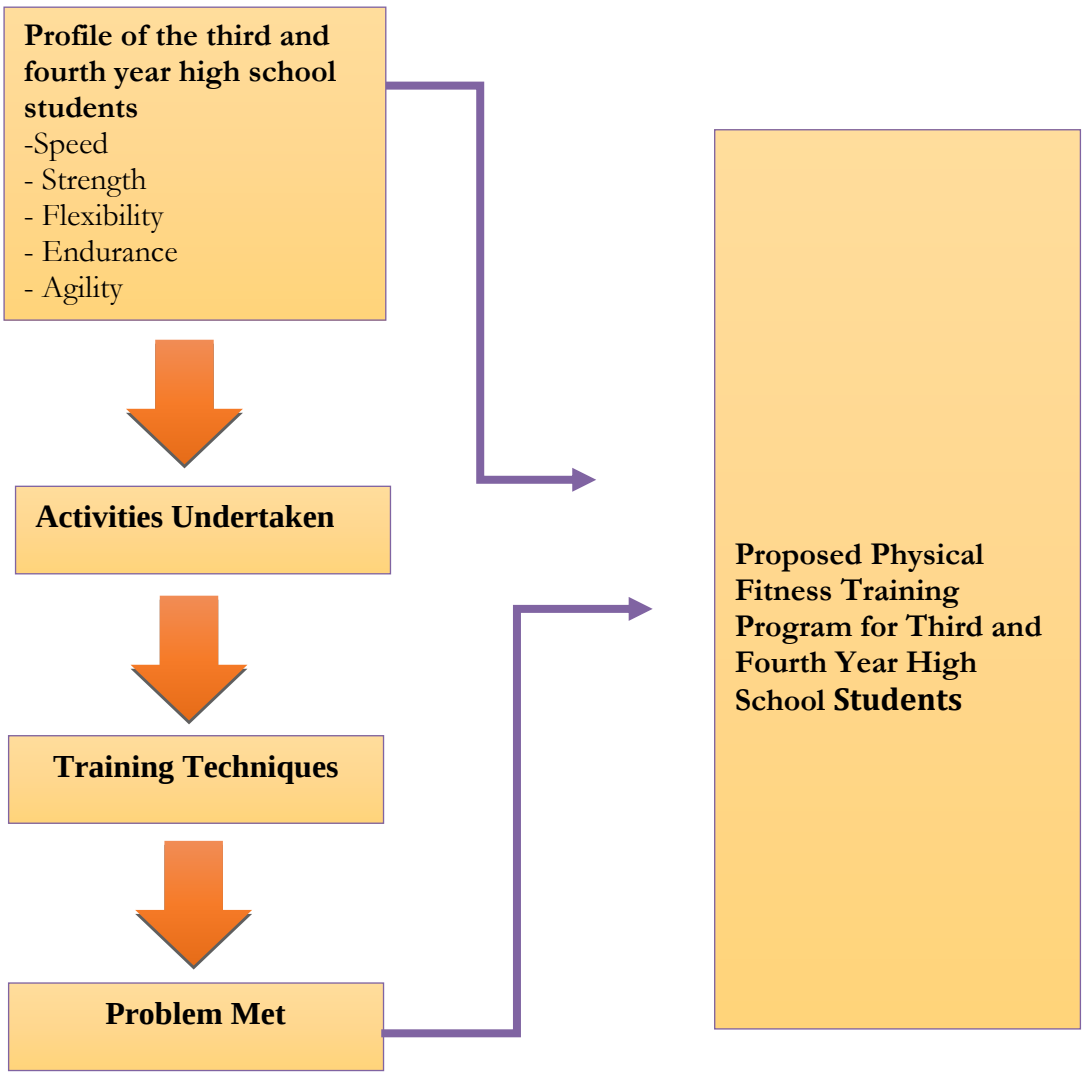
The Palompon Institute of Technology's desire to produce champion athletes and physically fit graduates has prompted the researcher to conduct a study that would guide him in designing physical fitness training program suited to the needs of all the students of the said school, most especially the varsity players who represent the school in the yearly State Colleges and Universities Athletic Association meet.

The conceptual framework of the study is based on the concept that the student's physical fitness level will improve through their participation in the training program, thus would raise their potential of becoming future elite athletes.

Hence, the study is focused on identifying the profile of the third and fourth year high school students in terms of the following fitness components namely: speed, strength, flexibility, agility and endurance; the activities undertaken to develop the physical fitness level; the extent to which the training techniques are employed; and the problem met in improving the physical fitness level of the students.

Schematic Diagram shows the Profile of the Third and Fourth Year High School Students Along with the Activities Undertaken, Training Techniques and Problems Met which Served as the Bases for the Proposed Physical Fitness Training Program for Third and Fourth Year High School Students.

**Fig. 1:** Schematic Diagram




## Methodology

### Research Design

The researcher used the descriptive survey method in gathering the data to determine the physical fitness profile of the third and fourth year high school students in terms of the fitness components, namely: speed, strength, flexibility, agility and endurance; determined the activities undertaken to develop the physical fitness level of the students; determined the extent to which the training techniques in improving the physical fitness level of the students; and lastly identified the problems met by the teachers in developing the physical fitness of the third and fourth year high school students.

### Locale of the study

This study was conducted at Palompon Institute of Technology, Palompon, Leyte during the school year 2008-2009.Palompon is an evolutionary name and is considered as one of the oldest and biggest municipalities in the province of Leyte, Eastern Visayas. Established in 1620, its original name was "Hinablayan" which derived from the Cebuano word "Sablay", which means hang, because the natives in the settlement were so fierce in repulsing invaders. After killing the

invaders, the natives would hang their dead bodies on the branches of trees.[55] The Spanish conquistadores named the place "paung-paung" (meaning cluster) after they observed a cluster of mangrove flowers in the harbor. As time passed, its name changed several times to "paung-paung" then Palongpon, after that to Palompong and then to its current name which is Palompon. Palompon is 124 kilometers road distance from Tacloban City, the provincial capital of Leyte and 66 kilometers from Ormoc city, the commercial growth center of the western coast of the Leyte Province. This municipality lies approximately at north latitude between 10 degrees 55 minutes and 11 degrees 07 minutes and east longitude between 124 degrees 22 minutes and 123 degrees 29 minutes. It is bounded in the north by the municipality of Villaba and Matag-ob; in the east Ormoc City and Merida, in the south by Isabel and in the west by the Camotes Sea. Palompon, Leyte has a total population of 52,530, broken down as follows: Poblacion is 4,867; and the barangays have a total population of 47,663 (History of Palompon, 1999).

**Respondents of the Study**

The respondents of study were the third and fourth year high school students of Palompon Institute of Technology. The three teacher-respondents were Physical Education teachers all working as both instructional teachers and coaches of the high school department of the said school for S.Y. 2008-2009.These students and teacher-coaches all responded to the same set of questionnaires that sought to determine the physical fitness level of the students, the training techniques employed by the teachers in improving the physical fitness level of the students and the problems met by the teachers in improving the physical fitness level of the students and the problems met by the teachers in the development of the physical fitness skills namely: speed, strength, flexibility, agility and endurance.

**Research Instrument**

The research instruments used in this study were the survey questionnaire for both teachers and students, and the Revised Physical Fitness Test for the students.

The survey questionnaire was composed of three parts. The first part asked about the activities undertaken by the Physical Education teachers in developing the physical fitness level of the students. The second part solicited answers with regards to the extent to which the training techniques are employed by the teachers in improving the physical fitness level of the students. The third part elicited response as to the kind of problems met by the teachers in the development of physical fitness skills, namely: speed, strength, flexibility, agility and endurance. The Revised Physical Fitness Test was used by the researcher to determine the physical fitness profile of the third and fourth year high school students of Palompon Institute of Technology, Palompon, Leyte.

**Validation of the Instrument**

Only the survey questionnaires for students and teachers were subjected to validation, as they were teacher-made tools. The Revised Physical Fitness Test developed by the Department of Education was no longer validated since it is already a standardized test. The survey questionnaire was pilot-tested at Lomonon National High School, Palompon, Leyte because the said school is very near to Palompon Institute of Technology so it was highly probable that the validation school has the same characteristics with that of Palompon Institute of Technology in terms of attitudes of students towards physical fitness and sports programs.

Aside from this Lomonon National High School, being a public high school that follows the Bureau of Education and Culture Curriculum, has textbooks used in teaching Music Arts Physical Education and Health that are very much similar in content to the textbook used at Palompon Institute of Technology, especially with regards to exercise materials used as physical

fitness activities that are supposed to be followed and employed and employed by the teachers in developing the physical fitness skills of students, namely: speed, strength, flexibility, agility and endurance. Hence, there was an assurance that the questionnaires would be better validated.

As expected, all items in the questionnaires were understood and responses elicited from both third and fourth year high school students and teacher respondents during the pilot testing, hence, no items were changed or corrected. Out of the thirty sets of the questionnaires distributed, all or 100% were also retrieved by the researcher.

**Data Gathering Procedure**

The researcher sought permission from the Schools Division Superintendent of Leyte Division and the Principal of Lomonon National High School for the validation of the research instrument. After finishing the task at the validation school, the researcher in turn asked for, and gained the approval of the President of Palompon Institute of Technology in fielding the questionnaire to the third and fourth year high school student-respondents of the said institution and collected the questionnaires personally to ensure 100% retrieval.

Basically, before the respondent answered the questionnaire, the researcher conducted and orientation relative to the purpose of the study and the manner by which they were to answer the survey questionnaire. It was made clear to both student s and the teachers-respondents that their cooperation and honest answer to the questionnaire would pave the way to the development of a proposed physical fitness training program for third and fourth year high school students that would help develop their physical well being and for those who take it more seriously, may become future athletes of the school.

Likewise, the physical fitness test was done to individual student's to determine the physical fitness level of the third and fourth year high school students of Palompon Institute of Technology involved in the study. Since the school is observing the time-on-task policy, the physical fitness testing was done during vacant period of the students and during the Physical Education classes.

Recording of the data was done in the prepared score sheets for fitness test, whereas, the survey questionnaire was reflected in the questionnaire itself.

**Findings**

**Profile of Third and Fourth Year High School on Physical Fitness**

Table 1 present s the profile of third and fourth year students on physical fitness.

**Table 1:** Profile of Third and Fourth Year Students on Physical Fitness

| ***Physical Fitness Components*** | **Below Target** | **Above Target** | **Total** |
|---|---|---|---|
| *1. SPEED*<br>*50 Meter Dash (in sec.)* | 67 | 38 | 105 |
| *2. STRENGTH*<br>*Flexed arm hang (girls)*<br>*Pull-up (boys)* | 43 | 62 | 105 |
| *3. FLEXIBILITY*<br>*Sit and reach* | 79 | 26 | 105 |

| | | | |
|---|---|---|---|
| *Standing long jump* | | | |
| *4. AGILITY* | 59 | 46 | 105 |
| *Shuttle Run* | | | |
| *5. ENDURANCE* | 65 | 40 | 105 |
| *Curl-ups* | | | |

Table 1 presents the profile of the 105 third and fourth year high school students-respondents of Palompon Institute of Technology in terms of the physical fitness components tested using the standardized Physical Fitness Test developed by Department of Education Culture and Sports-Bureau of Physical Education and School Sports.

The table shows that for test for speed (using the 50 m. dash), out of the 105 students only 38 or 36 percent showed a performance which was above the target and 67 students or 6 percent performed below target; in the test of strength (pull-up for boys, flexed arm for girls and standing long jump for both boys and girls), 62 students or 59 percent performed above target and 43 or 41 percent performed below target; the flexibility test (sit and reach) showed that only 26 students or 25% performed above target and 79 or 75 percent performed below target; the agility test (shuttle run) showed that only 46 individuals or 44 percent managed to perform above target while 59 students or 56 percent performed below target; the test for endurance (curl-ups) showed 40 students or 38 percent performed above target while 65 or 62 performed below target.

These results revealed that majority of the students performed poorly in the speed, flexibility, agility and endurance tests, and it was only in the test for strength and the students performed above target. This implies that there is a need for a training program that would develop the students' flexibility, agility, speed and endurance. Inclusion of exercises for strength is likewise a must in order to develop the strength of those who showed poor performance and enhance or develop further the strength of those who showed above target performance.

**Activities Undertaken to Improve the Physical Fitness of Students**

Table 2 shows the activities employed by the teachers to develop the physical fitness of students.

**Table 2:** Activities Undertaken to Improve the Physical Fitness of Students

| ***Items*** | **Student Average Mean** | **Teacher's Average Mean** | **Combined Average Mean** | **Interpretation** |
|---|---|---|---|---|
| *1. SPEED* | 3.76 | 4.67 | 4.21 | Outstanding |
| *1.1 Jogging* | 3.09 | 3.33 | 3.21 | Satisfactory |
| *1.2 Easy running* | 2.84 | 3.0 | 2.92 | Satisfactory |
| *1.3 Time running* | 2.99 | 3.33 | 3.16 | Satisfactory |
| *1.4 Speed running* | | | | |
| *Sub-Mean* | 3.17 | 3.58 | 3.38 | Satisfactory |
| *2. STRENGTH* | 3.09 | 2.67 | 2.88 | Satisfactory |
| *2.1 Pushing* | 2.47 | 1.0 | 1.74 | Very Poor |
| *2.2 Weight lifting* | 2.68 | 1.0 | 1.84 | Poor |
| *2.3 Weight training* | 2.85 | 2.67 | 2.76 | Satisfactory |
| *2.4 Pulling* | | | | |
| *Sub-Mean* | 2.77 | 1.84 | 2.31 | Poor |

| | | | | |
|---|---|---|---|---|
| *3. FLEXIBILITY* | 3.17 | 2.67 | 2.92 | Satisfactory |
| *3.1 Stretching* | 3.0 | 2.67 | 2.84 | Satisfactory |
| *3.2 Swinging* | 2.76 | 3.33 | 3.05 | Satisfactory |
| *3.3 Bending* | 2.83 | 3.33 | 3.08 | Satisfactory |
| *3.4 Rotating* | | | | |
| *Sub-Mean* | 2.94 | 3.0 | 2.97 | Satisfactory |
| *4. AGILITY* | 3.14 | 3.67 | 3.41 | Very Satisfactory |
| *4.1 Ball Passing* | 3.24 | 3.0 | 3.12 | Satisfactory |
| *4.2 Ball Bouncing* | 2.82 | 2.0 | 2.41 | Poor |
| *4.3 Shuttle Run* | 2.70 | 1.67 | 2.19 | Poor |
| *4.4 Sideward gallop* | | | | |
| *Sub-Mean* | 2.98 | 2.59 | 2.78 | Satisfactory |
| *5. ENDURANCE* | 2.81 | 4.0 | 3.41 | Very Satisfactory |
| *5.1 Aerobic* | 2.77 | 2.0 | 2.39 | Poor |
| *5.2 Anaerobic* | 3.2 | 3.0 | 3.1 | Satisfactory |
| *5.3 Step-up and down* | 3.35 | 1.67 | 2.51 | Poor |
| *5.4 15 min. run and walk* | | | | |
| *Sub-Mean* | 3.02 | 2.68 | 3.10 | Satisfactory |
| *Average Mean* | 2.96 | 2.74 | 2.91 | Satisfactory |

From the foregoing table, it could be seen that the highest combined average mean obtained is 4.21 on jogging, interpreted as "outstandingly undertaken". The second highest combined average mean obtained was 3.41 for both ball passing and aerobic interpreted as "very satisfactorily undertaken". This was followed by the combined average mean of 3.21, 2.92, 3.16, 2.88, 2.76, 2.92, 2.84, 3.05, 3.08, 3.12 and 3.1 for easy running, speed running, pushing, pulling, stretching, swinging, bending, rotating, ball bouncing and step-up and down respectively, all interpreted as "satisfactorily undertaken". The other activities such as weight training, shuttle run, sideward gallop, anaerobic and the 15 m in. run and walk obtained a combined average mean of 1.84, 2.41, 2.19, 2.39 and 2.51 respectively, all interpreted as "poorly undertaken". The lowest combined average mean was obtained for weightlifting was 1.74 and interpreted as "very poorly undertaken".

The result implies that jogging is a highly popular exercise among teachers and students. However, the other exercises that develop speed namely, easy running, time running and speed running, all rated as "satisfactorily undertaken", need more application. The exercises for strength namely; pushing and pulling interpreted to be; "satisfactorily undertaken", especially weight training and weight lifting, rated poorly and "very poorly undertaken" respectively, need to be constantly done because muscular strength is usually prerequisite to the development of endurance and power. The exercises for flexibility, interpreted as "satisfactorily undertaken" must likewise be given attention since these exercises help condition the muscles, thus prevent injury during vigorous physical activities. The activities aimed to develop agility such as ball passing which is "very well undertaken", as well as shuttle run and sideward gallop, both "poorly undertaken", should be done regularly since it will not only improve the students' agility, but are also fun tasks to do that could hold interest of the students.

**Training Techniques Employed**

Table 3 presents the extent to which the different training techniques are employed.

**Table 3:** Extent To Which Training Techniques Are Employed

| ***Training Techniques*** | **Student's Average Mean** | **Teacher's Average Mean** | **Combined Average Mean** | **Interpretation** |
|---|---|---|---|---|
| *1. Circuit Training* | 2.84 | 1.67 | 2.26 | Seldom |
| | 2.5 | 1.0 | 1.75 | Never |
| *2. Fartlek Training* | 2.95 | 1.67 | 2.31 | Seldom |
| *3. Interval Training* | | | | |
| *Average Mean* | 2.76 | 1.45 | 2.11 | Seldom |

The result revealed that the circuit training and interval training obtained a combined average mean of 2.26 and 2.31 respectively, interpreted as "seldom employed". Fartlek training got the lowest combined average mean which is 1.75 interpreted as "never employed".

This implies that the teachers in Physical Education at Palompon Institute of Technology do not apply a single training technique regularly which probably explains the poor performance of the students in the Physical Fitness Test conducted by the researcher.

There is a very strong indication therefore, that a Physical Fitness Training Program is badly needed at the said institution in order to raise the level of the students' physical fitness that could lead to its achieving its goals of producing champion athletes and physically fit graduates.

**Problems Met**

Table 4 shows the problems met by the teachers and students in developing the students' physical fitness.

**Table 4:** Problems Met

| ***Problems Met*** | **Student's Average Mean** | **Teacher's Average Mean** | **Combined Average Mean** | **Interpretation** |
|---|---|---|---|---|
| *1. Inadequate equipment and facilities* | 2.85 | 2.6 | 2.76 | Seldom |
| | 3.30 | 3.0 | 3.15 | Sometimes |
| *2. Inadequate exercise materials* | 2.95 | 1.67 | 2.31 | Seldom |
| | 3.09 | 2.33 | 2.71 | Sometimes |
| *3. Insufficient support of teachers and parents* | 3.07 | 3.0 | 3.04 | Sometimes |
| *4. Inability of students to follow instructions* | | | | |
| *5. Lack of interest on the part of the students to do or perform the physical fitness test.* | | | | |
| *Average Mean* | 3.05 | 2.53 | 2.79 | Sometimes |

With regards to the problems on inadequacy of equipment and facilities, as well as the insufficient support of teachers and parents, the combine average mean obtained were 1.43 and 2.31 respectively, both interpreted as "seldom". The other probable problems presented, namely:

inadequacy of exercise materials, inability of students to follow instructions and lack of interest on the part of students to perform the physical fitness test, acquired a combined average mean of 3.15, 2.71 and 3.04 respectively, all of which were interpreted as "sometimes"

The data signifies that the problem in the development of physical fitness does not lie on the different areas of concern previously mentioned. This strongly indicates that the problem is rooted on the lack of physical fitness training program of the school. Hence, it is imperative that the researcher develop one of the benefit of the school in which he is very much a part of.

**Proposed Physical Fitness Training Program for Third and Fourth Year High School Students**

**Rationale**

This proposed Physical Fitness Training Program is developed due to the researcher's desire to improve the general fitness level of all the students of Palompon Institute of Technology. Hence, provisions of the different physical fitness activities are necessary and important in order to develop elite athletes and ultimately produce future champions in the different sports events in the said school.

The Physical Fitness Test conducted showed that majority of the students performed below target in speed, flexibility, agility and endurance. Also, revealed that the teachers were in dire need of physical fitness training program for third and fourth year high school students incorporating the different training techniques and the corresponding fitness activities that would enhance their fitness level. Thus, the proposed physical fitness training program for third and fourth year high school students is herein presented.

**Program Objectives**

1. To provide Physical Education teachers with varied physical fitness exercise materials adapted to the third and fourth year high school students.
2. To provide the teachers and student-athletes with speed, strength, agility, flexibility and endurance training to improve the physical fitness performance level of the students.
3. To provide both the teachers and student-athletes with a specific physical fitness training program which utilizes circuit training, fartlek and interval training as its method of improving the physical fitness level of the students.

**Description of the Training Program**

The proposed physical fitness training program for the third and fourth year high school students consists of non-sport specific exercises, but rather, activities aimed to develop the general fitness of the students with regards to following fitness components: speed, strength, flexibility, agility and endurance.

The concepts applied in designing this training program are based on the principles in training for physical fitness compiled by Forbes Carlile and cited by Bucher, as well as the principles to be followed in planning the different training methods employed in this training program, namely: circuit training, interval training and Fartlek training techniques.

Training Techniques Used in the Training Program

Circuit training is an excellent way to improve mobility, strength and stamina. The circuit training format utilizes a group of 6 to 10 exercises that are completed one exercise after another. No two consecutive exercises the same muscle group. A circuit is set up so that the upper body, lower body, core and trunk and total body are worked up.[59]

The training space (indoor or outdoor) consists of a number of exercise areas. Each exercise area called a station. After completing the exercise at one station, the muscle groups are used at each station, allowing time for muscle recovery and increasing motivation through variety. A set time is spent at each station with a set recovery period between stations allowing for recovery and individuals to move one to the next station.

**Interval Training**
This method is combination of low intensity and high intensity activity.[61]

Interval training works both the aerobic and anaerobic system. During the high intensity effort, the anaerobic system uses the energy stored in the muscles (glycogen) for short burst of activity. Aerobic metabolism works without oxygen. The by-product is lactic acid, which is related to the burning sensation felt in the muscles during high intensity efforts. During the high intensity interval, lactic acid builds and the person enter oxygen debt. During the recovery phase (low intensity), the heart and lungs work together to "pay back" this oxygen debt and breakdown the lactic acid. It is in this phase that the aerobic system is in control, using oxygen to convert carbohydrates into energy. This repetitive form of training strengthens the heart muscle and improves the performance of the cardiovascular system.[62]

This type of training creates a hormonal environment that is favorable to mobilizing fat while preserving muscle tissue. Tremblay's study on interval training revealed that small amounts of interval training were greatly superior in terms of fat loss to much longer periods of low intensity activity-up to nine times more effective at reducing subcutaneous body fat. Intervals also increase work capacity and conditioning.[63]

Interval training workouts can be very intense and therefore performed 2-3 times a week only for 30 minutes to one hour depending on the individual level of fitness. Intense exercises demands adequate and quality nutrition.[64]

**Fartlek Training Technique**
Fartlek training is Swedish for "speed play" ("fart" = speed, "lek" = play).

It was originally developed by and for runners, as a looser alternative to their highly structured timed interval training.[65]

Fartlek was the first form of interval training, which involves alternating short, fast burst of athletic exercise with slow activity. It is a casual, unstructured training, but can also be done doing the exercises in periods of set duration.[66]

Just like all training techniques, it begins with a 5 minute warm up before starting the intervals that lasts from10-20 seconds to as long as 5 minutes to 15 minutes can be done on flat, soft surface or uphill and downhill or by using a staircase.

**Teachers/Users' Guide**
The proposed physical fitness training program for third and fourth year high school students are in two phases. Phase 1 covers the introduction to the physical fitness training program, organization and preparation of space and equipment for the circuit training.

The second phase consists of the training proper from June to November with 2 sessions per week. Only the circuit training technique will be employed for the first two months – June to July, for the purpose of improving the cardiovascular endurance of the students in

preparation for the Interval and Fartlek training which involves high intensity activities. After two months, assuming that the students had gained enough strength and stamina, and could do at least two repetitions of the circuit, the interval and fartlek training will be introduced from August until November, the three remaining techniques will be used in each session.

To all teachers and other physical fitness enthusiasts this training program must be used as a training guide in developing the fitness components among students.

The training must always begin on Phase 1 followed by Phase 2. The sequencing of the activities must be strictly followed in order to achieve the objectives of the training program.

**Program of Activities of the Training Program**
As discussed earlier the training program is scheduled in two phases Phase 1 and Phase 2.

**Phase 1**
Introduction to Physical Fitness Training

A. Orientation – A lecture – demonstration shall be done by the physical education teacher to give a "bird's"-eye-view" of the entire training program: it's objectives, the benefit that the students would gain frequency of training, the training techniques and exercises to be utilized, how each student will be evaluated and the duration of the training program will be evaluated and the duration of the training program will be evaluated and the duration of the training program. The different exercises will be demonstrated by the teacher to ensure that the students will get the exercise techniques correctly.

The students will be required to have their physical condition checked by the doctor or other health care provider.

B. Organization for the Training Session – The students will be in pairs when doing the activities, one of the pair will be the performer and the other will serve as recorder of the number of repetitions completed by the performer in each activity. After finishing a circuit, the partners will be exchange roles.
C. Setting up the Stations for the Different Exercises in the Circuit Training – The Physical Education teacher shall set up 10 stations will be provided with the necessary equipment.

- Sit up, press ups, dorsal press – mat, carton plywood or clean cloth on flat surface
- Step ups, seated dips, bent arm pullovers – benches, dumbbells
- Shuttle run - pole to mark the specified distance that the students will run to.
- Squats – weights to increase intensity
- Agility ladder – sticks, chalk o masking tape to form or draw the agility ladder (standard agility ladder 10 yards long 18 inches wide.)
- Jumping Rope – nylon rope

**Discussion of Findings**

**Physical Fitness Profile of Students**
In terms of speed, out of 105 students, only 38 or 36 percent achieved a performance that was above target, while 67 students 64 percent performed below target; in terms of flexibility, only 26 students or 25 percent performed above target and 79 or 75 percent of them showed below

target performance; with regards to agility, only 46 students or 4.4 percent were able to perform above target, and still a higher number of 59 students or 56 percent achieved a below target performance; just like all the other physical fitness tests previously mentioned, there was also a greater number of individuals who failed in the endurance test, only 40 or 38 percent above target and 65 or 62 percent below target; it was only in the test for strength that the students fared better since 62 students or 59 percent performed above target while only 43 or 41 percent performed below target.

**Activities Undertaken**

With respect to the physical fitness undertaken, only jogging was found to be outstandingly undertaken; followed in frequency of application by ball passing and aerobic exercises which are viewed as very satisfactorily undertaken. Majority of the exercises were satisfactorily such as; easy running, time running, speed running, pushing, pulling, stretching, swinging, bending, rotating, ball bouncing and step up down.

The activities that were poorly undertaken were weight training, shuttle run, sideward gallop, anaerobic and the 15 minute run and walk. Weight lifting was considered as very poorly undertaken. All these interpretations were derived from the combined average mean of the students and teachers mean calculated from the data gathered.

**Training Techniques Employed**

The circuit and interval training was "seldom" done, and the Fartlek training was perceived to be "never" done by a majority of student and even the teacher-respondents as reflected in the data.

**Problems Met**

The problems did not meet in developing the physical fitness of the students is obviously on the inadequacy of equipment, nor insufficient support of teachers and parents for these were "seldom" seen as reasons by the respondents. Inadequate exercise materials, inability of students to follow instructions, and lack of interest on the part of the students, were likewise not the reason because combined average mans of these problems were interpreted as "sometimes."

**Conclusions**

Based on the findings of the study, the following conclusions were reached.

1. The majority of the third and fourth year high school students performed bellow target in the speed, agility, flexibility and endurance test. This apparently shows that most of them have low fitness level due to the lack of vigorous physical activities that would develop their general fitness.

2. The students performed above target in the test for strength. This implies that they have the strength, but would not have the endurance to hold themselves up on the bar for more than the few seconds required in the test. Hence, the strength of the students must be further enhanced for it is the basic requirement in developing endurance.

3. The activities frequently required by the Physical Education teachers to perform were jogging, ball passing, and aerobic, used to develop speed, agility and activities hinders the development of the different physical fitness components which explains the students' generally poor performance in the physical fitness test. This also suggests that the teachers provide limited opportunities for students to develop their general fitness.

4. The circuit and interval training techniques which was seldom used and the Fartlek which was never practiced indicated that the Physical Education teachers need to plan, devise and implement a physical fitness training program.

5. The problems met by the teachers and students presented in the questionnaire were only "seldom" and "sometimes" met, which again points to the absence of a physical fitness training program as the main problem.

**Recommendations**

Based on the findings of the study and the conclusions drawn, recommendations as causes of action are hereby suggested:

1. All schools must aim to develop the general fitness of students in all levels, elementary, secondary and tertiary. Each school must have a physical fitness training program which is designed based on the physical fitness profile of the students.

2. Physical Education teachers must be updated on the current trends in designing a physical fitness training program through seminars, readings or through the use of information technology, particularly the internet and should also display enthusiasm in implementing it.

3. The proposed physical fitness training program for the third and fourth year high school students should not be used only in the target school, Palompon Institute of Technology, but rather by all secondary schools, whether private, public or state universities or colleges in the region.

4. An orientation seminar on the proper use of the physical fitness training program should be conducted so that the proper implementation could be affected.

5. Finally, developing the general fitness of all students must be given emphasis because a high level of fitness could serve as a springboard in producing elite athletes and competent, physically fit graduates who will become the future leaders of our country.

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## Annex 1.

## PHASE II

Phase II of the training Program is presented in MATRIX. This training program in matrix should be strictly followed as these activities are arranged in such way that the students would not be injured while performing the activities.

TRAINING PROGRAM FOR PHYSICAL FITNESS IN MATRIX

| *Exercise* | Description | Duration Repetition | Recovery Period | Training Technique | Types or Group of Muscles Developed | Physical Fitness Component Developed | Sessions Per Week | Target Per 100 |
|---|---|---|---|---|---|---|---|---|
| 1. *Sit ups* | * Bent knees sit-ups with hands on the chest. The number of repetitions may be increased | 20-30 sec | 20 or 30 sec | CIRCUIT | Core and Trunk (abdominal) | Strength and Endurance | 2 | JUNE TO NOVEMBER |
| 2. *Step up* | * step up and off bench Weights may be used | 30-60 sec | 30 or 60 sec | TRAINING | Lower body (legs and thigh) | Strength and Endurance | 2 | |
| 3. *Press ups* | * Either narrow arm or wide arm. Easier if knee in contact with ground, harder if feet on bench. | 30-60 sec | 30 or 60 sec | | Upper body (Arms and shoulder girdle) | Strength and Endurance | 2 | |

| *Exercise* | Description | Duration Repetition | Recovery Period | Training Technique | Types or Group of Muscles Developed | Physical Fitness Component Developed | Sessions Per Week | Target Per 100 |
|---|---|---|---|---|---|---|---|---|
| 1. *Squats* | * Repeated squats resistance maybe increased by holding weights | 20-30 sec | 20-30 sec | CIRCUIT TRAINING | Lower body (legs and thigh) | Strength | 2 | JUNE TO NOVEMBER |
| 2. *Dorsal Press* | * Lie on front of mat. Use arms to hyper-extend back and then lower trunk back to lying position. Increase number to reps. | 20-30 sec | 20 or 40 sec | | Upper body (arms and back) | Strength flexibility | 2 | |
| 3. *Shuttle Runs* | * Run for specified distance outside of working area. | 20-40 sec | 20 or 40 sec | | Lower body (legs and thigh) | Endurance agility | 2 | |
| 4. *Seated Dips* | * Sit with hands on edge of bench legs extended in front. Allow body to descend to floor and then press up. Higher bench increases resistance. | 20-30 sec | 20 or 30 sec | | Upper body (arms and shoulder girdle) | Strength | 2 | |
| 5. *Agility ladder* | * Person maneuvers himself/herself without stepping on the lines of the ladder drawn on the floor | 20-30 sec | 20 or 30 sec | | Lower body | Strength and endurance | 2 | |

| *Exercise* | Description | Duration Repetition | Recovery Period | Training Technique | Types or Group of Muscles Developed | Physical Fitness Component Developed | Sessions Per Week | Target Per 100 |
|---|---|---|---|---|---|---|---|---|
| 1. *Best Arm Pull-over* | * Lie on back, on bench. Dumbbell held in two hands, taken back behind head and returned to in front of head | 20-30 sec | 20 or 30 sec | CIR-CUIT TRAI-NING | Upper body (Arms and shoulder girdle) | Strength | 2 | JUNE TO |
| 2. *Jumping rope (over agility ladder)* | * Jump rope through agility ladder without stepping on the lines of the ladder drawn on concrete or floor. | 20-30 sec | 20 or 30 sec | | Total body | Strength, Endurance and Agility | 2 | |
| 3. *Sprint-walk warm up* | * Sprint or fast jog for 50 meters | | | FART-LEK & IN-TER-VAL- | Lower body (legs and thigh) | | 2 | NO-VEM-BER- |
| | * 5 min. brisk walk on level ground, light active stretching if desired. | | | | | | 2 | |
| *Intervals* | * Sprint or fast jog, 10-30 seconds, (the higher your intensity, the shorter you should make your time. | | | | | | 2 | AUG. |

| *Exercise* | Description | Duration Repetition | Recovery Period | Training Technique | Types or Group of Muscles Developed | Physical Fitness Component Developed | Sessions Per Week | Target Per 100 |
|---|---|---|---|---|---|---|---|---|
| | So, then walk back to your starting point) Repeat sequence for desired length of time | | | FAR-TLEK & IN-TER-VA | | | | AUG-UST TO NOV-E |
| 1. *Cool Down* | * 5 min. moderate walk on level ground, more substantial stretching if desired. | | | | Lower Body | | 2 | |
| 2. *Hill or Stair Run Warm up hill/ stair run Cool down Cool down* | * Walk briskly uphill, then walk down hill<br>* 5 to 10 min. moderate to brisk walk on level ground, light stretching<br>* Uphill/stairs and walk downhill/stairs, 5-15 minutes.<br>* 5 min. moderate walk on level ground, more | Repeat sequence for desired length of time | | | Legs and thigh<br>Lower body<br>(Legs and thigh) | | 2 | |

| *Exercise* | Description | Duration Repetition | Recovery Period | Training Technique | Types or Group of Muscles Developed | Physical Fitness Component Developed | Sessions Per Week | Target Per 100 |
|---|---|---|---|---|---|---|---|---|
| *Rest ratio of 1:1)* | | | | | | | | |
| *Interval 1* | * Running of | 1 min. | 1 min. rest | I | Lower body | Speed and Strength | 2 for 2-3 wks | J |
| | | | | N | (Legs and Thigh) | | | U |
| | | | | T | | | | L |
| *Interval 2* | * Sprint of | 1 min. | 1 min. rest | E | | | 2 for 2-3 wks | Y |
| | | | | R | | | | |
| | | | | V | | | | |
| *Interval 3* | * Running of | 1 min. | 1 min. rest | A | | | 2 for 2-3 wks | T |
| | | | | L | | | | O |
| *Interval 4* | *Sprint of | 1 min. | 1 min. rest | T | | | 2 for 2-3 wks | |
| *3.2* | * 5 min. warm up | 5 min. | | R | Lower Body (legs and thigh) | Endurance | | N |
| *Interval Training* | * 5 min. of stretching | 5 min. | | A | | | | O |
| *(Work/rest ratio of 2:1)* | | | | I | | | | V |
| | | | | N | | | | E |
| | | | | I | | | | M |

| *Exercise* | Description | Duration Repetition | Recovery Period | Training Technique | Types or Group of Muscles Developed | Physical Fitness Component Developed | Sessions Per Week | Target Per 100 |
|---|---|---|---|---|---|---|---|---|
| *Interval 1* | * Running of | 2 min. | 1 min. rest | | Abdominal | Strength/ Endurance | 2 | J |
| | | | | | | | | U |
| | * Sit ups of | | | IN- | | | | L |
| *Interval 2* | | 2 min. | 1 min. rest | | Upper body (Arms/shoulder girdle) | Strength/Endurance | 2 | Y |
| | | | | TER- | | | | |
| | * Press up of | | | | | | | T |
| *Interval 3* | | 2 min. | 1 min. rest | VAL- | Lower Body | Strength/Endurance | 2 | O |
| | * Burpess of | | | | | | | |
| *Interval 4* | | 2 min. | 1 min. rest | | (Trunk and legs) | Strength/Flexibility | 2 | N |
| | * Step up of | | | TRAI- | Legs and thigh | | | O |
| *Interval 5* | | 2 min. | 1 min. rest | | | Strength/Endurance | 2 | V |
| | * Running of | | | NING | Legs and thigh | | | E |
| *Interval 6* | | 2 min. | 1 min. rest | | | Endurance | 2 | M |
| | * Cool down | | | | | | | B |
| | | | | | | | | E |
| | | | | | | | | R |