

# Comparative Study of Physical Fitness Components between Physical and Non-Physical Education Male Students in Nekemte College of Teacher Education

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**Abstract-** The purpose of this study was to compare the significant difference of physical fitness components between physical education and non-physical education department male students in Nekemte College of teacher education. Amongst the total 42 participants of the study, 21 of physical education department students were selected using comprehensive sampling techniques whereas, the rest of 21 students were randomly selected from non-physical education department students in performing five components of physical fitnesses at age ranging from 20 to 23 years. The data were collected by the use of five selected variables and their criterion measures for physical fitness tests. The data were analyzed and compared with the help of statistical procedures in which arithmetic mean, standard deviation, standard error of mean, and t-test were employed and the level of significance was observed at 0.05. The results of the study were depicted that physical education students were found to be slightly superior to Non-physical education students in performing endurance and inversely true in agility, ( $t = .033$ ),  $P = .370$ , and  $t = (.004)$ ,  $P = .338$ ) scored respectively. This confirms that, there is no statistically significant difference observed between the two groups. Subsequently, significance differences were revealed in performing strength, speed and flexibility amongst the two groups, ( $t = .003$ ),  $P = .000$ ,  $t = (.025)$ ,  $P = .022$ , and  $t = (.037)$   $P = .007$ ) in which P-values estimated less at significant level of 0.05. On the basis of statistical findings, it was concluded that the data gathered in relation with physical fitness of the participant tremendously designated below the standard rating scale of their age group.

**Index Terms-** endurance, speed, strength, agility, flexibility

## I. INTRODUCTION

In the history of humankind, physical fitness has been considered as a vital element of everyday life of an individual. In being so, the ancient people were mainly dependent up on their individual strength, vigor and vitality for physical survival (Manmeet Gill, et al, .2010). These involved performances of some basic skills like strength, speed, endurance, flexibility, agility for running, jumping, throwing and climbing for the persistence of hunting, gathering food and building shelter for their living (Mehtap Ozdirenc, Nihal Gelecek, 2005).

In connection to the idea stated above, international journal of behavioral social and movement science (IJBSMS, 2012) define the concepts of physical fitness as old as mankind,

keeping in mind the survival of the fittest, down through the ages, as only strong and agile invader, protect themselves and their property. It is a fact that, physically fit people are in a better position to bear the rigorous and abnormal stress and strain, than those who are less physically fit. The basic movement like running, throwing, climbing, jumping lifting etc. requires specific physical attributes such as muscular strength, muscular endurance, cardiovascular endurance, strength, balance and coordination (W.H.O, 1981).

In the light of this, the expertise committee of the world Organization (1981) describes physical fitness as the ability to undertake muscular work satisfactorily and in capacity to carry out various forms of physical activities without being unduly tired including qualities important to the individual health and well-being. According to Clarke, Harrison, H (1971) physical fitness is defined as ability to carry out daily tasks with vigor and alertness without undue fatigue with ample energy leisure time pursuits to meet usual situation and unforeseen emergencies.

Likewise, regular participation in various exercises increases physical fitness. As a result, high level of physical fitness is desirable for a full productive life. However, sedentary living habits and poor physical fitness have negative impacts on both health and daily living. Every person has a different level of physical fitness which may change with time, place of work and situation. There is also an interaction between the daily activities and the fitness of an individual, the point if where to put the level of optimum fitness. From the physiological point of view, physical fitness may be ability of the body to adopt and recover from strenuous exercise (Kamla-Raj, 2010)

For most individuals, increase in physical activity increases physical fitness. Hence, physical activity and physical fitness are closely related in that physical fitness is mainly not entirely determined by physical activity patterns over recent weeks or months. That's why; genetic contributions to fitness are important but probably account for less of the variation observed in fitness than is due to environmental factors, particularly physical activity (Bouchard, C., and L. .pe' Russe, 1994).

The link between physical fitness and activities has been demonstrated in sport, where physically fit individual are able to perform at a higher relative intensity than their rivals. Therefore, the present comparative study was attempted to investigate the current status of physical fitness of 3<sup>rd</sup> year physical education department students and non-physical education students in Nekemte College of Teacher Education.

## 1.2. Statements of the Problem

Even if it remains unknown to what extent fitness instruction has been included in physical education program, fitness test program has been implemented in most schools as millions of young people have experienced fitness testing (Placek, et al., 2001). Interestingly, both US and the republic of Chain start systematic youth fitness testing in schools in the early 1950s for complete different reasons. The force in the US was unsatisfactory performance of American youth compered to European youth on the Kraus Weber test (Freedson et al, 2000; Seinfeld and Vogel, 1989). By contrast, the national wide impetus to follow the model of the Soviet Union was one of the primary reasons for the PRC to implement the national fitness test in schools (Ili, 1996).

The underlying assumptions for testing youth people's fitness in physical education program in both countries, however, were almost identical. It was widely believed that the identifications deficiency of fitness through testing could help teachers to implement appropriate intervention and motivation for youngsters to practice in more physical activates (Fan, 1996; Pangrazi, 2001). Similarly, fitness program in both countries have undergone revolutionary revisions over the years (Keating, X., D, 2003).

The results and experience gained from several European studies suggest that physical form is a key indicator of the health of children and adolescents (Ruiz, et al., 2006) and is a predictor of health in later life (Ruiz et al., 2009). Regular monitoring of the level of physical activity and physical fitness of the entire population should be considered a public health priority (World Health Organization, 2010). Monitoring involves constant measuring and/or estimating (collective test) levels of physical activity and physical fitness of the individual as well as the evaluation of the data (C N S P E C, 1990).

Raising the self-esteem of young people and allowing them to reach their potential through high quality of physical fitness is every research certainly in our Ethiopia context. Hence, the researcher of this study wants to realize the current statues of physical fitness level of Nekemte College of Teacher Education students constructed on previous research that suggest evidence involvement in physical fitness, physical education and sport result in benefits to young people in terms of their fitness, health, confidence, self-esteem, their ability to concentrate and their readiness to learn.

For that reason, the participants for the studies were planned to involve in test at beginning of 2016/017 academic calendar of pre-professional training or professional activities. Physical education students had got exposure to physical fitness related training ahead of one year and one semester but not non-physical students. Therefore, it is very important to examine the significance difference between the participants of physical fitness and sedentary populations adapt differently than trained populations without intervention imposed upon them. It is hoped that, the study helps to fill out the fitness level gap between the two categories. The following basic research questions were attested to explore the significant relation or difference between physical fitness performance level of third year physical education and non-physical education department students of Nekemte College of Teacher Education through selective physical fitness activities.

- What is the current physical fitness status between third year physical education department students and non-physical education department students of Nekemte College of Teacher Education?
- What are the significance differences of fitness level between third year physical education department students and non-physical education department students of Nekemte College of Teacher Education?
- What are the conditions that make disparity of physical fitness level between third year physical education department students and non-physical education department students in Nekemte College of Teacher Education?

### **1.3. Objectives of the study**

#### **1.3.1. General Objectives of the study**

The purpose of this study is to compare physical fitness level of third year physical education department students and non-physical education department students and to find out which of the two categories is more physically fit in responding to standardized level of physical fitness test.

#### **1.3.2..Specific Objectives**

- ✓ To estimate the current physical fitness status between third year physical education department students and non-physical education department students of Nekemte College of Teacher Education.
- ✓ To identify significance differences of fitness level between third year physical education department students and non-physical education department students of Nekemte College of Teacher Education.
- ✓ To examine conditions that make disparity between third year physical education department students and non-physical education department student physical fitness level in Nekemte College of teacher Education.

### **1.4. Significance of the Study**

The success and competence of any physical fitness depend upon the ability of the performer to effectively achieve the given task on time. Therefore, the issues that were discussed in this study would have the following importance:

- The study was expected to contribute in the identification of student physical fitness level of physical education department students and non-physical education department students of Nekemte College of Teacher Education.
- It is intended to create awareness towards the problem among physical education teachers in general and students in particular.
- To provide a hint to the college management and other concerned bodies as to fulfill necessary facilities and equipment for the departments of physical education students.
- To stimulate the interest of individuals to conduct research on the same issues for further investigation.
- To establish norms for investigators and thus make objective comparisons between students of different ages, height, weight and pulse rate level of competition in the college.

### **1.5. Scope of the Study**

#### **1.5.1. Delimitations of the study**

To make the study specific and manageable, the researcher delimited the area of the study to Nekemte College of Teacher Education with special reference to third year physical education department students and non-physical education department students in implementing five selective physical fitness test to identify student physical fitness level. Profiling physiological and physical fitness characteristics of the two groups is a very important and imperative part of this research within particular physical fitness activities.

### 1.5.2. Limitation of the Study

There were a few limitations to the study that need to be considered.

- Lack of motivation of the participants in performing the physical fitness tests, which might affect the results of the study.
- The low performance of the subjects due to their physical lifestyle and physical activity level.
- The performance effect of the subjects due to their difference in physical characteristics.
- Lack of recently published reference materials related to the topic.

### 1.7. Organization of the Study

This study is organized under five chapters. The first chapter highlights the paper and why the study was conducted. Chapter two reviews related literature to distinguish previously discovered areas to cover the ground for what is to be obtained in this study. Chapter three deals with the design and research methodology, instruments of data collection, sampling techniques, procedure of data analysis and interpretation. Chapter four analyzes data of different sources to see the achievement of the objectives of the study. The final chapter is to summarize, conclude, and forward suggestion and possible recommendations based on what is obtained in chapter four.

## II. REVIEW OF RELATED LITERATURE

The recent statue of physical fitness is an out comes of several literatures available on physical fitness variables: strength, speed, endurance, flexibility and agility. This study includes the literature related to construct and standardized physical fitness listed, yet, relevant literature though peripheral to physical fitness believed to be relevant and that is actual to dealing the study was incorporated.

### 2.1. Why fitness test?

Schools and colleges have the potential to improve the health of young people by providing instruction in physical education that promotes enjoyable lifelong physical activity of the learners. Diseases and health problem resulting from an inactive lifestyle have their origins early in life. This is when an active life style should be established. Fitness begins at birth and should continue throughout a person's life. Fitness improves general health and it is essential for full and vigorous living. The physically fit child feels more alert and eager to do things. A weak child is a weak brick in the wall of the nation. The wealth of a nation depends entirely upon the health of every citizen of the country (Carbin, C.B.; Lindesy, R. and Welk, G. 2000).

According to American College of Sports Medicine, (1998) performance in any sporting event is the result of a

multitude of factors, which include the amount of training performed, the body's adaptation to the training, motivation level, nutritional status and weather conditions to name a few. As you can see, physiological parameters only account for a portion of any performance, and so the role of any exercise physiologist is also similarly limited. Through fitness testing, the factors involving physiological processes, over which there is some control, can be measured and ultimately improved upon.

The complex nature of physical fitness can be best understood in terms of its components such as cardiovascular endurance, strength, flexibility, speed and muscular endurance. In addition to these components of physical fitness there are many other factor which contribute to physical fitness including heredity, living standard, nutrition, hygienic conditions, environmental and climate factors etc. (Sallis JF, McKenzie TL, 1992).

Competition is the ultimate test of performance capability and is therefore, the best indication of training success. However, when trying to maximize performance, it is important to determine the trainees' ability in individual aspects of performance. Fitness testing attempts to measure individual components of performance, with the ultimate aim of studying and maximizing the trainees 'ability in each component (Chandel AS, 1993).

## 2.2. Selective Variable of physical fitness

### 2.2.1. Flexibility

It is interesting to know that there is no ideal standard for flexibility. There is little scientific evidence to show that a person who can reach 2 inches past his or her toes on a sit-and-reach test is less fit than the person who is able to reach 6 inches past his or her toe. Too much flexibility as well as too little flexibility could be detrimental (Corbin et al., 2003). To develop flexibility, it is recommended that muscles are stretched past normal length until resistance is felt. For duration, the stretch should be held from 5 to 10 seconds initially, building to 30 to 45 seconds (Wuest et al., 1994).

Several sit-and-reach tests (SRs) are commonly used in health-related and physical fitness test batteries to evaluate the hamstring and lower back flexibility (Jackson, A.W. & Langford, N.J., 1989; Hoeger et al, 1990; Hui and Yuen, 2000). Such field measures are only moderate indicators of hamstring extensibility. However, the SRs are frequently used to evaluate the hamstring muscle extensibility because the procedures are simple, easy to administer, require minimal skills training and are particularly useful in large scale extensibility evaluation in the field setting (Hui and Yuen, 2000)

For its effective application, the participants sat on the floor, with their shoes off, their legs straight, and feet against the flex meter foot stop. Before the test the researcher asked the participant: do you have a back injury or is there any other reason you should not try to touch your toes? If the participant's answer was positive, the flexibility test was started. When participant reached forward and touched the stretch foot for 3 seconds, the best measurement of the three was recorded in centimeters (Morteza Jourkesh, et al, 2011).

According to Australian College of Sport & Fitness, (ACSF, 2013) measuring the distance from their toes to their fingertips, and record. If their fingers are passed their toes, the

results are positive, if the fingers are behind the toes, the results are negatively determining the ability the participants measuring in centimeters by means of the chart indicated below.

**Table 1: Standardized Rating Scale of Flexibility**

Rating	Sex	
	Female	Male
Very Poor	< -15	< -20
Poor	-15 to -8	-20 to -9
Fair	-7 to 0	-8 to -1
Average	+1 to +10	0 to +5
Good	+11 to +20	+6 to +16
Excellent	+21 to +30	+17 to +27
Super	> +30	> +27

Source: Australian college of Sport & fitness 2013

**2.2.2. Agility Test**

Agility was assessed using 10 meter agility shuttle test. Mark two lines 10 meters apart using marking tape or cones. The two blocks was placed on the line opposite the line they was going to start at. On the signal "ready", the participant places their front foot behind the starting line. On the signal, "go" the participant sprints to the opposite line, picks up a block of wood, runs back and places it on or beyond the starting line. Then turning without a rest, they run back to retrieve the second block and carry it back across the finish line. Two trials are recorded (Morteza Jourkesh, .et al, 2011).

According to Getchell, (1979) the Illinois Agility test is a commonly used test of agility in sports. It measures the ability to change position and direction. The length of the course is 10 meters and the width (distance between the start and finish points) is 5 meters. Four cones are used to mark the start, finish and the two turning points. Another four cones are placed down the center an equal distance apart. Each cone in the center is spaced 3.3 meters apart. Subjects should lie on their front (head to the start line) and hands by their shoulders. On the "go" command the stopwatch is started, and the athlete gets up as quickly as possible and runs around the course in the direction indicated, without knocking the cones over, to the finish line, at which the timing is stopped.

**Table 2: Standardized Rating Scale of Agility**

Sex	Rating				
	Exc.	Good	Average	Fair	Poor
Male	<15.2	16.1-15.2	18.1-16.2	18.3-18.2	>18.3
Female	<17.0	17.9-17.0	21.7-18.0	23.0-21.8	>23.0

Sources, Getchell, 1979

**2.2.3. Cooper Test**

Cardiovascular fitness was assessed using 12 minute run test. Place markers at set intervals around the track to aid in measuring the completed distance. Participants were run for 12 minutes, and the total distance covered is recorded. Walking was

allowed, though the participants must be encouraged to push themselves as hard as they can (Cooper, KH.Jama, 1968).

**Table 3: Standardized Cooper test for Male**

Age	V. good	Good	Average	B/average	Poor
13-14	>270 0 m	2400-2700 m	2200-2399 m	2100-2199 m	<2100 m
15-16	>280 0 m	2500-2800 m	2300-2499 m	2200-2299 m	<2200 m
17-19	>300 0 m	2700-3000 m	2500-2699 m	2300-2299 m	<2300 m
20-29	>280 0 m	2400-2800 m	2200-2399 m	2300-2499 m	<1600 m
30-39	>270 0 m	2300-2700 m	1900-2299 m	1600-2199 m	<1500 m
40-40	>250 0 m	2100-2500 m	1700-2099 m	1500-1999 m	<1400 m
>50	>240 0 m	2000-2400 m	1600-1999 m	1300-1599 m	<1300 m

Source: <http://www.laxymca.org> and the cooper institute for aerobics revised on 2002

In addition to this, the cooper 12-minutes running test is designed by Kenneth H. Cooper born in 1931 and he was created in 1968 for military use and the aim is to run as long as you can in 12 minutes with steady pace. The result is based on the distance, age and sex. The result of the test measures maximal oxygen intake, when it is done correctly, which means good motivation and maximal performance. Cooper test result correlates well (r=0.3) with VO2max numbers (Martin, D & Coe, P.N. 1997).

**2.2.4. Strength**

Reinier Van Der Ryst, (2005) defined strength as the maximum ability to apply or resist force. Measuring upper body strength and endurance, participants lower the body to a 90 degree elbow angle and push up. Set to a specified pace. Participants were complete as many repetitions as possible. Students begin performing push-ups according to the rhythm. The correct push-up were performed to a pace of one complete push-up every three seconds 1.5 seconds down and 1.5 seconds up, with no hesitation. The number of correctly performed push up with a given time was scored (Franks, B.D. 1989).

**2.2.5. Speed**

Speed is the ability to perform a movement quickly. It is the time takes us to respond to a stimulus. Confirming to, Sanjay Akumar. S, (2014) states that speed is basically how fast the participants can move partial their body or the whole of their

body, and is measured in meters per second. Therefore, speed is the rate of movement and often refers to the ability to move rapidly and it is an important factor in all explosive sports and activities that require sudden changes in space (Baechle, T.R. (1994).

To measure the speed capacity of the student through the distances of 50 meter run two stop watches, two instructors with score card and pen should be needed. This test was administered by two subjects at a time both subjects took position behind the starting line. The starter used the commands ready "go" each runner was assigned to a separate time keeper. The time keeper recorded time at the finishing line. The scores were recorded time taken by the subjects to across finishing line from the starting line time was recorded nearest to the one 10th of a second( Sanjay Akumar., S, 2014).

### III. RESEARCH DESIGN AND METHODOLOGY

Comparative study was set to address the current status of physical fitness level between physical education students' and non-physical education students in Nekemte College of Teacher Education. This study employed quantitative methods of research to gather information through compression of students' active participation in selective physical fitness activities. To this effect, the methodology of the research involves sources of data, sample of population and sampling techniques, instruments, procedures of data collection and method of data analysis as stated below.

#### 3.1. Research Method

Of the many benefits of fitness testing, the major use is to establish the strengths and weaknesses of the students. This was done by comparing test results between students of two groups involving in the same activities. The results of the groups were investigated as normative through comparing results to successful competitors in sport in which the areas of students' physical fitness level need improvement and the test program can be modified accordingly. Such valuable test time can be used more efficiently. However, some students perform well in their sport despite their physical or physiological attributes, and it may not be advantageous to be like them for others (American Alliance for Health, Physical Education, Recreation, and Dance, 2002)

Likewise, the preliminary testing session can give the students an idea of where their fitness levels are at the start of a program, so that future testing can be compared to this and any changes can be noted. A baseline is especially important if it is about to embark on a new test phase. Subsequent tests are expected to plan for the end and start of each new phase. At the time, by repeating tests at regular intervals, an idea of the effectiveness of the test program implementation can be obtained. The time frame between tests can depend on the availability of time or costs involved, or the phase of the test. Depending on these factors, the period between tests may range from 20-30 second to see a demonstrable change in any aspect of fitness. To obtain reliable and valid information, the researcher employed standard set of tests that are performed for the fitness testing of selective physical fitness activities (Chandel AS, (1993). However, if the researchers have an access to come across the entire of the test at list, the researcher can desire to

modify a procedure to suit individual needs to determine the capability of the learners in any component of physical fitness.

#### 3.2. Population and Sampling Techniques

The desired populations of the study were third year physical education department and non- physical education department students in 2016/2017 academic year. Therefore, out of total population of third year physical education department student, all male student taken as a participants of the study using comprehensivesampling whereas, for non-physical education department student's random sampling techniques was applied to recruit them. The population consisted of only male students from different circumstances from October 2016 to February, 2017. The total populations of the study were 42 students comprising of 21 males from physical education department and 21 male students from non- physical education department students. The exclusion criteria were histories of their health and orthopedic problems, such as episodes of hamstrings injuries, fractures, surgery or pain in the spine or hamstring muscles over the past three months. Since Physical fitness testing was part of mandatory curricula for all physical activity classes, informed consent forms were not collected. For persuasion, the protocol was approved by clinic employees and the research committee of Nekemte College of Teachers Education.

#### 3.3. Instruments of Data Collection

There are probably hundreds of standard fitness tests used and hundreds of variations of these. They can range from elaborate and expensive laboratory tests to simple and inexpensive field tests. Each test also has many advantages and disadvantages that can ultimately determine which is the most appropriate test to perform. Furthermore, physical fitness measurement tools have been utilized in three different arenas: the laboratory setting, epidemiological studies and individual assessment. Tests in these areas measure the components of physical fitness separately with different mechanisms or machines (Caspersen et al. 1985).

In the well-lit of this, individual assessment tests can realistically be used in the primary care setting to measure the attributes of physical fitness. The YMCA, fitness and Amateur Sport in Canada, and the American association of health, physical education, recreation and dance have developed physical fitness testing batteries that are reliable, valid, and have national norms. These batteries measure the components of physical fitness: body composition, aerobic capacity, muscular strength, endurance, flexibility and balance (Nieman, 1990).

Based on the nature of the study, different data collecting instruments were used to conduct the research. For this study, standardization test of physical fitness was involved in view of research criteria of availability, reliability and validity to confirm the consistency of data. To test physical fitness in this study 50 meter sprint run, zigzag run test (Ilino), bend & reach test and coopers/ 12 minutes run/walk test were used. The selected components were speed, strength, endurance, agility and flexibility that were measured by different means and methods: speed by sprint run, agility is measured by zigzag run test; strength is measured by push up; flexibility is measured by bend and reach test and endurance is measure by cooper (12minutes run/ Harward step test(Manmeet Gill, Nishan Singh Deol and

Ramanjit Kaur, 2010). The tests were without teacher interventions in selective physical fitness test in order to identify the condition encountering the overall physical fitness or performances level of the two subjects in Nekemte College of Teachers Education.

**3.4. Statistical Analysis of the Study**

To determine the significant differences of physical fitness level between the two subjects, the data were analyzed and compared by the help of Statistical Package for the Social Sciences (SPSS; version 20.01). In the procedure, arithmetic mean, standard deviation and independent “t” test were used to compare the data. As a result, “t” values anticipated to be valid either less than or greater than 0.05 on two-sided tests were considered statistically significant.

**3.5. Test Administration**

The first step in designing a fitness testing regime is to identify the components of fitness that the researcher wishes to investigate. These may depend on the phase of test or the phase of the season in which the testing is being complete. Each activity requires certain attributes and relies on certain factors more than others for successful performance. For example, the researcher was not necessarily wanted to test a marathon runner on sprinting speed and explosive strength for power. Accordingly, fitness testing time can be better spent on doing more relevant tests. And over, one method of categorizing the different components of fitness are as presented on the list of tests though this categorization is somewhat arbitrary. Testing battery may include a few similar tests from one fitness component and none from others depending on what the researcher is aiming to testing.

As a product of this, the researchers of the study arrange the participants of the study in to two groups to ensure the testing session run smoothly. Meanwhile, since the testing was with large group, the researcher set up testing stations with different testers at each station or with one tester following the same group around the stations.

**IV. PROCEDURE OF DATA ANALYSIS AND INTERPRETATION**

This chapter deals with the procedure of data analysis and interpretation that were obtained through mean values of components of physical fitness among physical education department students and non-physical education department students. The data were analyzed using mean and standard deviation as well as independent “t” test for better understanding of the results comparing with p-values.

**4.1. Introduction**

The researcher decided to conduct physical fitness test by the use of AAHPER, (1965) physical fitness test comprising 5 variables of physical fitness. Mean and standard deviation of the selected dimensions of physical education students and non-physical education students were computed and their results were depicted in the following tables corresponding with the number of the participants at significant level of 0.05.

The anthropometric assessment comprised measures of body weight, height, WC and tricipital and subscapular skin folds were applied in accordance with World Health Organization guidelines(1995).Anthropometric measurements were used to compare the body composition of the participant across two groups. With the context, though the RHR is influenced by several constitutional and environmental factors; the most important determinants are parasympathetic and sympathetic influences. Thus, quantifying RHR can give an index of the load imposed on the heart and the state of imbalance between sympathetic and parasympathetic activity (Rabbia F, Grosso T, Cat GG, Conterno A, De Vito B, Mulat-ero P, et al.2002)

**Table 4: Anthropometric parameters of the participants**

A.M. P	De pt.	N	M	SD	SE M	t-v	p-v
Age	PE	21	21.0	.97	.212	-.15	.7
		21	21.0	1.0	.227		
		9	4				
Heigh t	PE	21	1.72	.05	.011	.15	.1
		21	1.68	.09	.020		
		9					
Weig ht	PE	21	56.0	4.8	1.06	.84	.7
		21	57.4	5.6	1.23		
		7	7	9			
BMI	PE	21	18.9	1.2	.281	.21	.1
		21	20.0	2.0	.447		
		4	5				
Pulse rate	PE	21	71.4	12.	2.67	.80	.9
		21	74.4	11.	2.52		
		7	2	4			
	NP	21	74.4	11.	2.52		
2		0	8				

\*\*“t” values conclude, p-values < 0.05.

As shown in table 4, the existence of statistically significant differences between student anthropometric parameters in terms of department recorded as, age (M=21.04, SD =.973, and M =21.09, SD =1.04), height (M =1.72m, SD=.05, M=1.68m, SD =.09),weight (M = 56.09kg,SD = 4.89, M =57.47kg,SD =5.67), BMI (M =18.9%,SD =1.28 and M=20.04%, SD =2.05 and Pulse rate (M=71.47 b.p.m, SD=12.25 and M=74.42 b.p.m and SD=11.58b.p.m) respectively. The calculated independent “t”-test was to determine mean and standard deviation of anthropometric parameters of the participants of the study. The intended independent “t”-test estimated (t=-.153-.844) and statistical significant of p-values is ranged as P=.155-.902.Hence, the calculated data using independent t- test revealed that there were no significant differences of anthropometric parameters between the two groups ( “t” values is greater than p-values at significant level 0.05 or comparatively the same ).

**Table 5: Mean and standard deviation of physical qualities of the participants**

Variables	Unity	P.E. department		Non-P.E. dept.	
		Mean	SD	Mean	SD
Speed	Second	12.016	.34	12.017	.70
Strength	M/m No of push-ups	12.047	7.63	12.000	4.28
Endurance	Distance covered in meter	1561.52	609.13	1555.58	501.02
Agility	Second	20.437	1.96	20.43	1.82
Flexibility	Centimeter	2.90	5.19	2.85	2.95

\*Values are expressed in terms of Mean+ SD.

Table 5 deals with the five variables of physical fitness which were selected for the present study and their criteria were measured. The information gathered with respect to Anthropometric parameters of the participants, depicts that the mean and standard deviation values of physical fitness of physical and non-physical education department students standards were recorded as: speed(M=12.016,SD=.34,and M=12.017,SD=.70),strength (M=12.047,SD =7.63, and M=12.00, SD=4.28), endurance (M=,1561.52,SD=609.13and M=1555.58,SD=501.02), agility (M=20.437,SD=1.96 and M=20.43,SD=1.82), and flexibility (M= 2.90 ,SD 5.19, and M=2.85 ,SD=2.95) on the contrary.

**Table 6. Comparative analysis of physical fitness**

Variables	Dept	N	Mean	S.D	SE	"t" - v	P-v
Speed	PE	2	12.0	.34	.07	-	.00
		1	16			0.00	0
	N	2	12.0	.70	.15	3	
		1	17				
Strength	PE	2	12.0	7.63	1.66	0.02	.02
		1	47			5	2
	N	2	12.0	4.28	.93		
		1	00				
Endurance	PE	2	1561	609.	132.	0.03	.37
		1	.5	13	9	3	0
	N	2	1555	501.	109.		
		1	.8	02	3		
Agility	PE	2	20.4	1.96	.42	0.00	.33
		1	37			4	8
	N	2	20.4	1.82	.39		
		1	34				
Flexibility	PE	2	2.90	5.19	1.13	0.03	.00
		1				7	7
	N	2	2.85	2.95	.64		
		1					

\*"t" values determines, P-values >, < or = 0.000-.338 at significant level of 0.05

Table 6 describes that, the comparative analysis of mean, standard deviation and t-test results between the two group revealed that non-physical education department students performed speed test slightly greater than when compared with that of physical education students (M=12.017, SD =0.7andM=12.016,SD =.34)correspondingly. Therefore, the result computed through independent "t" test shows that "t" is equal to -.003.Thas a result"t" values is less than P-values at significant level of 0.05.

The same table displays the number of subjects, mean value of strength, standard deviation, and standard error for the test variable(s) within categories defined by the grouping variable,physical education department students were performing strength slightly/countless than that of non-physical education department students (M=12.047, SD=7.63,and M=12.000, SD=4.28) respectively, "t" equal to 0.025. Hence,"t" values is less than alpha at significance level of 0.05.

The comparative analysis of physical fitness of flexibility test between the two groups, the mean, standard deviation and "t" values of the two variables were recorded as (M=2.90,SD=5.19 and M= 2.85,SD =2.95) standard respectively. Therefore," t" values (0.007) is less than p-value at significant level 0.05 as replete in the above description table 6.

#### 4.2. Discussion and results of the study

To compare the selected physical fitness variables among male physical education students and non-physical education students of Nekemte College of Teacher Education, the researcher selected physical components of speed, strength, endurance, agility and flexibility. The obtained results presentation carried out in table 6 proved that there existed significant differences between the two groups studying in the college. In doing so, physical education students have slightly scored better in endurance and on contrary agility performed by non-physical education students. The mean and standard deviation differences were found to be no significant in favor of the two department students; the obtained "t" value was greater than the required "t" value of Non-physical education department students, with respect to "P" values is greater than alpha at significant level of 0.05.

When analyzing strength, flexibility and speed, the results confirmed that there were significant differences observed between the two groups as the obtained mean value was a little less than the required mean value. Confident interval calculated and presented proved that physical education students were all most similar with non-physical education students in performing the three test variables correspondingly. Furthermore, the confidence interval for the mean difference contains result greater within its range. This also indicates that the difference is significant.

In the frequency of comparison studies held between physical and non-physical education student, physical education students have performed endurance slightly better than non-physical education students and agility was on contrary for physical education students. This condition might be revealed due to physical education department students involved themselves more actively in sports and physical education programs in advance of one half years compared to non-physical education students. The evidence is that there were no significant

differences existed between the two groups in performing endurance and agility. The significant result was observed amongst the two subjects in performing strength, speed and flexibility test that were exposed by means of computing independent “t” test. Either or significant differences might occur due to the contribution of physical fitness factors including heredity, living standard, nutrition, hygienic conditions, environmental and climate factors etc. (Sallis JF, Patrick K, 1994).

## V. CONCLUSION & RECOMMENDATIONS

### 5.1 Conclusion

Many research studies have been done on the usefulness of physical fitness. It was proved that fitness has a significant and healthy impact on the life style of individuals. The findings of the studies revealed statistically significant differences or not in the respect of all selected physical education and non-physical education department students. On the basis of the results obtained from the present practical investigation within limitations, the following conclusions were listed.

The results of the “P” value confirm that physical education male students were comparatively slightly better than non-physical education male students in performed endurance and on the opposite to the agility tests. Based on the results of independent t-test and the computed p-values, there were significant differences obtained on sit and reach test, agility and 50 meter dash when the tests carry out for three times within 21 days period. To these effects, anybody can simply conclude that physical fitness test performed by physical education department male students for one half year of their regular classes was not bringing changes on their physical fitness level compared with non-physical education students by means of the standardized test categories designated in table 1, 2, and 3.

### 5.2 Recommendations

The concept of physical fitness is the capacity to do prolong hard work and recover to same state of health in short duration of time (American Health Fitness Foundation, 1986). This is the result of the degree of strength, speed, endurance, agility and flexibility one possesses. These elements of physical fitness are useful for different games and sports depending on several factors such as heredity, hygienic living nutrition and body manners of an individual (Bouchard, C., and L. Pe’Russe, 1994).

The recommendations address a broad range of evidence to underscore concern that college students are still not active enough and physical inactivity remains student pressing health issue. Physical fitness incentives tend to discourage activity by reducing the energy needed for activities of daily living that economics pays more for sedentary than those actively participating in physical exercises.

Therefore, results found in this current study have yielded the following some crucial recommendations to improve physical fitness of college students.

1. An intervention program is recommended for physical education and non-physical education students focusing on re-skilling teachers on how to set-up a student physical fitness program.

2. In addition to scientific updates, the teachers should plan considered issues and advances in understanding the roles and strategies of physical fitness for health and sustainable life prior to current physical activity guidelines directed at school age level.

3. Oromia Educational Bureau should have a detente in collaboration with Ministry of Education and should consider the non-physical education students equality in the implementation of physical education, physical fitness and sport activities as common course having considerable grade so as to produce productive citizen.

4. Furthermore, it is recommended that the Oromia educational bureau should design supplemental physical education curricular activities which have significant effects on students’ physical fitness more coordinated with skill and health related physical fitness exercises at college level.

5. College leaders and teachers should adapt test items to their college, weighing such variables as available equipment, physical space, and availability of test administrators, as well as factors related to cost and students’ privacy in which it might be more feasible and manageable to conduct physical fitness.

6. Researchers should conduct similar studies to ensure that the intervention exercises are both specific and sufficient to improve fitness, and they should design studies that allow for analyzing the effect of complicating factors, such as nutrition, demographic variables, and maturity status of the learner.

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