THE IMPACT OF PHYSICAL FITNESS TRAINING ON HEALTH RELATED FITNESS TRAINEES: THE CASE OF ASSOSA TOWN FITNESS CENTERS

BY:

ALEMAYEHU AYALEW WUBALE

A THESIS SUBMITED TO THE SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MSC IN SPORT SCINCE

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ACRONYMS

AAALF- American Association for Active Lifestyles and Fitness

AAPHERD- American Association for Physical Education, Recreation and Dance

ACE- American Council on Exercise

ACSM- American College of Sport Medicine

ADA- American Diabetes Association

AFB- Association for Fitness in Business

AHA- American Health Association

AIDS- Acquired-Immuno Deficiency Syndrome

AMA- American Medical Association

BGR- Benishangul Gumuz Region

BMI- Body Mass Index

CDC- Centers for Diseases Control and prevention

CPHA- Canadian Public Health Association

CPR- Cardio Pulmonary Resuscitation

CRF- Cardio Respiratory Fitness

EHR- Exercise Heart Rate

FITT- Frequency, Intensity, Time, and Type

FM- Frequency Modulation

GYM- Gymnasium

HES- Health Enhancement Systems

HIV- Human Immuno-deficiency Virus

IDEA- International Dance-Exercise Association

MDGs- Millennium Development Goals

MHR- Maximum Heart Rate

MS- Muscular Strength

NCDs- Non- Communicable Diseases

ND- No Date

NGOs- Non Governmental Organizations

NHC- National Health Committee

NSCA- National Strength and Conditioning Association

PARQ- Physical Activity Readiness Questionnaires

PCPFS- President's Council for Physical Fitness and Sports

RHR- Resting Heart Rate

STDs- Sexually Transmitted Diseases

UNDESA- United Nations Department for Economic and Social Affaires

USA- United States of America

USDHHS- United States Department of Health and Human Services

WEF- World Economic Forum

WHO- World Health Organization

YMCA- Young Men's Christian Association

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ABSTRACT

This study was aimed at investigating the impact of physical fitness training on health related fitness trainees: The case of Assosa town fitness centers. In order to achieve this purpose, some basic questions were raised regarding the general conditions of the fitness centers, instructors' qualification, gym facility and the fitness program as a whole, as well as fitness tests for the trainees and interview for gym instructors and experts. The study would be used quantitative, qualitative and experimental research methods, and simple random and purposive sampling techniques for selecting those who took part in the study. In this study there were eighty five total populations of gym trainees from the four known fitness centers in Assosa town and the subjects of the study were totally sixty in number: fifty trainees, eight trainers, and two experts of the region sport commission were participated. Questionnaires, fitness tests, interviews, and observations were used as tools of data gathering instruments. Accordingly, the overall study revealed that there were significant changes on the health related fitness exercise results of the trainees. The study concluded that when regular physical activity is combined with proper nutrition and following correct principles of physical training it can help to reduce body fat by building muscle mass and control body weight by preventing obesity, a major risk factor for many diseases (Head Quarters Department of the US Army, 1998). Thus the recommendations for addressing the issue includes higher institutes should produce qualified professionals for the area; gyms should consider some important materials and facilities like changing rooms, fully stocked first aid kit, fire extinguisher, forms which trainees fill in, medical cheek up of trainees and gyms should also follow a correct principles of physical fitness training, and finally mass media fitness programs should be a coordinated and cooperative work with governmental and non-governmental organizations to achieve the desired objectives,

KEY WORDS*:* - Physical fitness, Health, Fitness center, Physical activity, and Fitness test.

CHAPTER ONE

INTRODUCTION

1.1. Background of the study

The study is aimed at investigating the impact of physical fitness training on health related fitness trainees. As the world begins a new millennium, man's quest for physical fitness throughout prehistoric time for survival needs such as hunting and gathering, has turned in to a means of health enhancement, maintenance, and rehabilitation in addition to its effects in conditioning for competitive sports. The health and fitness industry has come a long way all around the world, with ongoing advances in a quest for longevity of the healthy life styles in a triangle of "mind-sprit-body" (Goldding et al.., 1989).

Carbine et al.., (2002) suggested that the relationship between a healthy life and regular exercise is undeniable. Let as consider the fact that, for example; that exercisers have an all cause mortality rate that is less than one-third that of non-exercisers. Moreover, some forms of regular physical activity, even if it is very mild form of activity, of low and moderate amounts of physical activity, can also have beneficial health results.

Many research works including Wuest, (1999); Orban and Ashton, (1984); Hadfield, (2000); Dick, (1997); Diamond, (2001) and Carbin, et al.., (2002), have shown that numerous health benefits have been ascribed to physical exercise. These are:- Regular physical activity can lower the risk of disability and death from heart disease, helps to strengthen the cardio-vascular system, maintain normal blood pressure, and decrease blood cholesterol, increase toleration of stress and maintain weight, it increases the energy level of the individual for work and play, leads to improved sleep, and strengthens the body, better enabling it to cope up with illness or accidents, increases the ability to withstand fatigue, improves concentration and alertness, improves posture and enhances body appearance, improves individual's mental health, reduce anxiety, help to alleviate depression, increases feeling of accomplishment work, increases productivity and decreases health cost etc.

According to US Department of Health and Human Services, (2001), in USA, in the healthy people 2010 national health objectives, physical activity is listed as a leading health indicator.

Goals have been developed to improve levels of physical activity among adults, adolescents, and children to reduce sedentary behavior among adolescents. This report and other related publications provide guidance from the task force on community preventive services to personnel in state and local health departments, education agencies, universities, community coalitions, organizations that fund public health programs, health care systems, and others who have interest in or responsibility for increasing physical activity.

Physical exercise program should be initiated at different levels, areas, age levels, social groups. However, even though we realize that physical fitness program has no or little cost, except few, in contrary way, we developing countries, are behind to those of the developed ones. Actually, our diversified and serious problems should put a head of them, but we couldn't. This may be because of cultural influence and lack of understanding up on the practice. This also shows that, as there is clear gap between the society and this practice in our country. For developing countries like Ethiopia, it should be considered as a crucial and burning issue because of the following reasons:-

1. Developing countries have so many health problems and they could not able to resist them by funding or budgeting money, since they are poor. Thus, by facilitating and supporting fitness program at any level from small center to nationwide, these countries will minimize and save more money which they could spend for the health care of their nations. In other words, investing in physical activity program of a nation is absolutely cost effect.

2. Secondly fitness decreases their high mortality rate, and finally, these countries can produce productive citizens those who can successfully achieve in any national development activities or unlocks the development of the country. In other words, human resourcefulness can be also developed in such a way that countries could increase the working capacity of their people.

In general, although health varies greatly with income, gender, age, and family origin, according to (World Health Organization, 2003a), it was the birth right of any body, which reflects ''Health for all strategy of the organization (Carbine, et al.., 2002). To achieve this strategy WHO has given more emphasis to physical fitness. This indicates that the realization of the health benefit of physical exercise when instructed by qualified personnel with the help of appropriate facilities and equipments which will make the program easy, attractive and effective. Moreover, there

should be a balance among the staff members, number of participants, the amount of contents, facilities and equipments, as well as, if it is fitness center, the capacity of center, in order to achieve the target of good health of citizens a nation. According to BGR sport commission report there were six fitness centers or gyms in Assosa town. But those which fulfill the minimum requirement of the commission criteria and registered were only four. From these numbers of gyms, according to the commission, two of them were listed under top level gyms and the rest four listed under low level gyms. That is why this study mainly focused on the impact of physical fitness training on health related fitness trainees: The case of Assosa town fitness centers.

1.2. Statement of the problem

According to Ayal, (2002), Health is of interest to economists, first because it is an important element of well-being, and second because it is a component of human capital, and as such is of major importance for growth and development. In poor countries, where physical jobs tend to be more abundant, health may be more important than education in determining labor productivity.

A physically active population is a healthier population, improving the productivity of the work force and increasing economic output. Sport and physical activity also provide one of the most cost effective forms of preventive medicine, with the potential to cut health-care costs dramatically. Even though involving in some forms of exercise, no matter how little or how much, is fine, it will be better if it is carried out in a correct manner. Physical activity is an essential component of any strategy that aims to seriously address the problems of sedentary living and obesity among children and adults UN, (2003) and WHO, (2003a).

According to WHO, (2006a) active living contributes to individual physical and mental health but also to social cohesion and community well-being opportunities for being physically active is not limited to sports and organized recreation. They exist everywhere, where people live and work, in neighborhoods and in educational and health establishments.

In general, here again, these and other literatures interpret that physical activity could be observed in broad sense. It is a collective effort of the involvement of so many agents for its achievement. Health professionals, educators, sport and physical education leaders, local,

national, international, and NGOs leaders, community at large, etc should work together for the achievement of health, social, and economic benefits of physical activity (Ibid).

Carbin, et al.., (2000) explained that Physical fitness is a multidimensional state of well-being, which consists of health-related physical fitness component, that are associated with good health, and skill-related physical fitness components, which are more associated with performance than good health. Although the development of physical fitness is the result of many things, optimal physical fitness is not possible without regular physical activity.

Today, most people are aware that regular physical exercise can positively affect many aspects of our physical, mental, emotional and social well-being. The undeniable fact here is that, no matter what your age is, no matter what your current level of fitness and health is; you will benefit from regular physical activity or exercise. In order to achieve the health, social, economic, and other benefits of physical activity quality training is very important (Ibid).

Nowadays, so many fitness centers have been functional in our country but many of us including those who are involved in the program may not know how many of them fulfill the basic requirements with respect to the staff members, facilities and equipments, subject matter and method of training in order to give proper training. Especially, in Assosa town most of the fitness centers were not follows the appropriate principles of health related physical fitness training, absence of well trained trainers and lack of sufficient materials were common. These conditions affect the trainee's fitness. That is why, this study mainly focused on the impact of physical fitness training on health related fitness trainees based on physical fitness training principles.

1.3. Research Questions of the Study

The study mainly focused on the impact of physical fitness training on health related fitness trainees based on physical fitness training principles. Therefore, this study were tried to answer the following basic research questions:-

1. Are trainers of the fitness centers professionally fit to run the fitness program?
2. How the assessment and evaluation techniques of the training program conducted by the trainers of the fitness centers?

3. Do trainers of the fitness centers follow the correct principles of physical fitness training?

4. Are training facilities and equipments appropriate with respect to the level of the trainees?

5. Are the trainees checked their health condition before entering the gym centers?

6. Why do the trainees need physical fitness training?

1.4. Objectives of the study

1.4.1. General objective

- The general objective of the study is to investigate the impact of physical fitness training on health related fitness trainees.

1.4.2. Specific objectives

Specially, the study mainly focused on the following major specific issues:-

- To identify the qualification of trainers of the fitness centers.
- To find out the current fitness levels of the trainees in the fitness centers and to assess whether their objectives are met or not.
- To investigate the principles and practices of the fitness programs in some selected fitness centers of Assosa town.
- To assess the quality of equipments and facilities of the fitness centers in relation with the level of participants, and the content of a specific program for activities.
- To examine the health condition of the trainees.
- To assess the contribution of physical fitness training on health.

1.5. Significance of the study

The main benefit of any research is the increase in knowledge, the study which carried out by one researcher may be further studied and would be studied by others many times which is the increase in knowledge upon a specific issue. When we come to this study, it has the following significances:-

- To provide information for those who want to involve on health related physical fitness training program.
- Value the contribution of physical fitness training to the total health of a population.
- It will improve the professional competency of gym trainers.
- To provide the importance of physical fitness training principles on health and well-being for both fitness trainees and trainers.
- It could serve as an important resource for those who want to pursue similar studies.

1.6. Delimitation of the study

The study was delimited to Assosa town by paying particular emphasis to the four known fitness centers, and the researcher hopes that the information or data gathered from this selected fitness centers would help to investigate the impact of physical fitness training on health related fitness trainees.

1.7. Limitation of the study

As a beginner, the researcher would face with some difficulties:-

- Shortage of time
- Load of work in this job
- Financial constraints
- Shortage of reference materials and difficulties of obtaining up dated literatures would affect the research work.

1.8. Definition of terms used in the study

Aerobics exercise:-is any activity that can sustain for more than just a few minutes, while the heart, lungs, and muscles work over time.

Body composition:-Refers to the makeup of the body in terms of lean and fat mass.

Disease:-is a condition in humans, plants, or animals that results in pathological symptoms and is not the direct results of physical injury.

Flexibility:-The ability to move the joints (for example, elbow, knee) or any group of joints through an entire normal range of motion.

Gymnasium:-is a large room equipped for physical exercise or training of various kinds, e.g. in a school or a private club.

Health:-is the general condition of the body or mind, especially in terms of the presence or absence of illness, injuries or impairments.

Muscular endurance:-The ability of a muscle or muscle group to perform repeated movements with a sub-maximal force for extended periods of time.

Muscular strength:-The greatest amount of force a muscle or muscle group can exert in a single effort.

Obese:-is extremely or unhealthy fat or overweight.

Participation:-Refers to the involvement of trainees in a given activity.

Physical activity:-is any bodily movement produced by skeletal muscles that result in energy expenditure.

Physical fitness:-is the ability to carry out daily tasks with vigor and alertness, without undue fatigue and with ample energy to enjoy leisure time pursuits and to meet unforeseen emergencies.

1.9. Organization of the study

This study has consists of five chapters. The first chapter deals with the back ground of the study, statement of the problem, research questions of the study, objectives of the study, significance of the study, delimitation of the study, limitation of the study, definitions of terms used in the study, and the second chapter deals with the review of related literature, and the third chapter deals with the research design and methodology of the study, and the fourth chapter deals with presentation, analysis and discussion of the data, and the last chapter deals with the summary of the findings, conclusion and recommendations of the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURES

2.1. Physical activity for various population groups

According to WHO, (2006a), for most of the development of mankind, physical activity has been an essential part of life for virtually everyone. Physical activity was not a choice but a necessity. In the past few decades, rapid changes in transport, communication, urban planning, architecture and leisure possibilities have made physical activity one choice among many. The UN 1990 convention shows that physical activity and recreation is a human right. The benefits of physical activity appear to extend to all segments of the population. For example, even seniors and those with disabilities and chronic disease conditions benefit from physical activity, which improves their mobility and physical, mental, and social functioning (Butler et al.., 1998 in Transportation Research Board, 2005).

Carter, (2005) explained that an inactive person generates 32% greater direct annual medical costs than an active one. Sport has been shown to reduce the risk of premature death by 37%, reduce incidence of chronic heart disease in middle-aged men by 50%, reduce the chance of developing type II diabetes by between 33-50%, and provide increased protection against 20 chronic diseases or conditions. Physical inactivity is a state of relatively complete physical rest, which does not provide sufficient stimulus for human organs to maintain their normal structures, functions and regulations (WHO, 2006a).

Tripp, Piletic and Babcock, (2003) described that Physical activity provides meaningful movement experiences and health-related fitness for all individuals in order that they may have the opportunity to acquire the motor skills, strategies, and physical stamina necessary for a life time of rich leisure, recreation, and sport experiences to enhance physical fitness and wellness.

2.1.1. Children and young people and physical activity

Kennedy, (2006) stated that Regular physical activity provides young people with substantial physical, mental, and social health benefits. Regular practice of physical activity helps children and young people to build and maintain healthy bones, muscles and joints, helps control body

weight, helps reduce body fat and develop efficient function of the heart and lungs. It facilitates developing the skills of movement and helps prevent and control the feelings of anxiety and depression, engagement in play and sports gives young people opportunities for natural self-expression, self-confidence, and relief of tension, achievement, social interaction and integration as well as for learning the spirit of solidarity and fair play. Physical fitness is not only one of the most important keys to a healthy body; it is the basis of dynamic and creative intellectual activity.

According to UN (2003), physical activity is critical for the holistic development of young people. Physical activity can also boost the immune system and strengthen the psychological well being of people with HIV and AIDS related illness. It has proven benefits to a child's ability to learn, and increases concentration, attendance and overall achievement (May and Phelan, 2005).

According to WHO, (2003a), it is estimated that less than one-third of young people are sufficiently active to benefit their present and future health and well-being. This decline is largely due to increasingly common sedentary ways of life. For example fewer children walk or cycle to school and excessive time is devoted to watching television, playing computer games and other sedentary activities often at the expense of time and opportunities for physical activity and sports.

Shephard, (2001) reported that habitual physical activity begins to decline as early as 6 years of age. Other critical periods when physical activity is likely to diminish include adolescence, the transition from school to university and from university to the labor force. Furthermore, the largest decreases in physical activity over the past decade have been shown by the youngest cohort, those currently aged 16 to 21 years. In all age groups, sport participation has been displaced by media watching, home maintenance, eating and resting.

Cooper, (2005) explained that the centers for Disease Control and prevention reports that the percentage of children ages 6 to 11 who are overweight has increased nearly 300 percent over the past 25 years. The numbers are almost identical for teenagers. In (Cooper, 2005), Klish and Baylor said "children today have a shorter life expectancy than their parents for the first time in

100 years.'' Similarly Narayan said, "One in every three U.S. children born after 2000 will become diabetic unless many more people start eating less and exercising more."

According to Mandigo, (2005), in 2000, 57% of Canadian children and youth aged 5 to 17 years were not sufficiently active to meet international guidelines for optimal growth and development. For adolescents, this number increased from 64% in 2000 to 82% in 2002. Girls in particular appear to be most at risk, in 2000; only 30% of girls and 40% of boys were considered active enough. It has also been found that children who are more physically active showed higher academic performance. Importantly, when patterns of physical activity and healthy life styles are acquired during childhood and adolescence they are more likely to be maintained throughout the life span. Consequently, improving physical activity levels in young people is imperative for the future health of all populations (WHO, 2003a).

2.1.2. Women and physical activity

According to UN, (2003) Sport can be an effective tool for empowering girls and women, given that they are often excluded from participating and enjoying the physical and psychosocial benefits offered by sport. By directly challenging and dispelling misperceptions about women's capabilities, integrated sports programs help to reduce discrimination and widen the role prescribed to women. Social inequality, poverty and inequitable access to resources, including health care, result in a high burden of NCDs among women worldwide. Although women generally tend to live longer with NCDs than men, they are often in poor health. Regular physical activity helps to prevent cardio vascular diseases (heart disease, high blood pressure and stroke) which account for one- third of deaths among women around the world. Cardio vascular diseases cause half of all deaths in women over 50 in developing countries. Regular physical activity, combined with adequate diet has shown to be one of the most effective means of controlling mild to moderate obesity and maintaining an ideal body weight in women. Diabetes affects more than 70 million women in the world. This figure is projected to double by 2025 (WHO, 2003b). Women particularly, post-menopausal, have a higher risk of developing osteoporosis than men. Reducing stress, anxiety, depression and lone lines through regular physical activity is particularly important for women, as rates of depression for women are almost double those of men in both developed and developing countries (Ibid).

According to Brady and Khan (2002) and UN, (2003) female athletes tend to do better academically and have lower school drop-out rates than their non-athletic counter parts. For many girls in developing countries, adolescence is characterized by high risk for early and unwanted sexual activity, forced marriage, and early pregnancy related events (Brady, 1998). In the US, research shows that regular participation in sport correlates to girls being less sexually active, lower rates of teen pregnancy (UN, 2003).

According to WHO, (2003a) Appropriate policy actions and culturally relevant community programs would facilitate the regular involvement of greater number of girls and women in sport and physical activities. However, while women should be encouraged to participate in physical activity, one should not over look the fact that in rural areas and in low income per-urban areas of developing countries, women may be already physically exhausted by other forms of day-long "occupational" physical activities in and outside the home. These women groups may need a better balanced set of support actions such as adequate nutrition. Income generating initiates, advise on physical activities that are most relevant to their specific conditions and possibly adapted leisure pursuits.

2.1.3. Seniors people and physical activity

According to YMCA, (2004) there is strong, systematic evidence of a direct link between regular physical activity and improved health for people of all ages. A 10% increase in adult activity would prevent around 6,000 pre-mature deaths not to mention bringing economic benefits worth at least £ 2 billion a year.

According to UN, (2007) and Shephard, (2001) older people constitute increasingly higher proportions of the total world population. In 2007 people aged 60 and over represented 11% of the world's population and this is projected to rise to 21% by 2050. Most of these older persons will be living in developing countries.

Joseph et al.., (2005) explained that the prevalence of physical inactivity is high and initial health status is poor in this segment of the population. No matter what part of the country you live in or whether it is urban, sub urban or rural, all communities need to provide physical activity opportunities for older adults.

According to Robert Wood Johnson Foundation, (2001) and Dillion, (2006) Scientific evidence increasingly indicates that physical activity can extend years of active independent life, reduce disability, and improve the quality of life for older persons as well. Physical activity is important for healthy aging, improving and maintaining quality of life and independence as people age (WHO, 2003b). More recently, scientists have begun to demonstrate that exercise also may improve cognitive functioning in older adults (Carbin et al.., 2002) and (The Journal on Active Aging, 2004).

According to WHO, (2003b) for adults and aging individuals physical activity has shown to improve balance, strength, coordination, flexibility, endurance, mental health, motor control and cognitive function. Improved flexibility, balance, and muscle tone can help prevent falls- a major cause of disability among older people. Walking or organized exercise sessions, appropriately suited to an individual's fitness level can provide the opportunity for social interaction, for reducing feelings of lone lines and social exclusion. Physical activity improves self-confidence and self-sufficiency, the benefits of physical activity can be enjoyed even if regular practice starts late in life. While being active from an early age can help prevent many diseases, regular movement and activity throughout life can also help relieve the disability and pain associated with common diseases among older people are cardiovascular diseases, arthritis, osteoporosis and hypertension.

Department of Health and Human Service of USA, (2004) suggested that Researchers have found that exercise and physical activity also can improve the health of people who are 90 or older, who are frail, or who have the diseases that seem to accompany aging. Staying physically active and exercising regularly can help prevent or delay some diseases and disabilities as people grow older. In some cases, it can improve health for older people who already have diseases and disabilities, if it's done on a long term, regular basis.

2.1.4. Persons with Disability and Physical Activity

Busciglio, (2005) stated that Physical activity provides meaningful movement experiences and health related fitness for all individuals in order that they may have the opportunity to acquire the motor skills, strategies, and physical stamina necessary for a life time of rich leisure, recreation, and sport experiences to enhance physical fitness and wellness. Each of us is affected by

disability, whether we have a disability ourselves, or a family member or friend with a disability. As we age, the odds increases that disability will enter our lives in some way, either affecting us directly or someone. We know disability is any physical or mental impairment that substantially limits an individual person in one or more of his or her major life activities such as walking, talking, breathing, or working.

Jones et al.., (1998) said that People with disabilities are less likely to engage in physical activity than people without disabilities, yet they have similar needs to promote their health and prevent unnecessary diseases. Students with disabilities can gain very similar benefits from physical activity and the accrued physical fitness as people without disabilities (www.sc-ape.org). It is estimated that 10-15% of the world population, or 600 million people, have a disability (Blavwet, 2005).

According to WHO, (2003a) Persons with disability should be provided with enough opportunities and support to perform sport and physical activities adapted to their physical conditions. The aim is to help persons with disability improve their muscle strength, their psychological well-being and quality of life by increasing the ability to perform daily living activities. This is an equitable approach to their social and economic integration and to their quality of life.

2.2. Recommended Levels of Physical Activity

According to Shephard, (2001), WHO, (2006b), and Ministry of Health of New Zeland, (2003) many countries have implemented programs to increase the physical activity levels of their populations. The main population health message is that adults should undertake at least 30 minutes of moderate intensity physical activity on most, if not, all days of the week. It was first developed in 1995 by the CDC and ACSM and was based on numerous physiological, epidemiological, and clinical studies confirming the health benefits accrued from this duration and intensity level of physical activity (Mahecha and Rodrigues, ND). This activity can be done in smaller sessions of 10 minutes, three times per day. Where possible, people should include some vigorous activity for extra health benefits. The specific health outcomes that are being pursued for particular population groups will determine what type, intensity, frequency, duration and context of activity is most appropriate (Ministry of Health of New Zeland, 2003). An

important but less clearly heard component of the current message is that aerobic activity should be supplemented by at least two days of resistance exercises per week (Shephard, 2001).

In 2000, the U.S Department of Health and Human Services stated that adults can achieve significant health benefits from participating in vigorous intensity activity for at least 20 minutes per day for a minimum of 3 days a week (Butler et al.., 1998 in Transportation Research Board, 2005). The ACSM recommends that most adults without symptoms of coronary heart disease do not need a formal medical examination and exercise testing if moderate –intensity exercise is prescribed. However, for older individuals with heart disease or for individuals who are over 45 years of age with two or more risk factors for cardiovascular disease, most experts recommend a pre-exercise assessment including a complete medical history and physical examination and an exercise stress test in most cases (Joseph et al.., 2005).

According to WHO, (2006b) Current physical activity recommendations for children and young people are; all young people should participate in physical activity of at least moderate intensity for 60 minutes per day. A recent study suggested that physical activity levels in children should be about 30 minutes higher than the current international guidelines of at least 60 minutes per day of physical activity of at least moderate intensity, to prevent clustering of cardiovascular disease risk factors. Canada's physical activity guide makes the slightly more demanding recommendation of 30-60 minutes of "moderate" physical activity, and it calls for strength activities 2-4 days per week, and flexibility exercises 4-7 days per week. Details of both sets of recommendations suggest that if the intensity is greater than moderate, the minimum duration of activity can be shortened, and that if the intensity is less than moderate, the duration of activity bouts must be extended (Shephard, 2001).

2.3. Fitness Centers and Professionals

2.3.1. Fitness Professionals

Advameg Inc.., (2007) explained that throughout most of the history of the fitness center industry, employees were not required to have any formal training. The only exceptions were life guards, who were required by law to be certified. Certification of individual employees began in the mid-1980s, but stringent evaluation and certification of facilities were not undertaken until

1989, when the ACSM began a feasibility study of the proposition. For most fitness workers, certification is critical (U.S. Department of Labor Bureau of Labor Statistics, 2008). Certification is desirable because it means that the holder has proven himself or herself to be competent in basic knowledge, skills and abilities pertaining to the discipline. In the case of fitness certification, presumably the goal is to ensure that the practitioner is able to develop and implement exercise programs that will be both safe and effective for the consuming public (Salge, 2004). Certification tests and programs proliferated in the 1980s from such professional organizations as the American College of Sport Medicines (ACSM), the American Council on Exercise (ACE), the Association for Fitness in Business (AFB), the National Strength and Conditioning Association (NSCA), and IDEA (the association for fitness professionals formerly the International Dance-Exercise Association), (Advameg Inc.., 2007).

Sekendiz, (2005) stated that the health and fitness industry is a dynamic, expanding, and maturing field. The dynamic growth and enthusiastic interest in fitness the last few decades has sparked an expansive evolution of the health and fitness industry. The employment of qualified professionals has significantly improved the credibility of health and fitness delivery systems. Career opportunities in the fitness industry include fitness club owner or manager, fitness director, aerobics director, special programs director, aquatics directors, teachers, exercise physiologists, and personal trainers. An increasing number of employers require fitness workers to have a bachelor's degree in a field related to health or fitness, such as exercise science or physical education. The education and training required depends on the specific type of fitness work; personal training, group fitness, or a specialization such as Pilates or yoga each need different preparation (U.S. Department of Labor Bureau of Labor Statistics, 2008). Fitness directors over see the fitness related aspects of a health club or fitness center. They create and over see programs that meet the needs of the club's members, including new member orientations, fitness assessments, and work out incentive programs. They also select fitness equipment; coordinate personal training and group exercise programs; hire, train, and supervise fitness staff; and carry out administrative duties (Olson, 1997) and (Kravitz and Rockey, http://.www.unm.edu).

According to NSCA, (2001) the strength and conditioning professional should establish written policies and procedures for equipment or facility selection, purchase, installation, set-up,

inspection, maintenance, and repair. Safety audits and periodic inspections of equipment, maintenance, repair and status reports should all be included. They must be trained and certified in current guidelines for cardiopulmonary resuscitation (CPR) and first aid training or certification is also necessary if sports medicine personnel are not immediately available during strength and conditioning activities. Covering all athletically related activities, the strength and conditioning professional should have such legal documents prepared for athletes under his or her care. These records should be preserved and maintained for a period of time determined by professional legal advice and consultation. They should cooperate with a training participants, health care providers at all times, and provide service in the participants best interest according to instructions specified by such providers (NSCA, 2001).

2.3.2. Fitness Centers

Sekendiz, (2005) stated that the health and fitness industry has come a long way all around the world no longer regarded as a luxury but more of a necessity with ongoing advances in a quest for the longevity of the healthy life styles. The first health club concept was non-profit, and developed by the (YMCA in 2004), London, England. At the end of the Industrial Revolution it had emerged as a response to unhealthy social conditions in the big cities. In 1866 the influential New York YMCA adopted a fourfold purpose for the improvement of the spiritual, mental, social and physical condition of young men. Although YMCAs were only run by volunteers in the early days, by 1880s fulltime employees started to work due to the construction of new buildings. Gyms, equipped with wooden dumbbells, heavy medicine balls and long-necked bowling pins, swimming pools, big auditoriums and bowling alleys were built in every YMCA building with hotel like rooms that made a major financial contribution to the “fore runners of today’s aerobic” for the next century (Golding et al.., 1989).

According to Advameg Inc.., (2007) Health clubs emphasize three aspects of physical fitness; cardiovascular conditioning, strength, and flexibility. Full service health clubs featured aerobic conditioning equipment, resistance equipment, dance and exercise classes, swimming pools and spa areas, and sometimes even tanning and massage. Spas were the first establishments of the fitness center industry. They emphasized relaxation with a European flavor, featuring whirl pools, steam rooms, and massage services. The American fitness center industry is generally regarded as being a decade ahead of its European counterpart.

Kravitz and Rockey, (http://.www.unm.edu) stated that Fitness centers exist in colleges, universities, community health agencies, club fitness profit and non-profit, worksites business and industry, medical settings hospitals, clinics and health maintenance organizations, hotels, country clubs, government institutions, and recreational programs. All equipment, including free weights should be cleaned and or disinfected regularly as deemed necessary by staff. Exercise devices, machines, equipment and free weights which are in need of repair, as determined by regular inspection or as reported by users, must be immediately removed from service and locked out of use until serviced and repaired; and be re- inspected and tested to ensure that they are working and performing properly before being returned to service (NSCA, 2001). Adequate facilities and equipments are critical to support the success of physical activity programs. Programs may be modified and adapted to meet the budget and space available (NASPE, 2001). The following are (ACSM's, 1997) standards for health or fitness facility in (NASPE, 2001):-

- A facility must be able to respond in a timely manner to any reasonably foreseeable emergency event that threatens the health and safety of facility users. Toward this end, a facility must have an appropriate emergency plan that can be executed by qualified personnel in a timely manner.
- A facility must offer each adult member a pre- activity screening that is appropriate to the physical activities to be performed by the member.
- Each person who has supervisory responsibility for a physical activity program or area at a facility must have demonstrable professional competence in that physical activity program or area.
- A facility must post appropriate signage alerting users to the risks involved in their use of those areas of a facility that present potential increased risk(s).
- A facility that offers youth services or programs must provide appropriate supervision.
- A facility must conform to all relevant laws, regulations, and published standards.

The amount of equipment depends upon specific programs, but should meet the needs of participants so that programs can serve the maximum number of participants under established safety standards. Equipment should be modified according to age, size and or physical ability of the participants (NASPE, 2001).

2.4. Physical activity/Exercise/Fitness training program

2.4.1. Definitions

According to the Ministry of Health of New Zeland, (2003), **Physical activity** is any bodily movement produced by skeletal muscles that result in energy expenditure. It comprises duration, frequency, intensity, type and context. **Exercise** is a sub set of physical activity that is distinguished by being done to improve or maintain physical fitness or health. Exercise can be done at a variety of intensities but often means vigorous activity. It can include moderate-intensity walking. **Physical fitness** is a state rather than a behavior. It is a multidimensional indicator of several functional capacities such as cardiovascular endurance, muscular strength or mobility, which in varying degrees are a result of genetics and stage in the life span, as well as physical activity levels (Ministry of Health of NewZeland, 2003). It still defies exact definition or measurement, partly because fitness is a multifaceted qualitative parameter that is usually specific to the task involved, and the scores of the many different tests available to measure fitness are not closely correlated (Karinharju, 2005).

According to Haskell and Kiernan, (1996), Fornicola, (ND), Karinharju, (2005) and U.S.A. DHHS, (2000) **Physical Fitness** is defined as "the ability to carry out daily tasks with vigor and alertness, without undue fatigue and with ample energy to enjoy leisure- time pursuits and to meet unforeseen emergencies."

2.4.2. General Directions for Fitness Program

Many different agencies and organizations have distributed guidelines for various types of physical activity in recent years; the general public may be confused concerning which activity guidelines to follow. The best of guide lines are well supported by scientific evidence and endorsed by respected experts. However, as the (ACSM, 2000), indicates physical activity prescription is both an art and a science. It is important that all people who apply physical activity guidelines understand the scientific reasons for the guidelines and use them artfully with consideration for those to whom the guidelines are being applied (Carbin et al.., 2000).

According to the New Jersey fire department, (2007), the fitness program is divided into the following sections: warm-up, strength and muscular endurance exercises weight training and

calisthenics, Aerobic Training Exercises, and cool-down. The strength and muscular endurance exercises do not have to be done on the same day or during the same exercise sessions as aerobics program. In other words, they may be done on separate days or at different times on the same day. However, every exercise session should be preceded by a warm-up period and followed by a cool-down period. The warm-up exercises are designed not only to get a person physically and mentally ready for the muscular and or aerobic exercise sessions, but also to help develop flexibility in various joints (Ibid).

2.5. How to Develop a Training Program

Mackenzie, (1997) explains the steps involved when developing a training program. The process of creating a training program to help develop an individual's level of fitness comprises of six stages:-

1. Gather details about the individual

2. Identify the fitness components to develop

3. Identify appropriate tests to monitor fitness status

4. Conduct a gap analysis

5. Compile the program

6. Monitor the progress and adjust program

Stage 1:- The first stage is to gather details about the individual; age, reasons for wanting to get fit, current or recent injuries, health problems, the sports they play and how often, their dislikes and likes with regards training, and what sports facilities they have access to gym, sports center etc. This is not an exhaustive list.

Stage 2:- The second stage is to determine which components of fitness they need to improve. This could depend up on what the individual wants to get fit for.

Stage 3:- The next stage is to identify appropriate tests that can be used to initially determine the individual's level of fitness and then to monitor progress during the training. Identified test should be conducted and the results recorded.

Stage 4:- We now know the individual's background, objectives and current level of fitness. We now need to conduct a gap analysis of the individual's current fitness levels from test results at stage three and target fitness levels identified at stage two. The results of this process will assist in the design of the training program so that each component of fitness is improved to the desired level.

Stage 5:- The next stage is to prepare a training program using the results of the gap analysis and FITT principles.

- **F - Frequency**- How often should the individual exercise?
- **I - Intensity**- How hard should the individual exercise?
- **T- Time**- How long should each session last?
- **T- Type or Training activity**- What exercise or training activity will help achieve the individual's fitness goals?

Plan the program in four week cycles where the work load in the first three weeks increase each week easy, medium, and hard and the fourth week comprises of active recovery and tests to monitor training progress. The aim of the four week cycles is to:-

Stage 6:- The program has now been agreed and the individual can undertake the program. Every four weeks meet and discuss with the individual; how the training has gone, the test results, progress towards target fitness levels, and adjustments to the training program.

2.6. Phases of Fitness Conditioning

According to Head Quarters Department of the US army, (1998) and Wuest, and Lombardo, (1994) the physical fitness training program is divided in to three phases: - preparatory, conditioning, and maintenance. The starting phases for different units or individuals vary depending on their age, fitness levels, and previous physical activity. Young, healthy persons may be able to start with the conditioning phase, while those who have been exercising regularly may already be in the maintenance phase. Persons who have not been active, especially if they are age 40 or older, should start with the preparatory phase.

2.6.1. Preparatory Phase

The preparatory phase helps both the cardio respiratory and muscular systems get used to exercise, preparing the body to handle the conditioning phase. The work load in the beginning must be moderate. Progression from a lower to a higher level of fitness should be achieved by gradual, planned increases in frequency, intensity, and time. Recovery days should be evenly distributed throughout the week, and training should progress slowly. This point leads to the conditioning phase (Ibid).

2.6.2. Conditioning phase

To reach the desired level of fitness, trainees must increase the amount of exercise and or the workout intensity as their strength and or endurance increases. To improve cardio respiratory endurance, for example, trainees must increase the length of time they run. They should start with the preparatory phase and gradually increase the running time by one or two minutes each week until they can run continuously for 20 to 30 minutes. At this point, they can increase the intensity until they reach the desired level of fitness. They should train at least three times a week and take no more than two days between workouts (Ibid).

2.6.3. Maintenance phase

The maintenance phase sustains the high level of fitness achieved in the conditioning phase. The emphasis here is no longer on progression. A well designed, 45 to 60 minutes work out including warm-up and cool-down at the right intensity three times a week is enough to maintain almost any appropriate level of physical fitness (Ibid).

2.7. Components of Physical Fitness

According to Wuest and Lombardo (1994), NSCA, (2001) and Karolides and Karolides (1993), Physical fitness is most easily understood by examining its components, or parts. There are two major components of physical fitness. These are health related fitness components such as cardiovascular endurance, muscular strength, muscular endurance, flexibility, and body composition and skill related fitness components such as agility, power, coordination, balance, reaction time, and speed. As the President's Council on Fitness, Sports and Nutrition (PCPFS)

notes, there is a cause-effect relationship between physical activity and health. Plainly said, with increased levels of activity, we improve our levels of physical fitness and enjoy better health, afforded by the benefits of exercise. There is widespread agreement by many literatures that the following five components of health related fitness are basic:-

1. Cardio Respiratory Endurance (CRE):- The efficiency with which the body delivers oxygen and nutrients needed for muscular activity and transports waste products from the cells. The best way to improve CRF is to participate regularly in a demanding aerobic exercise program. Muscular fitness has two components: Muscular strength and Muscular endurance. Although muscular endurance and strength are separate fitness components, they are closely related. Progressively working against resistance will produce gains in both of these components.

According to Shephard, R. (2001), young adult hood typically covers the period from 20-35 years of age, when both biological function and physical performance reach their peak. During young middle age (35-45) years, physical activity usually wanes, with a 5-10 kg accumulation of body fat. During latter middle age (45-65) years women reach the menopause, and man also substantially reduce their output of sex hormones. In early old age above 65 years, there may be a modest increase of physical activity, in an attempt to fill free time. Because initial fitness is quite low, the aerobic condition of a senior can be improved by low intensity of training, gains are greatest if a heart rate of 130-140 beats per minute can be sustained, but useful if slower progress is seen with regular training at heart rates of 110-120 beat per minutes. In the frail elderly, heart rates rarely exceeds 85 beat per minute, and some training response may then be anticipated even with activities inducing a heart rate of only 100 beats per minute. There is only an increase in heart rate during exercise because the heart needs to pump more blood to the different muscles. This increase is directly proportional to the increase of intensity of exercise. Average heart rate is 60-70 beat per minute, and during exercise it increases to 165-190 beat per minute. Aerobic activity as being long in duration yet low in intensity, heart rate at rest decreases as a result of endurance training. Heart rate during sub maximal exercise also decreases, often by about 20-40 beat per minute following 6 months of moderate training. Using the same large muscle group, rhythmically, for a period of 15-20 minutes or longer while maintaining 60-80% of your maximum heart rate, maximum heart rate either remains unchanged or decreases slightly with training.

2. Muscular Strength:-The greatest amount of force a muscle or muscle group can exert in a single effort. The greater the muscular strength of an individual, the greater the amount of force he or she will be able to generate. If your goal is building strength, your workouts will consist of heavy loads that fatigue you to failure within a short number of repetitions. Depending on the amount of weight you use to perform the exercise, this might be anywhere from 3 to 12 repetitions.

According to WHO, (2005), women have smaller amounts of the anabolic hormone testosterone and therefore have less muscle mass and size than men. Because of this, women typically have 60% to 80% of the absolute strength of men and have relative strength similar to man. Muscle strength peaks, around 25 years of age, plateaus through 35 or 40 years of age, and then shows an accelerating decline, with 25% loss of peak force by the age of 65 years. The male and female strength ratio is unchanged, so that women are limited by a loss of strength at an earlier age than men. Muscle strength can be greatly improved as little as 8 weeks of resistance training, even in 90 years old. Maximum strength is usually reached in the 20s and typically decline with age. As people grow older, regardless of gender, muscular strength is better among people who train than people who do not. This suggests that progressive resistance training is one antidote to premature aging

3. Muscular Endurance:-The ability of a muscle or muscle group to perform repeated movements with a sub-maximal force for extended periods of time.

Joseph et al.., (2005), stated that if you are tested on absolute endurance measured by the maximum number of repetition or muscle contractions, one can perform against a given resistance (e.g. the number of times you can move a designated number of pounds), a stronger person has an advantage. However, if you are tested on relative muscular endurance (the number of times you can move a designated percentage of your maximum strength), the stronger person does not have an advantage. For this reason men and women can compete more evenly in relative muscular endurance activities. In fact, on some endurance tasks women have done as well or better than men. If your goal is to build muscular endurance, you will decrease the amount of weight you use so that you can continue to perform repetitions over the course of a workout without failure, continuing exercise for 30 minutes or more. Muscular endurance showed great variability between individuals. However, no decrease in endurance was seen in

older ages. Though muscular endurance declines with age, it is not as dramatic as decreases in absolute strength.

4. Flexibility:-The ability to move the joints for example, elbows knees or any group of joints through an entire, normal range of motion. Flexibility is highly specific and varies for each joint or joint group. Thus, the flexibility of certain joints cannot be used to generalize the flexibility of other areas of the body; there is also a relationship between flexibility measures and differences in sex and age.

A study Kras, H. (1972) done on several 100 adults who had complaints of chronic lower back problems revealed that approximately 80% had sever muscle weakness and joint inflexibility diagnosed as the cause, while only 20% had a specific anatomical disease or lesion as the cause. Thus, there is an obvious tendency in our society to neglect the body through lack of physical exertion including stretching and flexibility exercise. Although flexibility can be increased with persistent exercise, the magnitude of increase is a very individual matter and is dependent up on the specific types and forms of activity. There is little scientific evidence to indicate that a person who can reach 2 inches past his or her toes on a sit and reach test is less fit than a person who can reach 8 inches past the toes. As children grow older, their flexibility increases until adolescence when they become progressively less flexible, generally girls tend to be more flexible than boys is probably due to anatomical differences in joints and differences in type and extent of activities they choose. In adults, there is less difference between sexes and older adults frequently have reduced flexibility, principally because of reduced activity, regular stretching can help older people maintain good flexibility throughout life.

5. Body composition:-is often considered a component of fitness. It refers to the makeup of the body in terms of lean mass (muscle, bone, vital tissue and organs) and fat mass. In terms of health, fat is the main point of interest and everything else is termed lean body tissue. The amount of fat we carry varies from person to person and healthy averages vary with gender and age. Being over fat or under fat can result in health concerns. A healthy amount of fat for a man is between 15 and 18% and for women is higher at 20-25%.An optimal ratio of fat to lean mass is an indication of fitness, and the right types of exercises will help you decrease body fat and increase or maintain muscle mass (Head Quarters Department of the US Army, 1998) and (President's Council on Physical Fitness and Sport, ND).

According to Vikram et al, (2003), and NHS Direct, (2011), a BMI of <18.9 as underweight and may indicate mal nutrition, an eating disorder or other health problems, while a BMI >25 is considered over weight and above 27 is considered obese or high risk. As exceptionally, people who do regular physical activity and possess a large muscle mass and size can be high in body weight without being too fat and weighting at the same time of day, preferably early in the morning is best, because it is more likely to represent real changes in body composition. There is loss of height through aging; BMI will increase without any corresponding increase weight.

2.8. Principles of Physical Exercise or Training

Adherence to certain basic exercise principles is important for developing an effective program. The principles of exercise apply to everyone at all levels of physical training, from the Olympic Caliber athlete to the weekend jogger (Head Quarters Department of the US army, 1998). The theory and methodology of training has its own specific principles based on the biological, psychological, and pedagogical sciences. These guidelines and regulations which systematically direct the whole process of training are known as the "principles of training," (Kernan, 1999). Many literatures like (Dick, 1997) and (Carbin et al.., 2002) and others site law of overload, principle of progression, principle of adaptation, principle of use or disuse, law of reversibility, law of specificity, principle of individualism, principle of variety and principle of active involvement as principles of physical fitness training or exercise. But the following 24 consensus principles from various sport training and science experts, such as Bompa, Harre, Costill, Epley, et al.., are presented by (John Kernan, 1999). A coach or trainer of any sport or fitness activity will enhance his or her success by following these principles of training when designing and planning training or lesson plans for athletes or trainees and teams (Kernan, 1999). These are :- principles of physical examination, active participation in training, multi-lateral development, individualization, feasibility, specificity or specialization, ground-based activities, multiple joint actions, three-dimensional movements, progressive overload, train the correct energy system, interval training, train explosively, adaptation, consistency, variety or variation, split routine, hard-easy system, modeling, warm-up, cool-down, rest and recovery, reversibility, and long-term per iodization and planning.

CHAPTER-THREE

RESEARCH DESIGN AND METHODOLOGY

3.1. Research design of the study

The focus of this study was to investigate the impact of physical fitness training on health related fitness trainees: The case of Assosa town fitness centers. This study utilized both quantitative and qualitative approaches (triangulation) were used. The design applied for this mixed approach study was before and after design quasi-experimental and descriptive method of multi site case study.

3.2. Sampling Techniques and sample population

The selection of sampling techniques for the study was based on the representatives and resourcefulness of the sample. Therefore, in order to collect a wide range of information for the study from trainees, and to get rich and in-depth information from trainers, and from experts of region sport commission the researcher used simple random and purposive sampling techniques, respectively. In this study there were eighty five total populations of fitness trainees from the four known fitness centers in Assosa town and the subjects of the study were totally sixty in number: fifty trainees, eight trainers, and two experts of the region sport commission were participated. In addition to this, the characteristics of the sample of the study were described in detail.

3.3. Participants of the study

The research participants were trainers and trainees of fitness centers as well as experts from BGR sport commission. These were used as a primary data source of the study. These participants were tried to be high experienced, representative, in order to get appropriate, rich and deep information in broad perspectives. In this study there were eighty five total populations of fitness trainees from the four known fitness centers in Assosa town and the subjects of the study were totally sixty in number: fifty trainees, eight trainers, and two experts of the region sport commission were participated.

3.4. Selection of variables

3.4.1. Independent variables (causes)

- Types of fitness exercises such as chin up, sitting tuck, sit and reach, and home step.
- The length of time or duration of exercise it takes to participants to respond a test.
- The Intensity and frequency of exercise.

3.4.2. Dependent variables (effect)

- Resting heart rate
- Maximum heart rate
- Exercise heart rate
- Muscular endurance
- Muscular strength
- Flexibility
- BMI

3.5. Data Collection Instrument

This study employed both quantitative and qualitative research approach and multiple data collection methods were used in order to touch important aspects of the problems, such as questionnaire, fitness test, interview, and observation, as well as the personal experience of the researcher serves as data collection instrument of the study. This approach helps to substantiate or support the information collected using one instrument by another.

Observation

It is one way of collecting primary data. It is a purposeful, systematic, selective ways of watching and listening to an interaction or phenomenon us it takes place (Kumar, 1999). Any way for the purpose of this study, non-participant observation mechanism was employed where by the researcher remains passive observer throughout the activity in each fitness centers training program. Hence, by using observation and attendance checklist the researcher tried to observe

the general conditions of the fitness centers and trainees continual training program in a week and other related issues of the gyms.

Interview

With a purpose to collect rich and deep information for the study through a direct interaction with the participants, this study employed unstructured, open-ended or in-depth interview with the guidance of some general questions. However, the researcher has also formulated questions during an interview. Furthermore, this instrument was employed to collect data from eight fitness center instructors and two experts of region sport commission. There were also informal conversations.

Questionnaire

Here data collection through questionnaire was conducted to get large participants for the study. Therefore, twelve lists of questions were prepared for fifty respondents to answer. The questions cover so many important issues of the fitness centers or gyms.

3.6. Procedures for administration of fitness tests

The investigator followed standard procedures for testing the selected variables and registering the score in fitness record sheet under the direct supervision of eight trainers of the fitness centers. The necessary data was collected from trainee's fitness test results for the selected variables. Before the administration of the test the trainees were given chance to practice the prescribed test so that they become familiar with the test and knew exactly what was to be done. The use of equipment was explained to them prior to the administration of test; five months were utilized for conducting the test. To ensure uniform testing condition the trainees were tested only during the evening session for the selected variables.

3.6.1. Evaluating body composition

Determination of desirable body weight (BMI test)

Purpose:-To determine the ideal body weight in relation to the body fat and lean tissue.

Equipment:-Weight in Kg, and Meter

Procedure:-Divide body weight in kilograms by height in meters squared.

Scoring:-Weight in kilogram per meter squared

Table.1.The normative data of BMI test, (Vikram et al, 2003 and NHS Direct, 2011).

Classification	Gender	
	Men	**Women**
Under Weight	17.9-18.9	15-17.9
Ideal Weight (Normal)	19-24.9	18-24.4
Over Ideal Weight	25-27.7	24.5-27.2
Obese (High risk)	>27.8	>27.3

3.6.2. Evaluating muscular strength

Chin-up test

Purpose:-To measure the strength of the trainees arm, shoulder and upper back muscles.

Equipment:-Bench, a bar which is suspended in the air and assistant.

Procedure:-The trainees warms up for 10 minutes, the trainees hangs from the bar with the palms of their hands facing them and arms straight (start position). Shorter trainees may be lifted by the spotter or by using a bench to the starting position. The trainees, using the arms, pulls the body up until the chin is above the bar and then lowers the body to the start position, the trainees continues with the pull ups until they are unable to continue or let go of the bar.

Scoring:-The assistant counts and records the number of successfully completed pull ups.

Table.2. The normative data of chin up test, (Beashel, P. and Taylor, J. 1996).

Gender	Classification	Age			
		16-19	**20-29**	**30-39**	**≥40**
Men	Excellent	>13	31+	28+	25+
	Above average	9-13	24-30	22-27	20-24
	Average	6-8	19-23	17-21	15-19
	Below average	3-5	15-18	12-16	10-14
	Poor	<3	<15	<12	<10
Women	Excellent	>6	18+	14+	10+
	Above average	5-6	15-17	11-13	7-9
	Average	3-4	12-14	8-10	4-6
	Below average	1-2	9-11	5-7	1-3
	poor	0	<9	<5	0

3.6.3. Evaluating muscular endurance

Sitting tuck test

Purpose:-To evaluate muscular endurance of the trainees' abdomen and thigh muscles.

Equipment:-Mat, level ground (flat non-slip surface), assistant, and stopwatch.

Procedure:-The trainee's warms up for 10 minutes, the assistant sets the stopwatch, the trainees sit on the ground so that the back and feet are the ground, extend the arms forward for balance, alternatively draw the legs to the chest and extend them away from the body, keep the feet and back off the floor, repeat as many times as possible, count the number of sitting tucks they are able to perform.

Scoring: - Record the total number of correctly performed sitting tucks in one minute.

Table.3.The normative data of sitting tuck test, (Mc Ardle et al, 2000).

Gender	Classification	Age		
		<35	**35-45**	**>45**
Men	Excellent	46-60	41-50	26-40
	Good	31-45	36-40	16-25
	Fair	15-30	11-25	6-15
	Poor	<15	<10	<5
Women	Excellent	41-50	26-40	16-30
	Good	26-40	16-25	11-15
	Fair	11-25	7-15	5-10
	Poor	<10	<6	<4

3.6.4. Evaluating flexibility

Sit and reach test

Purpose:-To measure the development of the trainees lower back and hamstring flexibility.

Equipment:-Meter Ruler, tape, box or bench about 20cm high and assistant.

Procedure:-The trainees warms up for 10 minutes and then removes their shoes, the assistant secures the ruler to the box top with the tape so that the front edge of the box lines up with the 15cm mark on the ruler and the zero end of the ruler points towards the athlete, the athlete sits on the floor with their legs fully extended with the bottom of their bare feet against the box, the athlete places one hand on top of the other, slowly bends forward and reaches along the top of the ruler as far as possible holding the stretch for two seconds, the assistant records the distance reached by the athlete's finger tips(cm), the athlete performs the test three times.

Scoring:-The assistant, add the three distances and uses the average for this value to assess the athlete's performance.

Table.4.The normative data of sit and reach test for, (Davis et al.., 2000) P.126.

Gender	Classification	Age			
		16-19	**20-35**	**36-45**	**>45**
Men	Excellent	>14	>10	>8	>6
	Above average	14-11	10-8	8-6	6-5
	Average	10.9-7	7.9-6	5.9-4	4.9-3
	Below average	6.9-4	5.9-4	4.9-3	2.9-2
	Poor	<4	<3	<2	<1
Women	Excellent	>15	>13	>10	>8
	Above average	15-12	13-11	10-8	8-6
	Average	11.9-7	10.9-8	7.9-6	5.9-4
	Below average	6.9-4	7.9-4	5.9-3	3.9-2
	poor	<4	<3	<2	<1

3.6.5. Evaluating cardiovascular endurance

Home step test

Purpose:-To determine the state of trainees cardiovascular fitness and the recovery heart rate after exercise.

Equipment:-a bench with 30-40cm high from the ground level, a stop watch, and assistant.

Procedure:-The athlete warms up for 10 minutes, step up and down on a 30-40cm bench for 3 minutes at a rate of 24 steps per minute, one step consists of 4 beats i.e. “up with the left foot, up with the right foot, down with the left foot, down with the right foot.” Stop at exactly 3 minutes and immediately sit in a chair. The active part of the test here is completed. Counting begins the pulse 5 seconds after the exercise ends.

Scoring:-The assistant records the athlete’s heart rate for 30 seconds and multiply the result by two.

Table.5.The standard norms of home step test

(Table source: Canadian Public Health Association).

Gender	Classification	Age					
		18-25	**26-35**	**36-45**	**46-55**	**56-65**	**>65**
Men	Excellent	<79	<81	<83	<87	<86	<88
	Good	79-89	81-89	83-96	87-97	86-97	88-96
	Above average	90-99	90-99	97-103	98-105	98-103	97-103
	Average	100-105	100-107	104-112	106-116	104-112	104-113
	Below average	106-116	108-117	113-119	117-122	113-120	114-120
	Poor	117-128	118-128	120-130	123-132	121-129	121-130
	Very Poor	>128	>128	>130	>132	>129	>130
Women	Excellent	<85	<88	<90	<94	<95	<90
	Good	85-98	88-99	90-102	94-104	95-104	90-102
	Above average	99-108	100-111	103-110	105-115	105-112	103-115
	Average	109-117	112-119	111-118	116-120	113-118	116-122
	Below average	118-126	120-126	119-128	121-129	119-128	123-128
	Poor	127-140	127-138	129-140	130-135	129-139	129-134
	Very Poor	>140	>138	>140	>135	>139	>134

3.7. Data Analysis

The data gathered through interview, observation, fitness test result and questionnaires were analyzed and interpreted to establish conclusion portion. Analysis of the test result is by comparing it with the trainee's previous results for the specific test. Since the study employed a blend of approaches, namely quantitative and qualitative, it applied both types of data analysis methods. Therefore, in order to analyze the qualitative data, the researcher was used descriptive data where these data were interpreted in narrative way. Here the data were coded, categorized and finally patterns of ideas, themes etc, were triangulated; whereas the quantitative data were analyzed using descriptive statistical methods, such as tables and percentage from test results and the data.

3.8. Reliability of a test

The reliability of a test was assured by establishing efficient and necessary equipments, and reliability of a test and trainee's reliability. To ensure the uniformity and reliability of the testing technique the investigator had a number of practice sessions in the testing procedures with the guidance of the respective experts. The investigator took all the measurement for the study with the assistance of professional experts.

3.9. Ethical Issues

In every discipline it is unethical to collect information without the knowledge of participants, their informed consent (Bogdan and Biklen, 1998) and (Kumar, 1999). Informed consent requires that respondents are made adequately aware of the type of information collected from them, why the information is being sought, what purpose it will serve to, how they are expected to participate in the study, and how it will directly or indirectly affect them (Ibid).

It is important that the consent should also be voluntary and without pressure of any kind. Thus based on the above principles, the researcher followed the following ethical and moral issues throughout the research process.

- The purpose, procedures and risks of a study including possible hazards to physical and psychological well being; were explained to the participants in such a way that they can understand.
- Participants were aware of the consequences of a study.
- Participants were fully aware of all data gathering techniques.
- The dignity, privacy, and interests of the participants were respected and protected.
- Research data were confidential and all participants remain anonymous.
- Participants were able to terminate or stop involvement at any time and will know that they have this option , and
- Participants' well fare and convenience were given priority over all other issues.

CHAPTER FOUR

PRESENTION, ANALYSIS AND DISCUSSION OF THE DATA

In this chapter, two parts of the study were treated based on the data obtained. In the first place the characteristics of the respondents were presented; and secondly, analysis and discussion of the data collected from the three groups of sample respondents (gym trainees, gym instructors and experts of the region sport commission) through questionnaire, interview and fitness test results from gym trainees were used in the analysis. Besides, personal observation using checklists were also used in the analysis. The data were presented in tables and analyzed using statistical numbers, percentage and descriptive statements.

4.1. Characteristics of the Respondents

The size of the sample population was sixty of which 50 (83.3%) were trainees, 8 (13.3%) were instructors, 2 (3.33%) were experts from BGR sport commission. From those sample population, sixty questionnaires were mailed and distributed to the same number of gym trainees, and 50 (83.3%) were responded to and returned. In addition to this, health related fitness test for each fifty trainees and interview with eight relevant fitness instructors, two experts of the BGR sport commission were employed. In addition, a checklist based observation was conducted.

Respondents were asked to indicate their personal background information through questionnaire and interviews. In this respect, respondents' sex, age, health status and duration of stay in the gym, were collected as presented in Table 1 and 2 below consecutively. Finally, the educational background and work experience of fitness instructors were also documented as presented in Table 3 below.

Table.6. Sex, age and health status of respondent trainees

No	Items	Sex					
1	**Age**	**Male**	**%**	**Female**	**%**	**Total**	**%**
	18-25	6	12	4	8	10	20
	26-33	11	22	7	14	18	36
	34-41	7	14	5	10	12	24
	42-49	3	6	3	6	6	12
	≥50	3	6	1	2	4	8
	Total	**30**	**60**	**20**	**40**	**50**	**100**
2	**Health status**						
	Excellent	9	18	6	12	15	30
	Very good	6	12	4	8	10	20
	Good	11	22	7	14	18	36
	Health remarks (Diabetics, back pain)	4	8	3	6	7	14
Total		**30**	**60**	**20**	**40**	**50**	**100**

Concerning the sex composition of the respondents as indicated in the Table 6 above, of the total sample trainees male's account 30 (60%) and females account 20 (40%), respectively. This figure shows that males' participation was a bit higher than females, but their difference was not exaggerated. When we consider instructors of all them were males, on this aspect male domination totally observed. This idea also supported by researcher's observation, which was seen during gym visits and by informal talk with instructors in the sample. This shows that females are one of the disadvantaged groups in the participation of physical activity (UN, 2003). So that even though, the participation of females, according to this study was not bad, more efforts should be made to encourage and enhance their participation.

As to the age composition of the trainees (respondents) as clearly indicated in Item 1 Table 6 above, more number of trainees 18 (36%), 12 (24%), and 10 (20%) were found between the age 26-33, 34-41, and 18-25, respectively. When we consider the rest 6 (12%) and 4 (8%) were found between the age 42-49, and 50 and above years old, respectively. This showed that, except

the first figure, 10 (20%) who were found between the age 18-25, one could see that as the age of an individual increases, physical activity participation will decrease. This idea also supported by (WHO, 2003a) as older society groups were the disadvantaged one in physical activity participation. In this respect the researcher tried to deduce the reason why 18-25 years of old age groups who account 10 (20%) were less involved that they might pass a lot in physical activity outside the gyms or fitness centers, so that their participation in physical activity would be higher than 26-33 age level groups.

As to the health status of the respondents as it was shown clearly in Item 2 Table 6 above, almost all 43 (86%) were found in good to excellent health condition, but 7 (14%) were diabetic and have back pain based on their medical checkup certificate, respectively.

Table.7. Trainees duration of stay at the gym

No	Items	Duration	No	%
1	Duration of stay at the fitness centers	1-15 days	3	6
		16 -30 days	3	6
		1.5 -2 months	4	8
		2.5 -3 months	4	8
		4 -6 months	12	24
		7 months -1 year	11	22
		1.5 -2 years	7	14
		3 – 4 years	6	12
		Total	**50**	**100**

Concerning the duration that trainees stay in the gym as it was clearly observed in Table 7 above, most respondents 12 (24%), 11 (22%), 7(14%) and 6(12%) were found between 4 months and 4 years. When we sum up these we can get 36 (72%), so that the majority of the sample population were more or less experienced in the fitness center practice. Furthermore, the rest who were found between 1 day to 3 months account 14 (28%) were also significant groups of the study.

Table.8. Work experience and Educational background of trainers

No	Items	Years	No
1	Work experience of the trainers	1-2 years	2
		3-4 years	4
		5-6 years	1
		7-8 years	1
		9-10 years	0
		11 and above years	0
		Total	**8**
2	Educational background of the trainers		
		Degree in HPE and instructor certificate	1
		Degree in HPE and has no instructor certificate	1
		Diploma in HPE and instructor certificate	2
		Diploma in HPE and has no instructor certificate	1
		Certificate in both HPE and instructor	1
		A student of HPE and Instructor certificate	2
		Total	**8**

When we consider the work experience of instructors Item 1 Table 8 above, more instructors 4 and 2 were have 3-4 and 1-2 years of experience, respectively. These figures together account 6 of 8 instructors. This shows that the selected instructors have a number of years of experience, so that, they have so many important information upon the area. Therefore, they can contribute a lot for this study on the different raised issues during data collection. Furthermore, those who account 1 were found between 5 to 6 and 7 to 8 years of experience have good experience as or than the previous ones because they have more years' service on the area and the one who has 1 to 2 years experience was also a student of HPE of degree program. In general, the sample groups of the study were well representative except male domination.

As could be considered the educational background of instructors in the Item 2 Table 8 above, 2 have gym instructor certificate and 2 have Diploma in HPE and instructor certificate, 1 has

Degree in HPE and instructor certificate, 1 has Degree in HPE and has no instructor certificate, 1 has Diploma in HPE and has no instructor certificate, and 1 has certificate in both HPE and instructor.

Most of the sample fitness instructors have certificate, except two, and even these two are a student of HPE, which means they are expected to know important aspects upon gym instructors. Furthermore, there were Degree graduates of HPE. Therefore, the educational background of the instructors, were good enough to deliver pertinent information on different perspective issues of the study.

4.2. Analysis and Interpretation of the Data

Table.9. Issues related with Gym facilities and equipments

No	Items	Responses			
		Yes		No	
		No	%	No	%
1	Are you comfortable with the facilities?	35	70	15	30
2	Do you have enough orientation about equipments?	38	76	12	24
3	Are equipments simple and easy to operate?	45	90	5	10

As to shown in Table 9 above, the majority of the respondents 35 (70%) replied that they were comfortable with the facilities of their fitness centers or gyms. Actually, this idea was very well noted during the observation made by the researcher. All sample fitness centers, except for adequacy of space and shortage of changing rooms which were revealed in few gyms, were in good condition. Even the above two problems were not considered to be serious because most of the time inadequacy of space observed in the aerobics room.

The study concerning equipment orientation, as it was observed in the Item 2 Table 9 above, 38 (76%) respondents replied that they got enough orientation. This figure was took the highest share from the total sample population. This idea was also supported by the information that was got from the interviewees. According to the interviewees (instructors), from the beginning they

were tried to introduce equipments and machines, and how to operate and practice with them, for trainees.

With regard to the level of complexity and strength to operate with fitness equipments, the data as presented in Item 3 Table 9 indicates that 45 (90%) of respondents agreed that equipments were simple and easy to operate. when we consider the duration trainees stay in the gym from their personal information in the above Table 7, most of them were regular attendants ranging from a number of months to a number of years. As the result of this, they might have adapted the complexity level through time, so that they were able to work with equipments simply and easily.

Table.10. Fitness instructors and staff members supervision

No	Items	Responses			
		Yes		No	
		No	%	No	%
1	Do the trainers closely supervise and assist trainees?	42	84	8	16
2	Do you get nutritional advices and other guides from the staff members or instructors?	35	70	15	30

As to the study on instructors whether they supervise and assist their trainees or not, Item 1 Table 10 above, showed that 42 (84%) respondents replied that they have healthy relationships with this aspect. These respondents additionally suggested that instructors were put the effort what they have with their trainees. This idea also supported by the results obtained from interview which held with the instructors.

Concerning nutritional advice and other guides, the above Item 2 Table 10 clearly showed that 35 (70%) respondents were answered that they received nutritional advice and other guides from staff members whereas 15 (30%) respondents said that they did not get this. Some respondents from this group additionally suggested that if anybody who wants to ask instructors about the issue and other things, they were positively cooperative and respond the question. This idea also supported by the results obtained from interview which showed that instructors advice most of

the time those who train for health. Anyway, more than half respondents from the total were got nutritional and other advices.

Table.11.The goal, frequency and duration of trainees training

No	Items	Goal, Frequency and Duration	Response	
			No	%
1	What is your goal to be in this fitness program? To improve:-	Muscular strength	12	24
		Cardio-vascular fitness	16	32
		Flexibility	2	4
		Weight loss	9	18
		Weight gain	3	6
		Exercise or Health habit	6	12
		Diet or Eating habit	2	4
		Total	**50**	**100**
2	How often do you exercise per week?	3 days	4	8
		4 days	13	26
		5 days	15	30
		6 days	10	20
		7 days	8	16
		Total	**50**	**100**
3	What is the average length of minutes per hour of each work out?	20minutes – 30 minutes	6	12
		40minutes – 50 minutes	10	20
		1 hour	14	28
		1:30 hour – 2 hours	20	40
		Total	**50**	**100**

As to the trainees goal of exercise the participants were asked through questionnaire. As could be seen in Item 1 Table 11 above clearly, most respondents 16 (32%) exercised to develop cardio-vascular fitness, 12 (24%) and 9 (18%) exercised to develop muscular strength and to loss

weight, respectively. This idea also supported by interview results, most of the time trainees join aerobics program. This program, according to many instructors, can help trainees to develop cardiovascular endurance and to loss weight. This idea also supported by different literatures like (Carbin et al.., 2002). So that, instructors said, after completing the aerobics session trainees shifted to different machines and equipments which help them to develop other components. This also again supported by observation made during data collection. 2 (4%) respondents were not significantly considered by the trainees as a goal of exercise.

Concerning the number of days of exercise, Item 2 Table 11 above clearly depicts that the majority 46 (92%) exercise from 4-7 days, which was the recommended exercise days sited by different literatures to get significant change on person's health condition. For instance, (Shephard, 2001); (WHO, 2006b) and (Ministry of Health of New Zealand, 2003), stated that adults should exercise moderately 60 minutes per a day for most or all days of a week to gain significant health benefits. In this respect, when we consider those respondents who practice every day account 8 (16%), even when we add those who practice 6 days of a week 10 (20%) upon the above figure it will become 18 (36%) which was less than half of the total.

As to the average length of minutes per hour of workout Item 3 Table 11 above clearly reveals that most respondents 20 (40%), waste 1:30 hour-2hours in each physical exercise. This amount of duration of moderate exercise mostly recommended by different literatures like (WHO, 2006b). The rest who work for 20-30 minutes account 6 (12%), those who work for 40-50 minutes account 10 (20%) and those who work for 1 hour account 14 (28%), respectively.

In general, those respondents who waste their time in exercise from 40 minutes to 2 hours were reached 44 (88%). On top of this, some respondents were suggested as they were practiced more than 1:30 and 2 hours, even some said 3 hours.

Table.12. Fitness Program and Health Issues

No	Items	Responses			
		Yes		No	
		No	%	No	%
1	Does your physical activity recommended by your doctor?	14	28	36	72
2	Do you feel any pain and discomfort during exercise?	8	16	42	84

Regarding the recommendation of doctor to involve in physical activity, Item 1 Table 12 above shows that less than a half 14 (28%) of respondents were started physical exercise by recommendation of their doctor, the rest 36 (72%) respondents were joined the gym by their own. Actually, most literatures like (Joseph et al.., 2005) said that if a person is 45 and above years old, he should see a doctor before starting any physical exercise. When we observe the age distribution of the respondents those who found between 42 and above account 10 (20%), and trainees who account 40 (80%) were found between 18-41 years old. Therefore, 36 (72%) group who responded did not see a doctor could be found in the age between 18-41 (80%), and those whose age range 42-44 could also be included in this group. This idea also supported by the interview results. Most instructors said that few trainees told them as they were told by their doctor to practice physical exercise and another few were brought recommendation letter from their doctor. Otherwise, the rest of them were come here by their own interest. One instructor also said that most trainees were involved in physical exercises just for recreation.

Concerning pain and discomfort during exercise, as could be seen in the above Item 2 Table 12 clearly the majority 42 (84%) respondents were replied that they were comfortable with the exercise they practiced as well as did not feel any pain so far. But some respondents said that they felt it when they start exercise at the beginning and they got relief from it gradually. Normally, most of the time whenever beginners start exercising, they might get some unpleasant feeling which it could be muscle cramp or strap and the like.

Table.13. Issues of Relevance and Feasibility of Fitness Program Deliveries

No	Items	Responses			
		Yes		No	
		No	%	No	%
1	Does the program designed meet your need?	38	76	12	24
2	Do the classes have different levels of intensity, duration, load and frequency which are modifiable to your needs?	30	60	20	40

Regarding the designed program whether they meet trainees need or not, the above Item 1Table 13 indicated that the majority respondents 38 (76%) were agreed on the issue and were interested in the program they got from the gym or fitness center. In support of this issue one could say something by observing the amount of duration that trainees were stayed in the gym or fitness center. Therefore, most of they were stayed more than 4 months without shifting to another gym or fitness center. Hence, they were stayed for such duration if and only if they were almost satisfied. In addition, few also suggested that instructors put the effort they have to satisfy their customers. This idea also supported by interview results. Most interviewees said that they work hard to satisfy their trainees.

With respect to intensity, duration, load and frequency of exercise, Item 2 Table 13 clearly shows that the majority respondents 30 (60%) were replied that instructors adjust and modify the intensity, duration, load and frequency of different work outs so as to fit with trainees needs. Moreover, interview results showed that most interviewee said when asked about principles of physical exercise and preparation of exercise for different groups, that they consider this issue strongly by dividing their trainees according to their age, experience on the exercise, sex, as well as the sickness level of their patient if there is.

4.3. General fitness test results

Table:-14. General fitness test results of gym trainees in the five health related components

No.	Sex	Age	Wt.	Ht.	Determination of desirable body weight (BMI test) pre and after 3 months of training in Kg/m^2.					Evaluating muscular strength (Chin up test) pre and after 3 months of training in repetition of exercise.					Evaluating muscular endurance (sitting tuck test) pre and after 3 months of training in rep. in 1minute.					Measuring flexibility (sit and reach test) pre and after 3 months of training in length by cm.					Evaluating CVE (home step test) pre and after 3 months of training by beat per minute.				
					P_0	**T_1**	**T_2**	**T_3**	**Av**	**P_0**	**T_1**	**T_2**	**T_3**	**Av**	**P_0**	**T_1**	**T_2**	**T_3**	**Av**	**P_0**	**T_1**	**T_2**	**T_3**	**Av**	**P_0**	**T_1**	**T_2**	**T_3**	**Av.**
1	M	18	52	1.72	17.58	18	18.4	18.9	18.43	5	8	10	12	10	16	17	18	20	18	11	11.3	11.2	11.5	11.33	106	104	105	103	104
2	M	18	53	1.68	18.79	18.79	18.9	18.93	18.87	6	8	11	13	11	18	19	20	21	20	10	10.3	10.5	10.9	10.57	105	105	104	103	104
3	M	19	50	1.58	20.03	20.4	21.2	22.01	21.2	8	10	12	13	12	20	22	23	24	23	10.5	10.5	10	10.5	10.33	104	102	103	101	102
4	M	20	56	1.65	20.5	19.83	20.2	21.1	20.38	18	18	20	21	20	26	26	28	29	28	6.3	6.5	6.7	6.6	6.6	101	100	99	98	99
5	M	23	69	1.72	23.3	24	24.2	24.3	24.17	20	21	22	24	22	28	29	30	30	30	5.5	5	5.8	6	5.6	99	98	97	96	97
6	M	24	56	1.65	20.57	20.9	21.3	21.3	21.17	16	18	19	20	19	24	25	26	28	26	6	6	6.3	6.2	6.17	102	101	100	99	100
7	F	19	60	1.56	24.65	23.92	24.1	24.4	24.14	5	6	8	10	8	13	14	16	16	15	13	13.1	13.2	13.3	13.2	119	118	117	116	117
8	F	20	63	1.55	26.22	25.91	26	26.1	26	8	9	11	12	11	20	22	23	25	23	11.3	11.6	11.5	11.8	11.63	115	113	112	111	112
9	F	22	60	1.52	25.97	25.6	26.3	26.8	26.23	8	8	10	11	10	16	18	19	20	19	12.7	12.9	13	13	12.97	117	115	113	111	113

10	F	24	68	1.63	25.59	25.3	25.8	26	26.03	7	7	7	8	7	11	13	14	16	14	13.1	13.3	13.3	13.3	13.3	120	118	116	114	116
11	M	26	63	1.66	22.86	22	22.8	23	22.6	20	22	23	25	23	30	32	34	36	34	5.4	5.5	5.5	5.5	5.5	98	96	94	92	94
12	M	28	66	1.75	21.55	22	22.5	22.7	22.4	21	21	22	24	22	29	30	32	33	32	5.8	5.9	6	6	5.97	101	100	100	100	100
13	M	28	65	1.6	25.39	25.2	25.3	25.3	25.27	16	17	18	19	18	21	23	23	24	27	11.4	11.5	11.5	11.5	11.5	109	107	108	106	107
14	M	27	55	1.58	22.03	22.4	22.1	23	22.5	20	22	23	24	23	30	32	31	32	28	6	6.4	6.5	6.9	6.6	102	100	100	100	100
15	M	29	60	1.72	20.28	21	21	21	19	19	19	20	22	20	25	26	27	28	20	7	7	7	7	7	106	104	102	100	102
16	M	29	52	1.64	19.33	19.5	19.7	19.6	19.6	20	21	22	23	22	26	26	28	29	28	8.6	8.6	8.7	8.8	8.7	105	103	101	99	101
17	M	30	75	1.62	28.6	28.6	28.6	28.6	28.6	12	14	15	16	15	18	19	19	21	20	12	12.3	12.3	12.3	12.3	111	110	99	98	99
18	M	33	64	1.7	22.15	22.15	21.15	23.2	22.18	18	20	21	22	21	23	24	24	24	24	10	10	10	10	10	108	106	104	102	104
19	M	31	66	1.76	21.3	21.4	21.5	21.6	21.5	18	19	20	22	20	24	25	26	26	26	7.6	7.6	7.7	7.8	7.7	107	107	105	103	105
20	M	32	62	1.7	21.45	22	22.3	22.1	22.13	19	20	22	24	22	28	29	30	31	30	9	9.2	9.3	9.4	9.3	103	101	99	97	99
21	M	30	75	1.62	28.6	28.6	28.6	28.6	28.6	10	12	14	14	13	16	17	16	18	17	13.3	13.4	13.5	13.4	13.43	112	110	109	108	109
22	F	26	70	1.65	25.7	25.9	26.2	26	26.03	7	7	8	9	8	14	15	16	17	16	15.2	15.3	15.6	15.7	15.53	123	122	121	120	121
23	F	27	63	1.66	22.86	22.8	22.6	22.6	22.7	10	11	12	13	12	22	23	24	25	24	11.4	11.4	11.5	11.6	11.5	118	117	116	115	116

24	F	30	63	1.65	23.14	23.2	23.5	23.6	23.43	8	9	11	12	11	18	20	21	22	21	13	13	13.2	13.1	13.1	121	120	119	118	119
25	F	28	64	1.7	22.15	22.4	23	23.02	22.8	9	11	10	12	11	21	23	24	24	24	12	12.5	12.6	12.7	12.6	119	118	117	116	117
26	F	32	65	1.62	24.77	24.33	24.4	24.7	24.48	7	8	9	11	9	16	17	18	19	18	13	13.4	13.4	13.5	13.43	122	120	118	116	118
27	F	33	68	1.58	27.24	26	26.8	27.2	26.67	6	8	9	12	10	17	19	19	19	19	13	13.3	13.4	13.5	13.4	120	119	118	117	118
28	F	31	63	1.55	26.22	26.11	26.5	26.3	26.3	7	8	9	10	9	15	16	17	19	17	14	14.2	14.3	14.4	14.3	123	122	121	120	121
29	M	34	55	1.62	20.96	21	20.8	21.6	21.13	14	14	15	15	15	20	22	21	23	21	6	6.4	6.5	6.9	6.6	108	107	106	105	106
30	M	38	67	1.7	23.18	23	23.3	23.4	23.23	17	17	17	17	17	18	19	20	20	20	7	7.2	7.3	7.5	7.33	112	111	110	109	110
31	M	41	50	1.48	22.82	23	23.1	22	22.7	14	14	13	14	14	15	16	16	16	16	6	6.3	6.2	6	6.17	115	114	113	112	113
32	M	40	68	1.68	24.1	24.5	24.6	24.6	24.57	12	12	13	14	13	13	14	15	16	15	6	6	6	6	6	117	116	115	114	115
33	M	37	68	1.73	22.72	23.1	23.3	24	23.47	13	13	14	15	14	16	17	17	19	18	5	5.4	5.2	5.5	5.37	114	113	112	111	112
34	M	35	63	1.68	22.32	22.32	22.4	22.5	22.4	17	17	18	18	18	19	20	21	22	21	5.5	5	5.8	6	5.6	108	107	106	105	106
35	M	34	55	1.62	20.96	21	20.8	21.6	21.13	18	19	20	21	20	23	23	23	24	23	6	6.4	6.5	6.9	6.6	107	106	105	104	105
36	F	38	68	1.68	24.1	24.3	24.3	24.3	24.3	6	7	7	8	7	8	9	10	11	10	10	7	7.8	7.6	7.7	122	120	118	116	118
37	F	36	58	1.6	22.66	23	22.8	22.4	22.73	8	8	8	8	8	10	12	13	14	13	6	6.2	6.1	6.3	6.2	118	116	114	112	114

38	F	35	64	1.7	22.15	23.2	22.9	22.6	22.9	7	8	9	10	9	12	13	13	13	13	8	8.4	8.6	8.8	8.6	124	122	120	118	120
39	F	34	72	1.66	26.13	26	26.5	26.2	26.23	5	6	7	7	7	15	16	17	17	17	9	9.2	9.3	9.5	9.33	123	122	121	120	121
40	F	36	68	1.73	22.72	23	23.6	23.2	23.27	7	8	8	9	8	11	13	12	13	13	6	6.6	6.6	6.7	6.63	120	119	118	117	118
41	M	40	68	1.68	24.1	24.5	24.6	24.6	24.57	15	15	14	15	15	17	18	19	20	19	5	5.2	5.4	5.5	5.37	114	113	112	111	112
42	M	38	64	1.58	25.64	25.6	25.7	25.7	25.67	14	14	15	15	15	17	19	20	21	20	5.5	5	5.8	6	5.6	112	111	110	109	110
43	M	46	56	1.58	22.43	22.43	22.43	22.43	22.43	15	15	14	15	15	15	16	17	17	17	4	4.2	4	4.5	4.23	116	115	114	113	114
44	F	43	75	1.62	28.58	27.2	27	27.3	27.13	3	4	5	6	5	10	12	13	14	13	7	7	7	7	7	120	118	116	114	116
45	F	48	55	1.58	22.03	22	22.4	22.5	22.3	5	6	5	6	6	8	9	10	11	10	5.4	5.5	5.5	5.5	5.5	123	122	121	120	121
46	F	42	68	1.64	25.28	25	25.1	24.9	25	6	6	6	6	6	11	12	13	14	13	6.3	6.5	6.6	6.7	6.6	119	118	116	114	116
47	M	52	56	1.58	22.43	22	22.4	22.8	22.4	10	11	12	13	12	13	14	16	18	16	4.4	4.5	4.6	4.7	4.6	119	118	117	116	117
48	M	55	56	1.58	22.43	23	22.4	22.6	22.67	8	9	10	10	10	10	12	14	15	14	3.7	3.7	3.7	3.8	3.73	122	120	118	116	118
49	M	50	80	1.75	26.12	26	26.3	26.7	26.33	10	11	12	13	12	15	16	17	18	17	4.1	4.2	4.3	4.4	4.3	117	116	115	114	115
50	F	58	60	1.7	20.76	21.3	21.6	21.7	21.53	3	4	5	6	5	5	6	6	7	6	3	3.3	3.4	3.5	3.4	122	12O	118	116	118

Key: - P_O=Pre-Test T_1=Test one T_2=Test two T_3=Test three Av. =Average BMI=Body Mass Index Ht. =Height Wt. =Weight

Table:-15. Examining the difference in the pre and post-test average results by age and sex categories

No.	Test variables	Age	Average Pre-test results				Average Post-test results (after 3 months of training)				Remarks
			Sex and its Rate				Sex and its Rate				
			M	Rate	F	Rate	M	Rate	F	Rate	
1.	BMI test in Kg/m^2	18-25	20.13	Ideal	25.61	Over ideal	20.7	Ideal	25.6	Over ideal	Constant
		26-33	23.05	Ideal	24.58	Over ideal	23.13	Ideal	24.63	Over ideal	Constant
		34-41	22.98	Ideal	23.55	Ideal	23.21	Ideal	23.89	Ideal	Constant
		42-49	22.43	Ideal	25.29	Over ideal	22.43	Ideal	24.82	Over ideal	Constant
		≥50	23.66	Ideal	20.76	Ideal	23.8	Ideal	21.53	Ideal	Constant
		Av.	22.45	Ideal	23.96	Ideal	22.65	Ideal	24.09	Ideal	Constant
2.	Muscular strength (Chin up test) number of repetition of exercise)	16-19	6	Average	5	Above Average	11	Above Average	8	Excellent	Improve
		20-29	19	Average	8	Poor	21	Average	10	Below Av.	Some
		30-39	15	Below Average	7	Below Average	17	Average	9	Average	Improve
		≥40	12	Below Average	4	Average	13	Below Av.	5	Average	Constant

3.	Muscular endurance (Sitting tuck test) number of repetition per minute)	<35	23	Fair	17	Fair	25	Fair	19	Fair	Constant
		35-45	16	Fair	10	Fair	18	Fair	12	Fair	Constant
		>45	13	Fair	7	Fair	16	Fair	8	Fair	Constant
4.	Flexibility (sit and reach test) length of reach in Cm.	16-19	10.5	Average	13	Above Average	10.74	Average	13.2	Above Av.	Constant
		20-35	7.73	Average	12.14	Above Average	7.95	Above Average	12.47	Excellent	Improve
		36-45	5.75	Average	6.46	Average	5.97	Above Average	6.77	Above Av.	Improve
		>45	4.05	Average	4.2	Average	4.22	Average	4.45	Average	Constant
5.	Cardio-Vascular Endurance (Step test) number of beat per minute.	18-25	103	Average	118	Below Average	101	Average	115	Average	Some
		26-35	106	Average	121	Below Average	103	Average	119	Average	Some
		36-45	114	Below Average	120	Below Average	112	Average	117	Average	Improve
		46-55	119	Below Average	123	Below Average	116	Average	121	Below Av.	Some
		56-65	-	-	122	Below Average	-	-	118	Average	Improve
		>65	-	-	-	-	-	-	-	-	-

As regarding the average BMI pre-test results of men and women before training were 22.45kg/m^2 and 23.96kg/m^2 respectively, as clearly indicated in item 1 table 15 above, this indicates that males were under the ideal body weight and females were over the ideal weight as stated by (Vikram et al, 2003). When we compare the previous test results with the post-test average results males were achieved 22.65kg/m^2 and females were scored 24.09kg/m^2. This shows that both male and female groups were improved by 0.89% and 0.54% respectively. So, they are under the desirable body weight. According to (Vikram et al, 2003), and (NHS Direct, 2011), a BMI of <18.9 as underweight and may indicate mal nutrition, an eating disorder or other health problems, while a BMI >25 is considered over weight and above 27 is considered obese or high risk. As exceptionally, people who do regular physical activity and possess a large muscle mass and size can be high in body weight without being too fat. Weighting at the same time of day, preferably early in the morning is best, because it is more likely to represent real changes in body composition. There is loss of height through aging; BMI will increase without any corresponding increase weight.

As to shown in item 2 table 15 above, the average chin-up test results for women between the age 16-19, 20-29, 30-39, and ≥40 before training were 6, 19, 15, and 12 repetition of chin-up exercise with average, average, below average, and below average fitness zone levels respectively, as stated by (Beashel, P. and Taylor, J. 1996). And women between the age 16-19, 20-29, 30-39, and ≥40 before training were 5, 8, 7, and 4 repetition of chin-up exercise with above average, poor, below average, and average fitness zone level respectively, as stated by (Beashel, P. and Taylor, J. 1996) . When we see the average test results after 3 months of training men between the age 16-19, 20-29, 30-39, and ≥40 were 11, 21, 17, and 13 repetition of chin-up exercise with above average, average, average, and below average fitness zone levels respectively, as stated by (Beashel, P. and Taylor, J. 1996) . And women between the age 16-19, 20-29, 30-39, and ≥40 were 8, 10, 9, and 5 repetition of chin-up exercise with excellent, below average, average, and average fitness zone level respectively, as stated by (Beashel, P. and Taylor, J. 1996).

According to WHO, (2003a) women have smaller amounts of the anabolic hormone testosterone and therefore have less muscle mass and size than men. Because of this, women typically have 60% to 80% of the absolute strength of men and have relative strength similar to man. Muscle

strength peaks, around 25 years of age, plateaus through 35 or 40 years of age, and then it shows an accelerating decline, with 25% loss of peak force by the age of 65 years. The male and female strength ratio is unchanged, so that women are limited by a loss of strength at an earlier age than men. Muscle strength can be greatly improved as little as 8 weeks of resistance training, even in 90 years old. Maximum strength is usually reached in the 20s and typically decline with age. As people grow older, regardless of gender, muscular strength is better among people who train than people who do not. This suggests that progressive resistance training is one antidote to premature aging.

Concerning on the muscular endurance test in item 3 table 15 above, the average test results of sitting tuck exercise for men under the age <35, 35-45, and >45 were 23, 16, and 13 repetition of sitting tuck exercise per minute and women under the age <35, 35-45, and >45 were 17, 10, and 7 respectively. All of them have fair levels of fitness zone according to (Mc Ardle et al, 2000). When we compare the previous results after 3 months of training the average results of sitting tuck exercise per minute for men under the age <35, 35-45, and >45 were 25, 18, and 16 while women under the age <35, 33-45, and >45 were 19, 12, and 8 respectively. This shows that all of them had a significant change but they were fair level of fitness zone level according to (Mc Ardle et al, 2000).

Joseph et al.., (2005), stated that if you are tested on absolute endurance measured by the maximum number of repetition or muscle contractions, one can perform against a given resistance (e.g. the number of times you can move a designated number of pounds), a stronger person has an advantage. However, if you are tested on relative muscular endurance (the number of times you can move a designated percentage of your maximum strength), the stronger person does not have an advantage. For this reason men and women can compete more evenly in relative muscular endurance activities. In fact, on some endurance tasks women have done as well or better than men. Muscular endurance showed great variability between individuals. However, no decrease in endurance was seen in older ages. Though muscular endurance declines with age, it is not as dramatic as decreases in absolute strength.

As we have seen the flexibility test in item 4 table 15 above, the average test results of sit and reach test for men under the age 16-19, 20-35, 36-45, and >45 were scored 10.5cm, 7.73cm, 5.75cm, and 4.05cm respectively, so all of them were average level of fitness zone as stated by

(Devis et al, 2000) p.126. And women under the age 16-19, 20-35, 36-45, and >45 were achieved 13cm, 12.14cm, 6.46cm, and 4.2cm respectively, were above average, above average, average and average fitness zone levels consecutively as stated by (Devis et al, 2000) p.126. When we compare the previous results after 3 months of training the average results of sit and reach test for men under the age 16-19, 20-35, 36-45, and >45 were scored 10.74cm, 7.95cm, 5.97cm, and 4.22cm with average, above average, above average, and average fitness zone levels respectively while women under the age 16-19, 20-35, 36-45, and >45 were scored 13.2cm, 12.47cm, 6.77cm, and 4.45cm with above average, excellent, above average, and average fitness zone levels respectively as stated by (Davis et al, 2000) p.126.

A study Kras, H. (1972) done on several 100 adults who had complaints of chronic lower back problems revealed that approximately 80% had sever muscle weakness and joint inflexibility diagnosed as the cause, while only 20% had a specific anatomical disease or lesion as the cause. Thus, there is an obvious tendency in our society to neglect the body through lack of physical exertion including stretching and flexibility exercise. Although flexibility can be increased with persistent exercise, the magnitude of increase is a very individual matter and is dependent up on the specific types and forms of activity. There is little scientific evidence to indicate that a person who can reach 2 inches past his or her toes on a sit and reach test is less fit than a person who can reach 8 inches past the toes. As children grow older, their flexibility increases until adolescence when they become progressively less flexible, generally girls tend to be more flexible than boys is probably due to anatomical differences in joints and differences in type and extent of activities they choose. In adults, there is less difference between sexes and older adults frequently have reduced flexibility, principally because of reduced activity, regular stretching can help older people maintain good flexibility throughout life.

With regard to cardiovascular fitness test in item 5 table 15 above, the average pre-test results of step test for men under the age 18-25, 26-35, 36-45, and 46-55 were 103 beat per minute, 106 beat per minute, 114 beat per minute, and 119 beat per minute, which shows average, average, below average, and below average fitness levels respectively, while women under the age 18-25, 26-35, 36-45, 46-55, and≥56 were 118 beat per minute, 121 beat per minute, 120 beat per minute, 123 beat per minute, and 122 beat per minute respectively, which shows all of them were below level of fitness zone according to CPHA (Table source: Canadian Public Health

Association). When we compare the previous results after 3 months of training the average results of step test for men under the age 18-25, 26-35, 36-45, and 46-55 were 101 beat per minute, 103 beat per minute, 112 beat per minute, and 116 beat per minute which shows that they were average fitness levels while women under the age 18-25, 26-35, 36-45, 46-55, and ≥56 were 115 beat per minute, 119 beat per minute, 117 beat per minute, 121 beat per minute, and 118 beat per minute respectively, which indicates all of them were average level of fitness except the age between 46-55 which is below average fitness level as stated by Canadian Public Health Association.

According to Shephard, (2001), young adult hood typically covers the period from 20-35 years of age, when both biological function and physical performance reach their peak. During young middle age (35-45) years, physical activity usually wanes, with a 5-10 kg accumulation of body fat. During latter middle age (45-65) years women reach the menopause, and man also substantially reduce their output of sex hormones. In early old age above 65 years, there may be a modest increase of physical activity, in an attempt to fill free time. Because initial fitness is quite low, the aerobic condition of a senior can be improved by low intensity of training, gains are greatest if a heart rate of 130-140 beats per minute can be sustained, but useful if slower progress is seen with regular training at heart rates of 110-120 beat per minutes. In the frail elderly, heart rate rarely exceeds 85 beat per minute, and some training response may then be anticipated even with activities inducing a heart rate of only 100beats per minute. There is only an increase in heart rate during exercise because the heart needs to pump more blood to the different muscles. This increase is directly proportional to the increase of intensity of exercise. Average heart rate is 60-70 beat per minute, and during exercise it increases to 165-190 beat per minute. Aerobic activity as being long in duration yet low in intensity, heart rate at rest decreases as a result of endurance training. Heart rate during sub maximal exercise also decreases, often by about 20-40 beat per minute following 6 months of moderate training. Using the same large muscle group, rhythmically, for a period of 15-20 minutes or longer while maintaining 60-80% of your maximum heart rate, maximum heart rate either remains unchanged or decreases slightly with training.

4.4. General Interview Results of Trainers and Experts

In this study interview was used as one form of data collection instruments, in addition to questionnaire, fitness test, and observation. Therefore, the general interview results obtained during data collection are summarized as follows:-

4.4.1. General Interview Results of Trainers

All instructors were asked to describe their qualification and level of certification they have. Therefore, Item 2 Table 3 above showed the educational background of the sample instructors clearly. Most gym instructors said that they got a gym instructor certificate from federal and region sport commission. But, from the interviewed instructors two of them have degree and diploma in HPE program not took gym instructor certificate course. Furthermore, most of them were not took international courses from life fitness and body wise gyms on the area. Moreover, six have some certificate on language, computer, coaching, in doping control, in massage theory, in gym machine instructor and first aid training. Except those who took a degree program in HPE, the rest instructors did not take any special training concerning special needs as a course or training, but they got some during gym instructor training especially, focusing on patients. Most of them were professional sport players in different games for so many years.

The other thing what they were asked was that whether they apply pre-program (pre-enrolment), in-program and post-program physical fitness tests and how do they go through it. Specifically, all instructors did not take any test, but most said that at the beginning they tried to know (by assessment) the need or interest of their trainees. After that, they understand their level then apply everything accordingly. And they follow their change throughout their stay by observation, interview, and as one side “by referring their trainees laboratory results.” Furthermore, six instructors said that they have a measuring device or machine which shows important aspect of trainees’ present condition like weight, heartbeat and blood pressure. Therefore, they said, from the beginning we collect these results in addition to our interview. As a result we know where a given trainee should level be (beginner, intermediate or advanced) and the amount of exercise he could challenge.

All gym instructors said that they have guides for their fitness program, which was prepared by all gym instructors and staff members' common agreement based on the principles of fitness training to follow their progression throughout the fitness training. And they have also a card of trainee from the beginning up to the end for those who stay or live with them for a short or long period of time which is an attendance and performance checklist.

Concerning the components of exercise which was they were asked, one said that he included all components of physical exercise, since he said "the main objectives was health oriented." The majority said, "We tried to get the interest of the trainees, and as domination we accept as but we include all the rest components." One said that "trainees who were involved aerobic session then lead to machine and weight rooms to develop other parts of fitness." According to other instructor, "it was a matter of adjustment; from a single machine any one can get all aspects by adjusting the speed, time, load, etc of a machine." Finally other said that," the exercise parts by themselves include all physical fitness components like when we warm-up, then to the main part and when we cool-down."

All instructors were asked whether they prepare lesson plans for their program or not. Most instructors said that they did not prepare any lesson plan for their program; their reason was the inconsistency of trainees. So that they as one said, "prepare him daily for new comers." But, he added, "For those who stay with us only give them some correction and some new things, because they already adapt so many things during their stay in the gym, so that more or less they know what to do every day." One said that "instructors could have any program personally or when they are a personal trainer otherwise this is impossible for a mass sport but they could have three or four types of exercises which could be rotate throughout."Other said that "most of the time programs are found in aerobics classes, from selecting the type of music for the program to different exercise types like floor aerobics, stepper aerobics, taboo aerobics and others, so that they can include different exercises for specific type of aerobics at different times."Two instructors said that they have a lesson plan for each trainee, regardless of the duration he or she stays in their gym.

As to the evaluation of their exercise program which was the one they were asked. Most said that they evaluate their program through observation and interview. One said that "sometimes they referring lab results of patients."The other said that "he evaluates his program when trainees

jump from beginner to the advanced level."According to another, "trainees did take different measurements at different intervals of time, so we evaluate that and the load they challenge every time."Other said that "he evaluated his program when trainees go with him for a prolonged period of times (for a number of months, years of duration), and when most of the time trainees told him their change(s)."Finally one instructor said that "first he practices a specific exercise by himself, and then he would try to modify and adapt it on his trainees, according to their level."

4.4.2. General Interview Results of Experts

Concerning on the assessment of general health aspect of the community, the result(s) and their implications questions, Lealem from the Region sport commission responded that the region sport commission did not carry out any assessment on the general health aspect of the community, even did not get any information concerning the issue from governmental and non-governmental organizations. He said that the government played a great role in the expansion of physical fitness program in every surroundings. For instance, according to Lealem:-

- The government permits any one to open gyms and fitness centers anywhere in the country.
- The fitness industry was included under the investment code, so that investors can import any machine free of tax.

Lealem and Sileshi region sport experts said that there are different physical exercise programs which can help any group of the society to participate in any or many of them. According to these experts, the programs were prepared well in order to participate all segments of the society like children, beginners, intermediates, advanced levels, for pregnant and older people, for diabetics and hypertension for HIV/AIDS patients, for those who have back problem, for obese people both men and women.

The materials that they used were modified wooden materials, blocks and other similar things but, some years later modern machines like treadmills, bikes, stepper weight machines were started to use in the region first by Bamboo Hotel. After sometimes gyms became expanded and expanded in every part of the region and the town Assosa. As a result investors were started to involve in to the market highly and import the latest modern machines. In this respect, Lealem said, now a day any investor can import any gym machine without any tax.

As to instructors' selection, Lealem said that instructors were selected by the criteria they set. Therefore, instructors should get level 1, 2, 3 gym instructor certificate from federal sport commission, after they complete secondary level education and were working in gyms or fitness centers as an instructor. In addition, those who have additional degree, diploma or certificate in HPE were given special attention during selection. Lealem and Sileshi said that they design programs which were focused on different health issues. Then any instructor who fulfills their criteria can involve on the program and he should prepare and summits a script of exercise to the sport commission. After that each script was evaluated in a committee which has different professionals including physicians, experts, specialists and others. Finally they would select those instructors who prepared well in their exercise script, and have good physique and dressing. In addition to this, both experts said that the committee would take some amendments on those exercise scripts which are ready for transmission; even, they said, did not let any program in air without the agreement of some respected professionals and specialists, especially those program focusing on patients.

Lealem and Sileshi both said that the Region Health Office primarily did not want to participate in fitness program from the beginning but, the objective of their physical exercise program was mainly focused on urban citizens' health matters. According to Lealem, now a day's modern diseases are in expansion in all urban towns of Ethiopia. Therefore, he said, to fight these and other diseases, the only way we should follow is this type of program. In general, he added, the aims and objectives of our program and of the nation public health of Health Ministry mainly focus on the production of healthy citizens.

4.4.3. Suggestions given by the Respondents questionnaires and interviews

Almost all the given suggestions of the respondents were concentrated on education. Most said that now a day the fitness industry is in progress and so many gyms have been built in our country but our level of education up on the area remains constant. They said courses that we took for 15-20 days previously is not enough when we compared it with the expansion of the industry and technology of the machines.

Hence it should be increased in quantity and quality for a long period of time so as to strengthen ourselves and serve our society better. Therefore, they said, the government should give more

attention for this issue. One instructor said that “gyms were expanded in every parts of the country therefore,” he said, “Trainings should reach there.”One said that “most instructors are working without enough knowledge on the area”; he added “they did not follow appropriate method of instruction, so that Benishangul Gumuz Region sport commission and or other authorized organization should evaluate the achievement level of instructors at the interval.”Sileshi, who is an expert in Region sport commission, said that “the fitness industry which is in expansion throughout the world creates a hottest market in our country. But the level of education which was given could not satisfy the need of the market.” “At this moment, he said in our country, gyms in their facilities and equipments were a head of the human resource they have.’’ “Therefore, he added finally, universities and colleges should respond this and should produce market oriented graduates

4.5. Observation Results (see- appendix-F)

4.5.1. General Condition of the Fitness Centers

Concerning the adequacy of space for proper use of equipments, around 3 (75%) gyms did not have adequate space for proper use of equipments, especially, this condition was observed in the aerobics classes. The other 1 (25%) gyms which accounts less than the average have enough space. Regarding to the room temperature and the light in the gym hall, the majority gyms which account 3 (75%) have enough light and their room temperature was conducive or comfortable and well-ventilated. Some times 1 (25%) the uncomfortable room temperature occurred in the aerobics class, because they enforced to take more people than their capacity, so that they became hotter, even if there were suckers and ventilation. This condition was observed in every sample gym, but 1 (25%) of them did not have conducive room temperature, not have enough light and not well-ventilated.

As to drinking fountain, shower rooms and changing rooms, 2 (50%) gyms have drinking fountain, 1 (25%) gym has adequate shower rooms and 1 (25%) gyms has changing rooms for males and females, half of the total gyms 2 (50%) however, satisfy more or less drinking fountain, But 3 (75%) of the gyms have not adequate shower rooms and changing rooms, sometimes the researcher informally heard that whenever the number of trainees increased the shower rooms become less in number when we come to again the changing rooms most of them

were not have separate changing rooms at all for both sex. Concerning the locker, the accessibility of locker rooms in the sample gyms 1 (25%) was almost satisfied whether they are imported or locally made. When we observe about staff offices and number of toilet rooms, except 1 (25%) gym the rest sample gyms 3 (75%) have offices for their instructors and for others but all have a reception class. Concerning toilet rooms 3 (75%) gyms have enough numbers of toilet rooms but sometimes because of shortage of space they have, few gyms 1 (25%) face a shortage of toilet rooms, for instance the one sample gym has got this problem. This issue also suggested by few trainees.

4.5.2. Concerning Gym facilities and equipments

There were enough equipments in 2 (50%) gym, but not enough in the 2 (50%) of other gyms. Concerning equipments clean, modernity and accessibility, 1 (25%) gyms have modern equipments and machines where as 3 (75%) gym use local products by mixing modern ones, like weights, mats and steppers. Concerning the emergency equipments, 3 (75%) gyms did not have fully stocked first aid kit and did not have fire extinguisher. Most interviewees said that they did not take any first aid training and none of them have got CPR (Cardio-Pulmonary Resuscitation) training. There were 1 (25%) gyms have cardiovascular machines, the rest 3 (75%) gyms have not cardiovascular machines (e.g. treadmills, upright and recumbent bikes, steppers, elliptical, etc). All sample gyms 4 (100%) have flexibility equipments. And 2 (50%) gyms have strength training machines (e.g. free weights, weight machines, etc), and balance equipments, the rest 2 (50%) gyms have not. Equipments were safe, age friendly and working properly. This issue actually supported by the results which were got from questionnaire and interview. For instance, 32 (64%) respondents were replied that equipments and exercise which were done using them were safe and comfortable.

4.5.3. About gym trainers

Most of the trainers were certified and licensed 6 (75%) and 2 (25%) were not certified, but they have a number of years of experience in this sport and that they are a student of HPE subject at this time. All the 8 (100%) gym instructors were enough for the selected fitness centers. Majority of trainers 6 (75%) were a good communicator, guider, coordinator and supervisor, except 2 (25%) of the gym instructors. 4 (50%) of the trainers follow the correct methods of training

principles, but 4 (50%) did not know what to do and practice wrongly. Because the majority of the gym trainers 6 (75%) did not have a lesson plan in the fitness program except 2 (25%) of the trainers so they were not follow good methods of training.

4.5.4. About gym trainees

Less than a half 20 (40%) of the trainees were started physical exercise by recommendation of their doctor, the rest 30 (60%) were joined the gym by their own. Most of the trainees 35 (70%) were perform an exercise for improving their health related fitness but 15 (30%) were perform for enhancing their body posture and performance level. Concerning the form which trainees would fill, 25 (50%) of them were full-fill about their health status, age and other important aspects, except half of them.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

This final chapter of the study deals with the summary of the findings, conclusions which are drawn on the basis of the findings and the recommendations forwarded based on the findings to solve the problem identified.

5.1. Summary of the study

The study mainly focused on the impact of physical fitness training on health related fitness trainees. The case of Assosa town fitness centers. Moreover, the study was intended to forward possible solutions for the identified problems while implementing the program in to practice with the following specific objectives:-

- To identify the qualification of trainers of the fitness centers.
- To find out the current fitness levels of the trainees in the fitness centers and to assess whether their objectives are met or not.
- To investigate the principles and practices of the fitness programs in some selected fitness centers of Assosa town.
- To assess the quality of equipments and facilities of the fitness centers in relation with the level of participants, and the content of a specific program for activities.
- To examine the health condition of the trainees.
- To assess the contribution of physical fitness training on health.

In order to achieve the objectives, the study was guided by the following basic research questions:-

1. Are trainers of the fitness centers professionally fit to run the fitness program?

2. How the assessment and evaluation techniques of the training program conducted by the trainers of the fitness centers?

3. Do trainers of the fitness centers follow the correct principles of physical fitness training?

4. Are training facilities and equipments appropriate with respect to the level of the trainees?

5. Are the trainees checked their health condition before entering the gym centers?

6. Why do the trainees need physical fitness training?

This study was aimed at investigating the impact of physical fitness training on health related fitness trainees: The case of Assosa town fitness centers. In order to achieve this purpose, some basic questions were raised regarding the general conditions of the fitness centers, instructors' qualification, gym facility and the fitness program as a whole, as well as fitness tests for the trainees and interview for gym instructors and experts. In this study there were eighty five total populations of gym trainees from the four known fitness centers in Assosa town and the subjects of the study were totally sixty in number: fifty trainees, eight trainers, and two experts of the region sport commission were participated.

The data were collected from these groups through questionnaire, fitness test, and interview. Furthermore, observation using observation checklists were also used for data collection. The data which were obtained from questionnaire, fitness test, and observation were presented in tables and analyzed in percentages whereas of interview analyzed in descriptive statements. Therefore, based on the result of the data analysis done, the following findings or results, conclusions and recommendations are summarized in their respective sub-headings.

5.1.1. Major Findings of the study

Characteristics of the Respondents

As presented in the data presentation chapter, female respondents accounts 20 (40%) and their participation in the gym instructor area were totally diminished.

As to the age of trainees respondents, the study revealed that 18 (36%), 12 (24%), and 10 (20%) were found under the age 26-33, 34-41, and 18-25, respectively. When we consider the rest 6 (12%) and 4 (8%) were found under the age 42-49, and 50 and above years old, respectively.

As to the health status of trainees respondents, the majority 43 (86%) were found in good health condition, except 7 (14%). This may be the result of the duration trainees stay in the gym for

enough period of time because majority respondents who account 33 (66%) stayed in the gym from 4 months to 4 years of duration in their gyms.

Concerning the educational background of instructors, 2 (25%) have gym instructor certificate and the other 2 (25%) have both diploma in HPE and instructor certificate, 1 (12.5%) has degree in HPE and instructor certificate, 1 (12.5%) has certificate in both HPE and fitness instructor, 1 (12.5%) has degree in HPE and has no instructor certificate and the remaining 1 (12.5%) has diploma in HPE and has no instructor certificate.

General condition of the gyms

As to the facilities of the gym, the majority of the respondents 35 (70%) replied that they were comfortable with the facilities of the gym and it was supported by the result obtained from the observation made by the researcher.

The study concerning on equipment orientation, 38 (76%) of respondents were replied that they got enough orientation and it was also supported by interview results.

The study on the level of complexity and strength to operate with equipments, 45 (90%) of respondents agreed that equipments were simple and easy to operate.

As to the study on instructors whether they supervise and assist their trainees or not, 42 (84%) respondents replied as they have healthy relationships with this aspect.

Concerning nutritional advice and other guides, 35 (70%) respondents were answered as they got nutritional advice and other guides from staff members whereas 15 (30%) respondents did not agree up on this. Suggested results also show that trainees were told about the issue only whenever they ask.

As to the trainees goal of exercise, most respondents 16 (32%) exercised to develop cardiovascular fitness, 12 (24%) and 8 (16%) respondents exercised to develop muscular strength and to loss weight, respectively. Furthermore, 4 (8%) respondents were exercised to develop multiple components, but few said that they exercise for both, to loss and to gain weight as well, which is impossible.

Concerning the number of days of exercise, the majority 46 (92%) exercise from 4-7 days per week. In this respect, when we consider those respondents who practice every day account 8 (16%), even when we add those who practice 6 days of a week 10 (20%) up on the above figure it will become 18 (36%) which was less than half of the total.

As to the average length of hour or minutes of work out, most respondents 20 (40%) waste 1:30 hr-2:00 hrs in each physical exercise, and the rest who work for 20-30 minutes account 6 (12%), those who work for 40-50 minutes account 10 (20%) and those who work for 1 hour account 14 (28%), respectively. In general, those respondents who waste their time in exercise from 40 minutes to 2:00 hours were reached 44 (88%). On top of this, some respondents were suggested that they practiced more than 1:30 and 2:00 hours, even some said 3 hours.

Regarding the recommendation of doctor to involve in physical activity, less than a half 14 (28%) of respondents were started physical exercise by recommendation of their doctor, the rest 36 (72%) respondents were joined their gym by their own.

Concerning pain and discomfort during exercise, 42 (84%) respondents were replied that they were comfortable with the exercise they practiced as well as did not felt any pain so far. But some respondents said as they felt it when they were started to exercising at the beginning and they got relief from it gradually.

Regarding the designed program whether they meet trainees need or not, 38 (76%) were agreed on the issue and were interested in the program they got from the gym.

With respect to intensity, duration, load, and frequency of exercises, the majority respondents 30 (60%) were replied that instructors adjust and modify the intensity, duration, load and frequency of different workouts so as to fit with trainees needs.

General test results of gym trainees

Concerning BMI test results of both men and women were ideal and over ideal fitness levels at the pre-test results respectively but after 3 months of training both of them were achieved the desirable body weight.

When we see the muscular strength of the arm, shoulder and upper back muscles of both men and women after 3 months of training most of them shows significant changes according to their age and gender relative to the pre-test results. This shows that whenever they practiced regularly in physical exercise by following the correct principles of training with proper diet muscle strength can be greatly improved as little as 8 weeks of resistance training, even in 90 years old. Concerning the muscular endurance test results, the endurance of the abdomen and hamstring muscles for both men and women after 3 months of training in different ages were achieved a fair fitness zone level which shows that there were some significant changes comparing to the pre-test result.

Regarding to the flexibility test results after the consecutive 3 months of training both men and women at different ages were improved their trunk flexion and lower back muscles compare to the pre-test result.

When we see the results of cardiovascular test after the consecutive 3 months of training in both men and women at different ages there were radical changes in resting heart rates relative to the pre-test results. This reflects that the heart rate of an individual who is physically fit increases less with exercise and returns to normal faster after exercise than does the heart rates of someone who is not physically fit.

General Interview Results of Instructors

Most gym instructors have got a gym instructor certificate from federal and region sport commission. But from the interviewed instructors two of them have degree and diploma in HPE program not took gym instructor certificate course. Furthermore, most of them were not took international courses from life fitness and body wise gyms on the area. Besides, none of them have any training concerning CPR (Cardio-Pulmonary Resuscitation).

Specifically all instructors did not take or apply any pre-program (pre-enrolment), in-program and post-program physical fitness tests. But they tried to get the need or interest of their trainees by the means of observation, interview, measuring device or machine, and as one side by referring their (trainees) laboratory results and they follow trainees change throughout. Furthermore, few use cards to follow their trainees.

Most instructors did not have any lesson plan for their program; their reason was the inconsistency of trainees, so they prepare themselves daily for a newcomers. In addition to this aerobics instructors sometimes use weekly plans for their program.

As to the evaluation of their exercise program, most instructors evaluate their program through observation, interview, using measurement results and suggestion, and even by referring lab results of patients.

General Interview Results of Experts

Concerning on the assessment of general health aspect of the community, the result(s) and their implication, the region sport commission did not carry out any assessment on the general health aspect of the community, even did not get any information concerning the issue from governmental and non-governmental organizations.

According to the experts, the programs were prepared well in order to participate all segments of the society like children, beginners, intermediates, advanced ones, for pregnant and older people, for diabetics and hypertension, for HIV/AIDS patients, for those who have back problem, and for obese people both men and women.

As to instructors' selection, they should get level 1, 2, 3 gym instructor certificates from federal and region sport commission, after they complete secondary level education and were working in gyms or fitness centers as an instructor. In addition to this, those who have additional degree, diploma or certificate in HPE were given special attention during selection.

Programs were designed which focused on health issues. Then any instructor who fulfills their criteria can involve on the program and he should prepare and summit a script of exercise to the sport commission.

Observation Results

General Condition of the Fitness centers

Concerning the adequacy of space for proper use of equipments, around 3 (75%) gyms did not have adequate space for proper use of equipments.

Regarding to the room temperature and the light in the gym hall, the majority gyms which account 3 (75%) have enough light and their room temperature was conducive or comfortable and well-ventilated.

As to drinking fountain, shower rooms and changing rooms, 2 (50%) gyms have drinking fountain, 1 (25%) gym has adequate shower rooms and 1 (25%) gyms has changing rooms for males and females, all the gyms however, satisfy more or less.

Concerning the locker, the accessibility of locker rooms in the sample gyms 1 (25%) was almost satisfied whether they are imported or locally made.

When we observe about staff offices and number of toilet rooms, 3 (75%) gyms have offices for their instructors and for others and also 3 (75%) gyms have enough numbers of toilet rooms.

Concerning Gym facilities and equipments

There were enough equipments in 2 (25%) gym, but not enough in the 2 (25%) of other gyms. Concerning equipments clean, modernity and accessibility, 1 (25%) gyms have modern equipments and machines where as 3 (75%) gym use local products by mixing modern ones.

Concerning the emergency equipments, 3 (75%) gyms did not have fully stocked first aid kit and did not have fire extinguisher.

There were 1 (25%) gyms have cardiovascular machines, the rest 3 (75%) gyms have not cardiovascular machines. All sample gyms 4 (100%) have flexibility equipments. And 2 (50%) gyms have strength training machines and balance equipments, the rest 2 (50%) gyms have not.

About gym trainers

Most 6 (75%) of the trainers were certified and licensed. All the 8 (100%) gym instructors were enough for the selected fitness centers. Majority of trainers 6 (75%) were a good communicator, guider, coordinator and supervisor. 4 (50%) of the trainers follow the correct methods of training principles. The majority of the gym trainers 6 (75%) did not have a lesson plan in the fitness program.

About gym trainees

Less than a half 20 (40%) of the trainees were started physical exercise by recommendation of their doctor. Most of the trainees 35 (70%) were perform an exercise for improving their health related fitness. 15 (30%) were perform for enhancing their body posture and performance level. 25 (50%) of trainees were full-filled about their health status, age and other important aspects in the trained form.

5.2. Conclusions

Considering the data analysis and the major findings, which were drawn from the analysis, the following conclusions could be drawn. Women often found in poor health than men. Regular physical activity helps prevent cardiovascular diseases which account for one-third of deaths among women around the world. Diabetes affects more than 70 million women in the world. Cardio-vascular diseases cause half of all deaths in women over 50 in developing countries 2025 (WHO, 2003a). When we consider this study, women were fewer participants in physical activity than males; even they are totally dominated with respect to gym instructor.

When we consider physical activity with respect to age, we can say the following statement from the finding of study, “as the age of an individual increase, physical activity participation will decrease.’’ In support of this, some reports suggest that habitual physical activity begins to decline as early as six years of age. Other critical periods when physical activity is likely to diminish include adolescence, the transition from school to university and from university to the labor force (Shephard, 2001).

The educational background of instructors revealed that most of them were certified and graduated in HPE from higher institutes showed the flourishing of well trained instructors towards this area. Furthermore, some were trained in first aid but all did not have CPR (Cardio-Pulmonary Resuscitation) training.

The facilities that are found in the selected gyms are more or less good and the equipments were appropriate with the sex, age and ability level of the trainees. This shows that the equipments and exercises done using them were safe. In addition to this trainees were also informed or oriented

about the proper use of exercise equipments and/or machines. Besides, even though there are enough machines in the gym, sometimes it does not coincide with the number of trainees.

Even though the supervision and follow up taken by the instructors are good, their nutritional advice and other guides should be strengthen more, because trainees have healthy relationships with their instructors and were not advised well.

As to the trainees' goal of exercise, more of them are exercising to develop cardiovascular endurance, muscular strength and to loss weight, others to develop multiple components. There are also few who want to develop both to loss and to gain weight at the same time which is impossible. Therefore, this clearly indicates that they do not have or got enough awareness about physical activity.

Concerning the number of days of exercise, more trainees are engaged in physical activity more days of the week, but their share for each day is not good enough. Beside this, more numbers of trainees are not engaged in physical exercise every day or one day less than the week. And, although we could not know the type, the amount of exercise and the numbers of days which each trainee practice, all period of times which trainees practice are the recommended times which one can get visible changes on his health. Beside this, the two and above hours which was selected by few trainees is not recommended for those who practice every day for health.

Specifically all instructors did not take or apply any pre-program (pre-enrolment), in-program, and post-program physical fitness tests. But they tried to get the need or interest of their trainees by the means of observation, interview, measuring device or machine, and as one side by referring their (trainees) laboratory results and they follow trainees change throughout. Furthermore, few use cards to follow their trainees.

Almost all instructors did not have any program; their reasons were the inconsistency of trainees and evaluate their program through observation, interview, using measurement results and suggestion, and even by refer lab results of patients.

Concerning BMI test results of both men and women were ideal and over ideal fitness levels at the pre-test results respectively but after 3 months of training both of them were achieved the desirable body weight. This indicates that when regular physical activity is combined with proper

nutrition it can help to reduce body fat by building muscle mass and control body weight by preventing obesity, a major risk factor for many diseases (Head Quarters Department of the US Army, 1998) and (President's Council on Physical Fitness and Sport, ND).

When we see the muscular strength of the arm, shoulder and upper back muscles of both men and women after 3 months of training most of them shows significant changes according to their age and gender relative to the pre-test results. This shows that whenever they practiced regularly in physical exercise by following the correct principles of training with proper diet muscle strength can be greatly improved as little as 8 weeks of resistance training, even in 90 years old. As people grow older, regardless of gender, muscular strength is better among people who train than people who do not. Women have smaller amounts of the anabolic hormone testosterone and therefore have less muscle mass and size than man. Because of this women typically have 60-80% of the absolute strength of men (WHO, 2005).

Concerning the muscular endurance test results, the endurance of the abdomen and hamstring muscles for both men and women after 3 months of training in different ages were achieved a fair fitness zone level which shows that there were some significant changes comparing to the pre-test result. This indicates that regular physical exercise with proper diet can improve the level of muscular endurance fitness, for this reason men and women can compete more evenly in relative muscular endurance activities. Though muscular endurance declines with age, it is not as dramatic as decreases in absolute strength (Joseph et al.., 2005).

Regarding to the flexibility test results after the consecutive 3 months of training both men and women at different ages were improved their trunk flexion and lower back muscles compare to the pre-test result. This shows that regular stretching exercise can help older people maintain good flexibility throughout life, and reduces the stiffness of joints, tendons and ligaments of the body. Although flexibility can be increased with persistent exercise, the magnitude of increase is a very individual matter and is dependent up on the specific types and forms of activity, generally girls tend to be more flexible than boys is probably due to anatomical differences in joints and type or extent of activities they choose (Kras, H. 1972).

When we see the results of cardiovascular test after the consecutive 3 months of training in both men and women at different ages there were radical changes in resting heart rates relative to the

pre-test results. This reflects that the heart rate of an individual who is physically fit increases less with exercise and returns to normal faster after exercise than does the heart rates of someone who is not physically fit. When any individual practice regularly in aerobic exercise for a long period of time with low intensity the heart rate at rest decreases as a result of endurance training. Heart rate during sub maximal exercise also decreases often by about 20-40 beat per minutes following 6 months of moderate training (Shephard, R. 2001).

Concerning on the assessment of general health aspect of the community, the result(s) and their implication, the region sport commission did not carry out any assessment on the general health aspect of the community, even did not get any information concerning the issue from governmental and non-governmental organizations. Furthermore, they do not know the aims and objectives of the public health of the country, but the objective of their physical exercise program was mainly focused on urban citizens' health matters.

More gyms have not adequate space for proper use of equipments, especially in aerobics class. Regarding to the room temperature and the light in the gym hall, the majority gyms have enough light and their room temperature was conducive (comfortable) and well ventilated, respectively. As to drinking fountain, shower rooms and changing rooms, all the gyms however, satisfy more or less.

Concerning the locker and the availability of staff members, the accessibility of locker rooms in the sample gyms were almost satisfying whether they are imported or locally made. When we observe about staff offices and the number of toilet rooms, except one gym the rest sample gyms did not have offices for their instructors. Concerning toilet rooms three gyms have enough number of toilet rooms. All of the sample gyms, except one did not have any form, which trainees fill about their health status, age and other important aspects.

Equipments were safe, age friendly and working properly. There were few cardiovascular machines, and many strength training machines, flexibility and balance equipments. All equipments and machines were appropriate and compatible with the capacity level of trainees and are clean.

Concerning equipments modernity and accessibility, most gyms have modern equipments and machines, where as two gyms uses local products by mixing modern ones, like weights, mats and

steppers. Besides, more gyms did not have fully stocked first aid kit and any trained person with first aid, and all sample gyms did not have fire extinguisher.

5.3. Recommendations

- To improve the lack of qualified fitness trainers in Assosa town fitness centers the higher education institutions should give more attentions to fill the gap.
- The fitness centers should full fill the necessary facilities and equipments by giving more attention with respect to the impact they have on trainee's health.
- The community based physical fitness program should work in collaboration with region health bureau, education, youth and sports, urban development, social affair and other governmental and non-governmental organizations like WHO (World Health Organizations), especially, the mass media will give more emphasis to the health related fitness programs.
- The study revealed that participation of women in physical activity was less than males; even they are totally dominated with respect to gym instructor. Therefore different incentives should be made in order to increase their involvement.
- Trainees especially who have health problems and those who participate in health related physical fitness program should develop the culture of visiting their doctor before the beginning of any physical exercise.
- When regular physical activity is combined with proper nutrition and by following the proper fitness training principles it can help to reduce body fat by building muscle mass and control body weight by preventing obesity, a major risk factor for many diseases.

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APPENDICES

APPENDIX-"A''

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

COLLEGE OF NATURAL SCIENCE

QUESTIONNAIRES TO BE FILLED BY TRAINESS OF THE FITNESS CENTERS

Dear respondent:

My name is Alemayehu Ayalew. I am a graduate student of the institute of education or college of natural science in Addis Ababa University. Currently, I am writing my masters' thesis entitled "The impact of physical fitness training on health related fitness trainees: The case of Assosa town fitness centers'' for the partial fulfillment of the master of science in sport science. The questionnaire is designed to collect data from respondents. You are kindly requested to provide your response to the questionnaire prepared. Please be assured that the data collected in this questionnaire will not be used for other purposes than the above stated objectives. Thank you.

General direction:

In this questionnaire, you will find out twelve questions which cover the major issues of the fitness center. Based on the questions yes or no and other alternatives are presented. Thus you are kindly requested to select and encircle the most appropriate one among the given alternatives. Furthermore, if you have any additional suggestion, you may write in the space provided. Finally, I thank you very much for responding to the questions.

Respondent's personal data:

Fitness centers type: Governmental----------Private----------Sex--------
Age----------Type of your job or profession----------Duration of stay in the fitness center/gym/club (in number of days, months, and years) ----------

Medical information (health status) ----------

Questionnaires for trainees of the fitness center:

1. Are you comfortable with the facilities?

   A. Yes B. No

   Suggestion:

2. Do you have enough orientation about equipments?

   A. Yes B. No

   Suggestion:

3. Are equipments simple and easy to operate?

   A. Yes B. No

   Suggestion:

4. Do the trainers closely supervise and assist trainees?

   A. Yes B. No

   Suggestion:

5. Do you get nutritional advices and other guides from the staff members?

   A. Yes B. No

   Suggestion:

6. What is your goal to be in this fitness program? To improve:-

   A. Muscular strength B. Cardio-vascular fitness C. Flexibility D. Weight loss

   E. Weight gain F. Exercise or Health habit G. Diet or Eating habit

   Suggestion:

7. How often do you exercise per week?

   A. 3 days B. 4 days C. 5 days D. 6 days E. 7 days

   Suggestion:

8. What is the average length of minutes per hour of each workout?

A. 20-30 min B. 40-50 min C. 1hour D. 1:30-2 hours

Suggestion:

9. Does your physical activity recommended by your doctor?

A. Yes B. No

Suggestion:

10. Do you fill any pain and discomfort during exercise?

A. Yes B. No

Suggestion:

11. Does the program designed meet your need?

A. Yes B. No

Suggestion:

12. Do the classes have different levels of intensity, duration, load and frequency which are modifiable to your needs?

A. Yes B. No

Suggestion:

APPENDIX-"B"

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

COLLEGE OF NATURAL SCIENCE

Title:-"The impact of physical fitness training on health related fitness trainees: The case of Assosa town fitness centers."

Dear interviewee:

My name is Alemayehu Ayalew. I am a graduate student of the institute of education or college of natural science in Addis Ababa University. Currently, I am writing my masters' thesis entitled "The impact of physical fitness training on health related fitness trainees: The case of Assosa town fitness centers" for the partial fulfillment of the masters of Science in sport science. Interview guide is designed to collect data from participants. Therefore, you are kindly requested to generate important information to the interview prepared. Please be assured that the data collected in this interview will not be used for other purposes than the above stated objectives. Thank you.

Interview Guides Presented for Trainers

1. Please describe your qualifications and level of certification?
2. Do you apply pre-program (pre-enrolment), in-program, and post-program physical fitness tests (aerobic fitness test, muscular strength test, body composition test, flexibility test) and how do you go through it?
3. Do you have guides for your fitness program? Who prepared them and how they prepared?
4. Do you include all health-related physical fitness components in your work? If yes, how do you respond the needs of the trainees? And which components dominate your program?
5. How do you prepare lesson plans for your program?
6. How do you evaluate your methods of training?

APPENDIX-"C"

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

COLLEGE OF NATURAL SCIENCE

Title:-"The impact of physical fitness training on health related fitness trainees: The case of Assosa town fitness centers."

Dear interviewee:

My name is Alemayehu Ayalew. I am a graduate student of the institute of education or college of natural science in Addis Ababa University. Currently, I am writing my masters' thesis entitled "The impact of physical fitness training on health related fitness trainees: The case of Assosa town fitness centers" for the partial fulfillment of the masters of Science in sport science. Interview guide is designed to collect data from participants. Therefore, you are kindly requested to generate important information to the interview prepared. Please be assured that the data collected in this interview will not be used for other purposes than the above stated objectives. Thank you.

Qualification----------Experience----------

Interview Guides Presented for the Experts:

1. Do you carry out an assessment on the general health aspects of the community, or get it from the respective agent? If this is so, what is (are) the results of the assessment and their implication?
2. During designing the fitness program, who are your target groups of the population?
3. How training guides and other materials developed, tested, revised, produced, used, and evaluated? And are they distributed to all fitness centers/gyms/clubs?
4. Who is involved and what is the respective role of trainers, professionals and others during program designing and preparation?
5. Are the aims and objectives of the fitness program corresponding to the aims and objectives of public health issues of the nation? How?

APPENDIX-"D"

OBSERVATION CHEEKLIST

The objective of this checklist is to assess important issues concerning:-The general condition of the fitness centers such as facilities and equipments, trainees and trainers of the fitness centers.

Observation date----------

Beginning and completion time of observation----------

Observer name----------Number of set of observation----------

Place of observation----------Title of a set----------

No	Observation Items	Yes	No	Remarks
1	**General conditions of the fitness centers/gyms/clubs**			
	1.1. Is there adequate space?			
	1.2. Is there enough light in the gym hall?			
	1.3. Is the room temperature conducive?			
	1.4. Is drinking water available?			
	1.5. Is there adequate shower rooms for males and females?			
	1.6. Are there enough locker and changing rooms?			
	1.7. Does the program designed for the need of the trainees?			
	1.8. Is there enough toilet and office rooms?			
2	**Gym facilities and equipments**			
	2.1. Are there enough equipment?			
	2.2. Are equipments clean and modern ones?			
	2.3. Are there emergency equipments like first aid?			
	2.4. Are there cardiovascular machines?			
	2.5. Are there strength training machines?			
	2.6. Are there flexibility equipments?			
	2.7. Are there balance equipments?			

3	**About gym trainers**			
	3.1. Are they qualified, certified and licensed?			
	3.2. Are they enough in numbers?			
	3.3. Are they follow the training principles?			
	3.4. Are they good communicator and coordinator?			
	3.5. Have a lesson plan and manual guide?			
4	**About gym trainees**			
	4.1. Are they checked by medical doctors?			
	4.2. Do they do for health?			
	4.3. Do they do for fitness?			
	4.4. Do trainees fill out pre-training form?			

APPENDIX-"E"

OBSERVATION RESULTS

The following table describes the general observation result obtained from observation checklist (**Appendix-D**).

No	**Observation Items**	**Gyms**											
1	**General conditions of the fitness centers**	**1**		**2**		**3**		**4**		**T**		**%**	
		Y	**N**	**Y**	**N**	**Y**	**N**	**Y**	**N**	**Y**	**N**	**Y**	**N**
	1.1. Is there adequate space?	-			-		-		-	1	3	25	75
	1.2. Is there enough light?	-		-			-	-		3	1	75	25
	1.3. Is the room temperature conducive?	-		-		-			-	3	1	75	25
	1.4. Is drinking water available?	-			-		-	-		2	2	50	50
	1.5. Is there adequate shower rooms?	-			-		-		-	1	3	25	75
	1.6. Is there enough locker, changing rooms?	-			-		-		-	1	3	25	75
	1.7. Does the program designed for the need?	-		-			-		-	2	2	50	50
	1.8. Is there enough toilet and office rooms?	-		-				-		3	1	75	25
2	**Gym facilities and equipments**												
	2.1. Are there enough equipment?	-		-			-		-	2	2	25	25
	2.2. Are equipments clean and modern ones?	-			-		-		-	1	3	25	75
	2.3. Are there emergency equipments?	-			-		-		-	1	3	25	75
	2.4. Are there cardiovascular machines?	-			-		-		-	1	3	25	75
	2.5. Are there strength training machines?	-		-			-		-	2	2	25	25
	2.6. Are there flexibility equipments?	-		-		-		-		4	0	100	0
	2.7. Are there balance equipments?		-	-			-	-		2	2	50	50

3	**About gym trainers**	**Y**	**N**	**Total**		**%**	
				Y	**N**	**Y**	**N**
	3.1. Are they qualified and licensed?	-	-	6	2	75	25
	3.2. Are they enough in numbers?	-		8	0	100	0
	3.3. Are they follow the training principles?	-	-	4	4	50	50
	3.4. Are they good communicator?	-	-	6	2	75	25
	3.5. Have a lesson plan and manual guide?	-	-	2	6	25	75
4	**About gym trainees**						
	4.1. Are they checked by medical doctors?	-	-	20	30	40	60
	4.2. Do they do for health?	-	-	35	15	70	30
	4.3. Do they do for fitness?	-	-	15	35	30	70
	4.4. Do trainees fill out pre-training form?	-	-	25	25	50	50

Key: - Y=Yes, N=No, and T= Total

Declaration

I Alemayehu Ayalew declare that the research works entitled “The impact of physical fitness training on health related fitness trainees: The case of Assossa town fitness centers” being submitted to the school of graduate studies of Addis Ababa University in partial fulfillment of the requirements for the degree of MSC in sport science. This thesis is my original work and has not been presented for the award of any degree, diploma, fellowship or any other similar title in any other university, and that all sources of material used for the thesis have been duly acknowledged.

ALEMAYEHU AYALEW WUBALE	----------	----------
BY	SIGN	DATE
Dr. SOLOMON TEKA	----------	----------
ADVISOR	SIGN	DATE