

# **EDUCATION:**

## **A MULTI-DISCIPLINARY APPROACH TO IMPROVING QUALITY OF LIFE**

*A book of readings in honour of*

**Professor  
EMMANUEL ADEREMI AKINADE**



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# **APPRAISAL OF AUDIOVISUAL UTILIZATION FOR TEACHING PHYSICAL EDUCATION IN LAGOS STATE SECONDARY SCHOOLS**

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## **ABSTRACT**

The study appraised the utilization of audiovisual aids for teaching Physical Education in Lagos State secondary schools of Lagos State. A close-ended questionnaire [ $r=0.77$ ] was validated and administered to 150 P.E. teachers of various secondary schools in the State. Percentage and Chi square analyses showed that audiovisual aids were not available in the schools, therefore, not utilized in the teaching of Physical Education. In addition, teachers were not familiar with their uses for teaching. It is recommended that government; parents and corporate bodies should support schools in making these learning resources available. And teachers should be exposed to the use of audiovisual aids for teaching during training, and while in service, through workshops.

## **INTRODUCTION**

Education has been described as the heartbeat of national development; its importance and indispensability, as the only viable means of developing and utilizing full potentials of any human society have remain a long established and

universally accepted fact [Agugbuem, 2002]. It is expected that the more the citizens of a country are educated, with knowledge, productive skills, attitudes and values, the better empowered they would become to actualize the dreams of accelerated national development.

Physical Education, however, is included in most curricula at various levels of education. The inclusion is based on the fact that the subject is widely accepted to contribute to the wholesome development of the child. Adegbamigbe [2002] affirmed that the inclusion of Physical Education in school curricula has attracted the supports of the world bodies like the United Nations Educational Scientific and Cultural Organization [UNESCO]. The teaching of the subject, is duly spelt out in the organization's international character of Physical Education and Sports [Adegbamigbe, 2002].

The significance of teaching aids in Physical Education cannot be overemphasized. Adegbamigbe [2000] assert that the purpose of teaching aids in Physical Education is to achieve instructional objectives more effectively. The teaching aids can increase students' motivation and create heightened interest and enjoyments, in learning by reducing the amount of teacher talk and increase visual involvement. Of all the learning resources, audiovisual aids constitute a special class. The American Alliance for Health, Physical Education, Recreation and Dance [AAHPER, 1988] identifies the following as audiovisual teaching aids in Physical education:

- i. Videotapes
- ii. 8mm films and loops
- iii. Video discs; and
- iv. 16mm films

In addition to these, television instructional programmes, motion pictures, computer assisted instruction [CAI], Programmed Learning, Over-head Projectors and Audiovisual Individual Learning Packages are also described as audiovisual teaching aids [Nnamdi, 2001; Adegbamigbe, 2000; Akinpelu, 1999 and Fawole, 1999]. A considerable number of research has been conducted on several of the aforementioned teaching aids to identify their contributions to learning; results indicate positive. According to Akindolie [1999], studies carried out in USA showed that about 83 percent of what is seen is learnt. And in message retention, a combination of seeing and hearing has been found to be the most effective. That is about 50 percent of message transferred by both seeing and hearing is retained, while only 30 percent of the same message communicated by seeing alone is retained. And hearing alone produces only about 20 percent retention. Be that as it may, Akindolie [1999] summarised the roles played by audiovisual aids in teaching-learning process as:

- i. Providing the teacher with the means for extending learner's experience;
- ii. Helping the teacher to provide meaningful source of information; and

- iii. Assisting the teacher in overcoming physical difficulties in presentation of subject matter, such as reaching a large audience, or knowing what is ordinarily invisible or only seen with difficulty.

To benefit from the values, of audiovisual aids in the teaching of Physical education, it is important that they are available and properly utilized. This study was therefore conceived to appraise the extent of audiovisual utilization for the teaching of Physical Education in Lagos State secondary schools. The following hypotheses were formulated for the study.

1. Audiovisual teaching aids are significantly available for teaching Physical Education in Secondary Schools.
2. Secondary school teachers would not be significantly exposed to the use of audiovisual aids for teaching Physical Education.
3. Students would not be significantly interested in Physical Education classes taught using audiovisual aids.

## **METHODOLOGY**

### **PARTICIPANTS**

A total of 150 Physical Education male and female teachers were randomly selected from various secondary schools in Lagos State. Analyses showed that 59 [46.5%] respondents were males while 68 [53.5%] were females. 8 [6.3%] were below the age of 20 years, while 43 [33.9%], 27 [21.3%] and 36 [28.3%] were of the age ranges of 20-30 years, 31-40 years and 41-50 years respectively. Only 13 [10.2%] were above the age of 50 years.

On teaching experience, 22 [17.3%] of the respondents have not spent up to 5 years on the job. 31 [24.5%], 37 [29.1%] and 14 [11%] have been teaching for 5-10 years, 11- 15 years and 16-20 years respectively, and 23 [18.1%] have spent well above 20 years as teachers. 78 [61.4%] of the respondents were NCE/Diploma holders, while 31 [24.4%] were first degree holders and 18 [14%] have their Master's degree.

### **INSTRUMENT**

A close-ended questionnaire constructed by the researchers served as the instrument for data collection. It was constructed based on four-scale of Likert

pattern [i.e. SA = Strongly Agree, A = Agree, D = Disagree and SD Strongly Disagree], and delved into availability and utilization of audiovisual teaching aids in the teaching of Physical Education in Secondary Schools. The draft of the questionnaire was given to colleagues for comments for the purpose of validity. It was thereafter subjected to reliability test using test-retest method and this gave an  $r$  value 0.77.

## **ADMINISTRATION OF INSTRUMENT**

The researchers with the assistance of three undergraduate students who are well educated as research assistants administered the questionnaire to the respondents in their various schools. The researchers were only able to retrieved 139 [93%] of the administered copies as some respondents failed to return their copies.

## **DATA ANALYSIS**

The collected data were analysed using Simple -Percentage and Chi Square statistical analyses, and inferences were made at 0.05 level of significance.

## RESULTS

**Table I: Percentage and chi-square results on availability of audio-visual aids in schools**

ITEMS	SA (%)	A (%)	D (%)	SD (%)
VIDEOTAPES, VIDEODISCS, SLIDES FILM PROJECTORS AND TELEVISION SETS ARE USEFUL IN THE TEACHING OF PHYSICAL EDUCATION IN SCHOOLS	61	31	23	12
	48	25	18	9
VIDEOTAPES, VIDEODISCS, SLIDES FILM PROJECTORS AND TELEVISION SETS ARE AVAILABLE IN SCHOOLS FOR TEACHING OF PHYSICAL EDUCATION	07	11	32	77
	5	9	25	61
THE AVAILABLE VIDEOTAPE, VIDEODISCS AND FILMS ARE FREQUENTLY UPDATED WITH CURRENT ONES	05	13	41	68
	4	10	32	54

$\chi^2 = 12.07$ ,  $df = 6$  [ $P > 0.05$ ]

The simple percentage analysis of data in table I shows that 73% representing 92 of the total 127 respondents agreed that audiovisual teaching aids are useful in the teaching of Physical Education, while 27% representing 35 respondents disagreed with the opinion. 14% representing 18 respondents said audiovisual teaching aids are available in the schools and are frequently updated with current ones. 86% representing 109 respondents disagreed, with these positions. Chi Square analysis shows that the calculated value of 12.07 was less than 12.59 critical value at 0.05 level of significance. Based on this result, the hypothesis that audiovisual teaching aids is not significantly available for teaching Physical Education in secondary schools was accepted.

**Table II: Percentage and Chi-square Results on Teachers' Exposure to Audiovisual Aids**

<b>ITEMS</b>	<b>SA</b> <b>(%)</b>	<b>A</b> <b>(%)</b>	<b>D</b> <b>(%)</b>	<b>SD</b> <b>(%)</b>
<b>AUDIOVISUAL AIDS ARE COMMONLY USED IN THE TEACHING OF PHYSICAL EDUCATION.</b>	<b>10</b>	<b>08</b>	<b>53</b>	<b>56</b>
	<b>8</b>	<b>6</b>	<b>42</b>	<b>44</b>
<b>MOST PHYSICAL EDUCATION TEACHERS ARE FAMILIAR WITH THE USE OF AUDIOVISUAL AIDS IN TEACHING.</b>	<b>08</b>	<b>12</b>	<b>48</b>	<b>59</b>
	<b>6</b>	<b>9</b>	<b>38</b>	<b>47</b>
<b>PHYSICAL EDUCATION TEACHERS WERE EXPOSED TO THE USE OF AUDIOVISUAL AIDS DURING THEIR TRAINING.</b>	<b>13</b>	<b>17</b>	<b>42</b>	<b>55</b>
	<b>10</b>	<b>14</b>	<b>33</b>	<b>43</b>

$\chi^2$  5.96, df= 6 [P>0.05)

The percentage analysis in table II shows that 14% representing 18 respondents of the total 127 were of the opinion that audio visual aids are commonly used in the teaching of Physical Education, while 86% representing 109 respondents disagreed with the opinion. 15% representing 20 respondents said most P.E. teachers are familiar with the use of audiovisual aids, 85% representing 107 respondents said 'No' to this opinion. 24% representing 30 respondents agreed that P.E, teachers were exposed to the use of audiovisual aids during their training. And 76%



representing 97 respondents disagreed with the opinion. Further analysis shows that the calculated chi square value of 5.96 was less than 12.59 critical value at 0.05 level of significance. This indicates that the hypothesis that secondary school teachers would not be significantly exposed to the use of audiovisual aids for teaching of Physical Education is accepted.

**Table III: Percentage and Chi square Analyses Results on Students' Interest in Audiovisual Aids**

ITEMS	SA	A	D	SD
PHYSICAL EDUCATION CLASSES WOULD BE ENHANCED WITH THE USE OF AUDIOVISUAL AIDS.	58	47	10	12
	46	37	8	9
STUDENTS ENJOY PHYSICAL EDUCATION CLASSES WHERE AUDIOVISUAL AIDS ARE USED FOR TEACHING.	41	62	05	19
	32	49	4	15
THE USE OF FILMS AND MOTION PICTURES IN TEACHING SKILLS WILL MAKE LEARNING MORE EFFECTIVE.	33	70	13	11
	26	55%	10	9

$\chi^2=18.19$ ,  $df= 6$  [ $P<0.05$ )

The analysis in table III shows that 83% representing 105 of the total 127 respondents agreed that P.E. classes would be enhanced with the use of audiovisual aids, while 17% representing 22 respondents were against the opinion. 81% representing 103 respondents said students enjoy P.E. classes where audiovisual aids are used for teaching, and that the use of film and motion pictures in teaching skills will make learning more effective. 19% representing 24 respondents disagreed with these opinions. Chi square result shows that the calculated value 18.19 was greater than 12.59 critical value at 0.05 level of significance. The result indicated that the hypothesis that students would not be significantly interested in P.E. classes taught using audiovisual aids should be rejected. This connotes that students will be interested in classes taught using audiovisual aids.

## DISCUSSION

The result obtained on the availability of audiovisual teaching aids indicates that audiovisual aids are not available in schools [see table I]. This finding is in line with the opinion of Akinniyi [1994] who asserted that lack of teaching materials is part of the most serious problems hindering the carrying out of effective Physical Education programme. In support of this, Ayanlaja [2000] acknowledged the fact that the problem of equipping the schools is common to all states of the federation and such problems can only be tackled if data are available on the exact position of the instructional resources in the schools.

Contrary to this finding, Akinpelu [1999] affirmed that for skill teaching in almost every subject, there are ready-made films; videotapes, slides and overhead projector transparencies that could enhance students' comprehension. He further states that contact with Audiovisual Unit of states and federal ministries of Education and/or Information will show the array of unutilized resources that are available to teachers. Studies however, have shown that skills learned via the audiovisual teaching aids can enhance the quality of learning [Nnamdi, 2001; Adegbamigbe, 2000; Akindolie, 1999; Ajayi, 1999 and Fawole, 1999].

The result obtained on the teachers' exposure to the use of audiovisual aids for teaching Physical Education also shows that most of the teachers were not familiar with the use of audiovisual aids for teaching, even under training as teacher [see table III). This result is not far from expectation based on the fact that this learning resources are not available for utilization in the schools [see table I]. Appreciating the value of audiovisual aids in teaching, Adewoyin [1999] opined that teachers in developing countries need to brace up for the new challenges involved in the adoption and utilization of the new media and technology so as not to be threatened by professional obsolescence. Adegbamigbe [2000] affirmed that to a significant degree, audiovisual teaching aids assist in perception, retention, and also provide reinforcement of knowledge, result and understanding of the tasks before the teacher and the students.

A significant result was obtained on students' interest in classes taught using audiovisual aids. Responses indicate that students enjoy Physical education classes where audiovisual aids are used for teaching and that classes would be enhanced and learning more effective with the use of these resources [see table III]. This finding corroborates the opinion of Nnamdi [2001] that the flexibility

of audiovisual aids like the videotapes makes them effective learning tools as students can manipulate them almost as easily as a book. Tapes and discs, of course can be stopped at any point and replay particular section(s) as often as necessary for clarification and understanding. Also, Fawole [1999] asserted that audiovisual aids have enabled teachers' presentation of subject matter to be meaningful and exciting to the students.

**Conclusion and Recommendations**  
Based on the findings of this study, it is concluded that audiovisual teaching aids are not available for the teaching of Physical Education in most of the secondary schools in Lagos State; therefore the learning resources are not utilized in the teaching of the subject. It is also concluded that though students enjoy Physical education classes taught using audiovisual aids, and that learning is more effective; but most Physical Education teachers are not familiar with the use of these materials in teaching. Recommendations were therefore made as follows:

- Physical Education teachers should be well exposed to the use of audiovisual aids for teaching their subject during their training periods.
- Workshops should be organized at intervals to educate Physical Education teachers on the latest audiovisual teaching aids and how to utilize them.
- The school authorities through the supports of government, parents and corporate bodies should equip the schools with varieties of audiovisual teaching aids.

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# SCIENCE AND DEVELOPMENT

*A book of readings in honour of*

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# EXERCISE: ITS RELEVANCE AND PRESCRIPTION

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## ABSTRACT

There is need for every individual in the society to keep fit and stay healthy. This fact has made many people, especially the elites in the society to turn away from living a complete sedentary life by engaging themselves in exercise. This paper, however, reviewed the importance of exercise to the Lives of individuals in the society, how to prescribe exercise and what factors should be considered in the process of exercise prescription. The paper concluded that exercise could be likening to medicine, very advantageous when used as prescribed by experts, and could be extremely dangerous when abused or misused.

## INTRODUCTION

The need to keep fit cannot be overemphasized; its value goes beyond ability to cope with the daily demand of life. Of recent, there is general awareness in respect of the role of exercise in prevention of various deadly diseases [Musa, 1997; Odulaye, 1998; Alawale and Amusat, 2001; Oyelese and Moredayo, 2001 and Okuneye 2001; 2002].

Many elites today are turning from living a complete sedentary life by engaging themselves in exercise sometimes as a pleasure and healthful experience. They believe in regular exercise for physical fitness and wellbeing. Some do it to look slim and trim, while others exercise to decrease the risk of heart disease. The latest terminology is 'Aerobics' a more appealing magical word coined by Dr. Kenneth Cooper of Aerobic centre at Dallas, US [Odulaye, 1998]. Man as a matter of fact likes something new, appealing, fresh and arresting. Consequently, Dr. Cooper got the Americans Pumping Oxygen into their systems through aerobic exercise. The impression created seemed to be; 'why becoming a doctor's regular client if I can prevent myself from becoming one'. 'Why not sacrifice gallons of sweat via exercise [aerobics] to stay healthy'.

Via engagement in regular exercise, the heart pumps more blood with fewer strokes into the various organs of the body needing it. The lungs process more air and with less effort. The blood supply to the muscles improves and the total, systemic, blood volume increases; oxygen as a matter of fact has affinity for blood and oxygenated blood however is the real life in man.

Through exercise, the body physical working capacity. [PWC] is improved by bringing in oxygen and delivers it to the body tissues and cells where it is

combined with foodstuff to produce energy. Oxygen consumption is increased, so also endurance capacity.

Apart from the medical benefits and health maintenance benefits of exercise, Okuneye [2002] identifies its importance to certain group of people. These are the elderly, pregnant women and the disabled.

It has been proved that regular exercise enhances muscle function in the elderly ones. And it also helps to decrease systolic and diastolic blood pressure as well as resting heart output can be significantly enhanced in older individuals particularly in those with a previously sedentary life.

Okuneye [2002] also asserts that the elderly who exercise regularly maintain normal gait all through life. Gait abnormalities are common components of disability among inactive older individuals and this condition further limits functional morbidity in them. In the same vein, Ajiduah and Okuneye [1991] reported that functional parts of disabled body respond equally well to exercise as in able-bodied individuals. This means that regular exercise can result in improved cardiovascular and pulmonary functions of disabled just as in the able-bodied individuals.

On the part of the pregnant women, exercise has been indicated for obstetrics and gynecological conditions. Okuneye [2002] suggests that health maintenance programme during pregnancy should include exercise regimen for the purpose of increasing and maintaining muscles strength and flexibility which are required to reduce back pain associated with weight gain and centre of gravity shifts in pregnancy.

Bryant and Peterson [1998] are of the opinion that many women would like to continue strength training during pregnancy, but are hesitant due to the seemingly inconsistent and diverse opinions on the subject. In recent years, however, a growing number of professionals from the medical and exercise science communities have tendered specific advice for pregnant women interested in strength training. Most experts agree that, based upon the limited data available, proper strength training poses little risk to the mother or developing foetus [Bryant and Peterson, 1998]. In fact, it may be very beneficial for a pregnant woman.

Bryant and Peterson [1998] further state that not too long ago, women were instructed to stay in bed for up to two weeks following an uncomplicated delivery. Fortunately, medical professionals now know better; it is now generally accepted that the sooner a woman gets moving, the better off she is. Exercise, particularly strength activities, can help tone the abdominal region, improve posture and help a woman regain her pre-pregnancy shape.

So far, it has been established that regular exercise greatly improves quality of life in individuals and enhances living a more fulfilling life. However, this same exercise which is of great value could be of grave danger to individuals when engaged in them without prescription. What then is exercise prescription?

## EXERCISE PRESCRIPTION

From grammatical point of view, the word 'exercise' could be regarded as bodily activity or any regular movement or series of movements taken by individuals for the sake of health or fitness. It could also be seen as activity designed or programme to train and develop the body or specific part[s] of the body.

On the other hand, to prescribe means to say, write or tell with authority. Therefore, prescription is the act of prescribing. It is the oral or written order or direction for making up and use of a prescript [i.e. what has been prescribed].

With this concept, one could define exercise prescription as a written or oral order, or direction of properly and scientifically designed bodily activities for the purposes of disease prevention, rehabilitation or other purposes.

Okuneye [2002] is of the opinion that exercise can only become a beneficiary if it is properly and scientifically designed such that a right type with adequate intensity, duration and frequency is chosen for participation. Exercise programme should be planned based on an established goal, that is whether it is for cardiovascular conditioning, muscular strengthening, body fat or weight reduction or a life time's exercise for multiple positive results. Once there is a clear-cut goal, exercise can then be prescribed following the specific needs of individuals.

Citing Clifford, Tan and Gorsuch [1991], Okuneye [2002] emphasizes that prescribing an exercise regimen should be as specific as prescribing medication. Prescription of exercise should be well graded such that the intensity and duration of exercise are calculated. This is important because exercising at random has some demerits; the intensity may be insufficient or the duration inappropriate while excessive exercise can lead to exhaustion, muscle soreness, muscle tear and joint damage [Nwankwo, 1997, and Okuneye, 2002].

## WHO SHOULD PRESCRIBE EXERCISE?

Just like medical prescription, exercise prescription should be handled by experts. According to Awopetu [2000], there are two major types of exercise programmes:

- i. The unsupervised exercise programme; and
- ii. The supervised exercise programme

The unsupervised exercise programme is the type that is not recommended by experts in the field of exercise physiology. This category of exercise does not spare the participants in electronic media exercise programmes dubbed keep fit programmes.

The supervised exercise programmes are those under strict professional supervision. The supervised exercise programme is directly under the supervision of the exercise director and for the physician. Qualified personnel must always be in attendance in all supervised programmes; this is needed for achievement of set goal and for safety purposes.

Awopetu [2000] identifies the professionals that are essential in exercise programme. They include:

- i. The physician
- ii. The programme director



- iii. The exercise leader; and
- iv. The exercise technician

The physician is a knowledgeable and skillful person in area of sports medicine. He is expected to take part in the screening before exercise testing. This screening involves preliminary medical evaluation, heart rate, blood pressure and electrocardiogram [ECG] testing. The physician should give necessary assistance and direction for graded exercise test administration, provide direction and assistance during emergency situations; and in addition, interpret observations and results of exercise testing.

The programme director is responsible for providing leadership and direction to 'the exercise programme. The director prescribes appropriate exercise for the participants on individuals' basis, supervises the programme and ensures its safety and effectiveness. He must be a professional in the field of sports science, preferably a higher degree in exercise physiology, physical education and/or medicine. Awopetu [2000] recommends that the programme director, in addition to his academic qualification should have at least one year experience in the running of an exercise programme from a reliable-organization.

The exercise leader who is a professional in physical education, medicine, exercise physiology or physiotherapy, handles the execution of prescribed exercise under the guidelines established with physicians and programme director. And also assist both the physician and programme director in assessing participants' response to exercise.

The exercise technicians should be a professional in physical education, nursing, physical therapy, occupational therapy, laboratory technology or medical technology. The technician is responsible for preparation of the graded exercise station for test administration, screening of participants, computation and analysis of data obtained during graded exercise and implementation of emergency procedure.

In a nutshell, for effectiveness, exercise should be handled by team of personnel.

## **PRESCRIBING EXERCISE**

Awopetu [2000] opined that for exercise to be meaningful, its prescription must include the intensity, the duration, the frequency and the types of exercise.

### **INTENSITY:**

In a supervised exercise programme, the prescribed Intensity must be guided by the functional capacity of individuals and the maximal heart rate. While Maximal Heart Rate [HR<sub>max</sub>], is the highest rate at which one can exercise safely [Jensen & Fisher, 1979; Getchell, Pippin & Vames, 1987 and Odulaye, 1998], the latter refers to the maximal oxidative capacity [maximal oxygen consumption; VO<sub>2</sub>max] during an all-out test of cardiovascular fitness. According to Jensen and Fisher [1979], several studies have correlated the energy required to walk at various

speed and grades on treadmills with oxygen cost or MET level. The relationships are helpful in evaluating work capacity of individuals.

A MET is an expression of energy cost, it is the way in which metabolic rate [ $\dot{V}O_2$ ] can be expressed. One MET unit is equivalent to  $\dot{V}O_2$  at rest and has a nominal value of 3.5 ml  $\dot{V}O_2$  / [kg-min]. Any steady state activity may be described as an equivalent number of METs by kilograms of body weight.

Three METs would equal three times the resting cost or 10.5 ml /kg/min. There are several ways to predict the cost of various activities. Though charts have been developed to predict the energy cost of recreational activities [Jensen & Fisher, 1979 and Odulaye, 1998], equations have been developed as well and for more accurate prediction of energy cost. An example of the equations is:

$\dot{V}O_2$  [ml/kg-min] = speed [m/min]  $\times$  0.1 ml  $\dot{V}O_2$ /kg-min per m/min + 1 MET [3.5 ml/kg-min].

For instance to compute the value for  $\dot{V}O_2$  and MET corresponding to a horizontal walking speed of 80 m/min. 14.8 km/h is:

$\dot{V}O_2 = 80 \text{ m/min} \times 0.1 \text{ ml/kg-min per m/min} + 3.5 \text{ ml/kg-min} = 11.5 \text{ ml/kg-min}$

METS =  $\frac{11.5 \text{ ml/kg-min}}{3.5 \text{ ml/kg-min}} = 3.3$ .

However, the functional relationship between % $\dot{V}O_{2\text{max}}$  [i.e. METS] and Heart Rate [HR] provides the basis for regulating and monitoring sub-maximum exercise [Odulaye, 1998]. This can be done using the following:

1. Training MET intensity [TMET] and
2. Training Heart Rate [TRH]

Odulaye [1998] citing Pollock [1979] asserts that when Heart Rate response is normal, 80% and 85% of maximum heart rate [MHR] occurs at 70% of maximum MET capacity [MMET]. Therefore for practical purposes, training values are approximated by fixed percentage of 75% MMET and 80% MHR. Based on the results of the graded exercise test, the calculation of lower and upper ranges for TMET [70% and 80% MMET] and THR [75% and 85% MHR] is recommended [Odulaye, 1998].

For example a young man with an average resting heart rate [BHR] of 68 achieves an MHR of 144 at an MMET of 9.0. The ranges for TMET and THR would be calculated as follows:

TMET =  $9 \times 0.70 = 6.3$  METS [lower limit]

$9 \times 0.80 = 7.2$  METS [upper limit]

THR =  $144 \times 0.75 = 108$  /min [Lower limit]

$144 \times 0.85 = 122$  /min [upper limit]

This method is described to provide a satisfactory range of TMET and THR which may be used to guide clients in exercise programme at initial stage. While Awopetu [2000] suggests prescription of 80% of functional capacity for healthy conditioned young athletes, Okuneye [2002] is of the opinion that the target heart rate during pregnancy period should be set around 25% lower than for the general population. Prescription for the unhealthy ones varies from diseases to disease and from person to person. Duration

This also varies based on individuals and goal[s] of design. Odulaye [1998] suggests 30 to 44 minutes of exercise at training intensity to be optimum and Awopetu [2000] opined that patients on rehabilitative programmes could exercise

between 5-10 minutes. And normal participants on conditioning programmes have an exercise programme between 20-30. minutes in the first week. Progressive changes of duration are also recommended as soon as the functional capacity improves.

## FREQUENCY

For consistent results exercise training should be conducted up to three or four times per week. This is necessary to ensure effectiveness in the achievement and maintenance of considerable level of physical fitness.

## TYPES OF EXERCISE

This falls under three broad categories [Awopetu, 2000]:

- a) Cardio-respiratory endurance activities, which include walking, jogging, running, cycling, swimming, dancing and varieties of games. It should be noted here that competitive games are not recommended for sedentary and high-risk individuals.
- b) Flexibility and Relaxation Activities. These activities are effective during warm-up and cool-down periods. The objective, however, is to increase the range of movement and relieve tension.
- c) Muscular strength endurance activities: they are exercises performed with high tension, low repetition of either a dynamic or static nature.

The essence of exercise training is to achieve cardiovascular, muscular and metabolic adaptation to an increased aerobic work stimulus [Oduye, 1998]. Therefore, exercise programmes should emphasize aerobic activities involving large muscles mass.

## CONCLUSION

To conclude, however, it will be appropriate to briefly highlight some basic factors that need consideration before engaging patients or clients [as the case may be] in exercise programmes. There is need to consider the individual body habitus, family medical history, overall life style and interest in prescribes or exercise. This can be achieved through baseline medical and physical assessment. Individual's risk must be thoroughly assessed particularly among those with family history.

Of course, there are times when exercise could be bad idea. Nelson [2002] mentioned some condition when exercise is to be avoided. These include

unstable angina, poorly controlled diabetes or uncontrolled blood pressure, a recent major surgery and other serious health crisis. In such cases, one has to wait until the doctor satisfies him okay. Once the condition is stable, one can start to exercise, but at easy and doable level.

On the side of pregnant women, Bryant and Peterson [1998] state some conditions in which exercise should not be engaged in. These are:

- i. Contraindications for exercises during pregnancy
- ii. Absolute contraindications
- iii. Heart disease
- iv. Premature labor
- v. Incompetent cervix
- vi. History of three or more spontaneous abortions or miscarriages
- vii. High blood pressure
- viii. Anemia and blood disorder
- ix. Thyroid disease
- x. Diabetes irregular heart rhythms
- xi. Excessive obesity
- xii. Extreme underweight
- xiii. History of precipitous labor
- xiv. History of intrauterine growth retardation
- xv. History of bleeding during present pregnancy; and
- xvi. Extremely sedentary life style.

Exercise is like medicine, it is advantageous when used as prescribed but could be extremely dangerous when abused or misused.

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