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# TOWARDS OPTIMISING THE INVALUABLE TRIO

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**62<sup>nd</sup> Inaugural Lecture**

**OLABISI ONABANJO UNIVERSITY  
AGO-IWOYE**

**Tuesday, 12th February, 2013**

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## TOWARDS OPTIMISING THE INVALUABLE TRIO

**The Vice Chancellor,  
 Deputy Vice Chancellor,  
 Other Principal Officers of the University,  
 Provosts of Colleges,  
 Deans of Faculties and Student Affairs,  
 Distinguished Professors and Heads of Department,  
 Distinguished Colleagues and Friends from Sister Universities  
 and Institutions,  
 Your Excellencies and Royal Highnesses here present,  
 My Lords Spiritual and Temporal,  
 Gentlemen of the Press,  
 Great OOUTES,  
 Ladies and Gentlemen.**

### PREAMBLE

You are welcome to the 62<sup>nd</sup> Inaugural Lecture of the Olabisi Onabanjo University Ago Iwoye; the 13th from the Faculty of Education and the 1<sup>st</sup> from the Department of Sports Science and Health Education. Having to deliver this lecture today the 12<sup>th</sup> day of February 2013 brings to my memory that by my father's record, my academic pursuit started precisely on the 22<sup>nd</sup> February 1959, when he registered me in the primary school. The coincidence by month is divine and the date 'twelfth' gives some scriptural connotation of completeness and wholesomeness. This is gratifying!

I joined the university on October 1<sup>st</sup>, 1985 to meet Late Prof. Amos Tinuayo Oduyale as the head of department and acting Dean of the Faculty of Education, late Prof Adekunle Olanrewaju Adesanya

and Dr. Kehinde Odusote. Thus, I became the fourth academic staff to be employed into the then department of Physical and Health Education, which was later renamed the Department of Sports Science and Health Education. These senior colleagues that I met were very supportive and thus provided a very conducive environment for me to acquire the traits and culture of the academia, and the ability to teach physical education and sports effectively in the university setting.

I was appointed to teach Exercise Physiology in the department of Physical and Health Education but Prof. V. V. Subbarao, the head of the department of Physiology at the time and Prof. Laditan who was the Provost of the College of Health Sciences then nearly lured me into the Physiology department. However Prof. A. T. Oduyale prevailed on me and I chose to stay in the department of Physical and Health Education from my conviction that as a teacher of Physical Education and sports, the faculty of Education is the best place for me as it was customary then and now. I later had a close interaction with the Physiology department when I had to do some researches under the guidance of Prof. L.F.O. Obika, a renowned Professor of Physiology and Prof. Dayo Ejiwunmi an anatomist and former Deputy Vice Chancellor of Olabisi Onabanjo University, they guided me in collecting hematologic samples and analyzing them in the physiology laboratory – as part of my PhD research work at the University of Ibadan in 1991. Messrs. Adejayan (now late) and Ogunjimi, who were the Chief Technologist and Deputy Chief Technologist respectively in the Department of Physiology and Mr Femi Adeleye of Medical Pathology laboratory readily assisted me as well.

I therefore had a mixture of practical experience of teaching physical education in the department of Physical and Health Education and conducting research in the department of Physiology of the then Ogun State University.

## 1.0 INTRODUCTION

Engaging in sports has many benefits that can be harnessed in promoting our economic, political and social status in the comity of nations. Sports science is that very dynamic discipline which has become the major source of advancement in sporting performance in today's world. Although Nigeria shares a rich history of how physical education has evolved from mere jumping and running to become a field founded firmly on scientific principles and propagated by cutting edge technological research, we as a nation are - much unlike many western nations, yet to take real advantage of the immense benefits that this trio of physical education, sports and sports science can afford us. For this to happen, however, we need a paradigm shift. We need to see how important the role of physical education, sports and sports science is, in contemporary society. Fostering this paradigm shift is the main purpose of this lecture.

The choice of my topic for this lecture, "Towards Optimising the Invaluable Trio" was informed by my experiences as a:

1. teacher of physical education at the primary, secondary, teacher training and tertiary levels;
2. sportsman and sports administrator (both at the secondary and tertiary levels);
3. student and teacher of sports science at the tertiary level; professor of sports science; member of the Nigerian Association of Physical Health Education Recreation Sports and Dance (NAPHER.SD) and President of the National

Through these experiences, I have realized that the three must go together for the practitioners and other stakeholders to get the best result from any of them. In other words, you cannot get the best results in physical education without due consideration for its resultant outcome on sports, sportsmanship and performance in sports (either at the professional/elitist level or leisure/recreational level). Whereas physical education exists on its own for the purpose of enlightening the mind on how best to use the body in performing physical activities, sports sciences - which evolved from it - are the tools for practicing physical education in a most pragmatic approach in line with the expectations of the present day in order to get the best results in sports.

So, physical education, sports and sports science are the trio that is of immeasurable value. This lecture therefore, would discuss the concept of physical education, sports and sports science, with a view to understanding their concepts and bringing to fore their interrelationship and how their values can be singularly and collectively optimised in Nigeria.

## 2.0 PHYSICAL EDUCATION AS AN INDISPENSABLE ELEMENT IN HOLISTIC EDUCATION

For education to be gainful, it must provide holistic development in the educated. A properly educated individual is one who has learned to be more purposeful having been empowered with the needed skills to maximize inherent attributes and channel his/her resources towards making success in all ramification.

Mr. Vice Chancellor Sir, permit me at this juncture to present to the audience a discipline that has – due to its values and nature – been aptly described as an ingredient for holistic education i.e. Physical Education.

Physical education provides the avenue for holistic development of man. Nixon and Jewett (1980), defined physical education as: “that phase of the total process of education that is concerned with the development and utilization of the individual's voluntary, purposeful movement capabilities with directly related mental, emotional and social responses. Stable behavior modifications in the individual result from these movement centered responses and this the individual learns through physical education”. Bucher (1975), tried to highlight the two words in the term “physical education” by explaining “physical” as referring to the body or physique, as being used in reference to the various bodily characteristics such as physical development, physical prowess, physical health and physical appearance. It relates to the body rather than the mind. While the addition of education to the word physical gives the term, “physical education”, which connotes a process of education that concerns activities which develop and maintain the human body. This presupposes that when a man is engaged in physical activities such as dancing, jumping, running, skating, swimming or climbing, education is taking place. Such activities could make or mar the individuals, depending on the process and the outcome.

While expressing his understanding of physical education, Yang (2005), described the accepted goal for education as the one which promotes the balanced education of the whole child or person in the interested and indivisible domains of the mental, moral and physical. He explained physical education as movement related education which include, children's play, dance, fitness exercises and activities, games, recreation and sports all associated directly with the affective, cognitive and psychomotor domain of the whole person.

Physical education as a comprehensive education of the whole person which addresses and facilitates growth of mental, emotional, physical and spiritual elements is essential for all.

“From dust you are and to dust you shall return” (Genesis 3:19) indicates the experience of man in life, therefore physical education which begins the moment a human becomes capable of movement and ends at death should be appreciated and treated as a learning process that contributes to the proper development of man as an individual entity, right from conception till death.

The International Charter of Physical Education and Sports adopted by the member states of the United Nations Educational Scientific and Cultural Organization (UNESCO) in 1978 states that:

- a. One essential condition for the effective exercise of human rights is that all people should be free to develop and preserve their physical, intellectual and moral powers and that access to physical education and sport should be assured and guaranteed for all human beings;
- b. It is essential to preserve and develop physical, intellectual and moral power of the human beings, improve the quality of life at local, national and international levels including individuals with disabilities regardless of type or severity;
- c. Physical education and sports make an effective contribution to the acquisition of fundamental human values underlying the full development of all peoples;
- d. Physical education and sports should seek to promote closer communion among peoples and among individuals together with disinterested emulation, solidarity, mutual respect and understanding, and full respect for integrity and dignity of all human beings and more.

The International Charter of Physical Education and Sports has also adopted ten articles on the practice of physical education and sports:

- I. The practice of physical education and sports is a fundamental human right for all;
- II. Physical education and sports is an essential element of lifelong education in the overall education system;
- III. Physical education and sports programme must meet individual and social needs;
- IV. Teaching, coaching and administration of physical education and sports should be performed by qualified personnel;
- V. Adequate facilities and equipment are essential to physical education and sports;
- VI. Research and evaluation are indispensable components of the development of physical education and sports;
- VII. Information and documentation help to promote physical education and sports;
- VIII. The mass media should exert a positive influence on physical education and sports;
- IX. National institutions must play a major role in physical education and sport; and
- X. International cooperation is a prerequisite for the universal and well-balanced promotion of physical education and sports.

Judging from the components of the articles it is glaring that while endeavoring to deliver quality education, three components must be addressed: the physical, intellectual and moral powers of human beings. Physical education embraces all, while developing the learner through a well articulated, balanced and comprehensive programme. Indeed the time is more than ripe to re-awaken the world on the need to properly and more carefully embrace physical education and sports more than ever before, because of the core values they possess.



## 2.1 The Status of Physical Education Today

Mr. Vice-Chancellor Sir, permit me to say that despite the international propagation and apparent acceptance of physical education and sports as noble disciplines, all appear to be in theory and not in practice. The current status of physical education and sport in schools and society in general is worrisome. Despite the high-level synergy of efforts by the international governmental and non-governmental organizations (e.g. International Olympic Committee (IOC), International Council for Health, Physical Education, Recreation, Sports and Dance (ICHPER.SD), International Council of Sport Science and Physical Education (ICSSPE), Intergovernmental Committee for Physical Education and Sports (CIGEPS/UNESCO), American Association for Physical Health Education, Recreation Sports and Dance (AAPHER-SD) and also Nigeria Association of Sports Science and Medicine (NASSM) and National Association for Physical Education and Recreation, Sports and Dance (NAPHER.SD)) to promote and embrace physical education and sports a general tide of apathy and rejection has eroded their values. The world over, two apparently different trends have evolved albeit ironically. On the one hand, de-accentuation of physical education and sports exist even to the extent of total or near total elimination of physical education and schools' sports programmes; whereas on the other hand, there have been increasing efforts on the part of inter-governmental and non-governmental national and international organizations to promote sports and physical education. There is near-general apathy towards physical education today. Students have imbibed the mentality that physical education and sports are for the less-intelligent. This phenomenon has been aggravated by the status given to physical education in the school curricular. Presently, at the senior secondary school level, physical education and sports have been relegated to the level of an optional subject. This is wrong for a subject that has been classified as an essential element of lifelong education. You will agree with me that a subject that originates with man; that is all encompassing in terms of knowledge and fitness acquisition to promote a healthy and

qualitative living should not be relegated. Today, at the tertiary level of education, a large percentage of students undergoing a course in physical education were compelled to do so when it becomes their last resort; only a few willingly chose to do so. The joy one has is that when they eventually come in, they seldom want to leave having understood the values of the discipline. Physical education cannot be optimised if it does not become a regular ingredient of all facets of education. It must be made compulsory at all levels of secondary education and elective at the tertiary level to optimise its values.

## 2.2 Efforts towards Promotion of Physical Education and Sports and the Associated Problems

International governmental and non-governmental organizations that are stakeholders in sports (such as CIGEPS/UNESCO, UNESCO, IOC, ICPHER.SD, ICSSPE, AAHPER-SD, NASSM, NAPHER etc) have come to recognize the interrelationship between physical education and sports, as such, they promote them jointly. However, most national governments (including Nigeria) are yet to understand this vital link, thus, while they place premium on sports promotion, their level of awareness and promotion of physical education is quite low. The situation in Cameroon is different in this regard, she has a ministry of Physical Education and Sports. Ghana promotes the development of sports through due recognition to physical education. These countries have benefitted by this in sports development.

Some of the problems bedeviling the smooth running of physical education are discussed in subsequent paragraphs.

### 2.2.1 Misperception towards School-based Physical Education and Sports

Parents, educators, and education policy-makers in many countries (especially African countries - Nigeria, Ghana, Kenya, even South Africa) do not consider the many forms of physical education as

academic subjects. They consequently treat physical education as one of the unserious subjects to be placed at the bottom of the hierarchical order of educational priorities. The story is not different in America. In spite of the recommendations contained in the United States Surgeon-General's reports (2002, 2003, 2005 and 2006) which stress the need to enforce a quality daily physical education programme of 30 minutes for all students of K-12 grades most states have not yet adopted this recommendation (Yang, 2005). Further report (Yang, 2005) showed that in the USA, only the state of Illinois still requires daily physical education while other states do not (National Association for Sports and Physical Education of AAPHERD, 1999). Majorly, physical education and sports have also been categorized as an elective subject rather than compulsory subjects. This is the case even in the USA that has the intent to give every American a bright future, in particular, children, "by providing a world class education that would help them meet the challenges of the 21<sup>st</sup> century and lead happier, more productive lives".

The policy of relegating physical education to an elective status at the senior secondary school level as it is in Nigeria is unfair, unjust and negates the dream of the International Charter of Physical Education and Sport which was adopted by the United Nations Educational Scientific and Cultural Organization (UNESCO, 1978). The challenge to correct this malady and anomaly is for all well-meaning people the world over to step down the relegation and negative attitudes towards physical education in the school system.

### **2.2.2 Lack of understanding of its true essence and purpose**

When the purpose of a thing is not known, abuse – they say – is inevitable. Physical education has almost been jettisoned due to lack of proper understanding of its essence and purpose. While identifying the source of the problem, Yang, 2005 opined that this may be due to much emphasis on the national elite athletes "first approach" in the United States of America. In Nigeria, the story is

identical because emphasis is placed on winning and the winners, without due cognizance to the mode and process of becoming the winner in the most pragmatic and systematic manner which physical education promotes from infancy to adulthood.

### **2.2.3 Low awareness and acceptance of school-centered physical education and sports activities:**

This is majorly due to the status given to the subject in the school syllabus. Apathy towards the subject by the students and teachers alike is also a factor of retrogression that is negatively affecting the discipline e.g. "I can teach other subjects syndrome" which is exhibited by teachers when the principals/proprietors fail to accord physical education its proper recognition in the learning process; or when the teacher does not want to practice his/her trade. Today Nigeria suffers from dearth of physical education teachers since the demise of the teacher training colleges and with the low patronage of the discipline at all levels, the sources of producing them have dwindled.

### **2.2.4 Lack of adequate and appropriate quantification of what the teacher would teach and what the learners must know to attain a given standard of educational attainment**

What are the yardsticks to measure how much calisthenics, gymnastics, stunts and tumbling etc, activities an elementary or secondary or even tertiary level student should acquire before he can be considered proficient? What are the attributes of new entrants into the profession that distinguish them from an average person or are physical education and sports discipline for all? Can everybody thrive in physical education and sports? These are very salient questions. Their answers would help in setting the goals and objectives for teaching physical education (both theoretically and practically) and quantifying the progress made.

### **2.2.5 Lack of Total Commitment on the Part of the Practitioners to the Practice of Physical Education**

Do the professionals themselves have selfless value for the subject

at all levels or are they only waiting for the days of inter-house sports or sports award nights? Are they mainly waiting to be nominated as parts of government delegation so that they may eat of the "national cake"? Nowadays, physical education and sports provides avenue for all-comers to enrich their purse because the assumption is that anybody can practice or manage sports. While it is an aberration to ask someone who is not a qualified doctor to oversee medical affairs, it is to us adequate and appropriate to call any one to head or oversee our sports council under the pretext that he/she was once a sportsman the need to have obtained some training in sports administration is very essential as well. This is an aberration. For sports, it is a political appointment while for other disciplines, professionalism is given due cognizance.

### **2.2.6 Lack of unity of purpose among the professionals**

The professionals too are more or less in disarray. Up till now we have not been able to come up with the necessary ingredient to ensure effective delivery of quality physical education programmes in schools. Most of the time, information on workshops for such development are given to selected people on man-know-man basis. Indeed, the Nigerian Association for Physical Health Education, Recreation, Sports and Dance (NAPHER.SD) should rise up to the challenge and all the branches should be resuscitated, to perform the role of promoting physical education for its values to be optimised.

What about our practical classes? They have come to their lowest ebb. The joy of participation in practical physical education classes has almost been completely lost.

Physical Education is a body of knowledge that encompasses all aspects of knowledge. Ajisafe (1991), describes physical education as an academic as well as a professional body of knowledge. The professional aspect can best be appreciated and maximized if the academic elements are adequately pursued and

acquired, but most of the protagonists of the discipline pursue the professional without adequate acquisition of the academic knowledge. No wonder then that our coaches cannot produce champion athletes all the time. Our success stories in sports have always been on and off. One step forward; ten steps backward. Today we are number one in Africa tomorrow we are far down the ladder.

### **3.0 SPORTS: ITS NATURE AND VALUES**

Sports are structured, institutionalised activities, requiring rigorous physical exertion with fixed rules and regulations requiring external governing bodies and motivated by intrinsic and extrinsic rewards (Ajisafe 1991; Odedeyi 1987, Onifade 2012).

Sports have also been defined as any activity, experience or business enterprise that focuses on fitness, recreation, athletics or leisure. (Pitts, Feilding and Miller, 1994).

It is a competitive, human physical activity that is governed by institutionalised rules. (Synder and Spritzer 1983)

Fasan (2004), explained sports as game events of wide magnitude, which attracts a large crowd, or spectators as well as involve government and private spending as well as efforts of other volunteers. It is also a discipline or field of study. While quoting Parkhouse (1991), Fasan (2004), observed that sports is a big business whose growth in the last half century has been phenomenal.

It is a truth that if all the factors of sports industries are quantified from the manufacturing of sporting goods to the end results of competition or mere participation in recreational activities, the financial outlay will be very huge. Sports have been described as the twenty-second largest industry in the United States of America. Sports business has been described as being more lucrative than the automobile, petroleum, lumber and air transportation sectors of some big economies. Sports as a business has contributed much to

the economies of the United States of America, Britain, Germany and France, more than most other facets of economies of those countries. However, it is yet to be so in Nigeria, because we are yet to optimise its values.

From psychological perspective, sports can be defined as human activity that involves specific administrative organisation and a historical background of rules which define the objective and limit the pattern of human behaviour. Sports from scientific perspective mean many things to many people. It is a means of sublimation for pent-up energy to release tension. It is also an antidote to boredom and panacea to hypokinetic related diseases when engaged in under appropriate rules relating to the skills and proper mode of participation.

In Nigeria, sports have been seen as means for national development and a weapon for political, economic, social and cultural advancement. While quoting Sie (1978), Onifade (2012) explained that sports as a tool for national development promotes good and patriotic citizenry, loyalty which transcends the bonds of kinship, language and locale resulting in national cohesion, unity and patriotism. The extent to which sports has affected the national economy is yet to be fully ascertained scientifically but it is glaring that it is quite economically involving and success or otherwise in its participation is mainly dependent on the totality of the financial outlay that a government, group or an individual is willing to expend on it. The world over, the story of success in sports is always accompanied with much spending on the provision of facilities and adequate preparation of athletes to meet the 21<sup>st</sup> century challenges of athletic or sporting competitions. Sportsmen and women are always motivated both intrinsically and extrinsically. However, funding tends to limit the extrinsic motivation in the Nigerian athlete.

Sport is a veritable vehicle for national Integration. Igbanugo (2010), described sports as a tool for national cohesion and as a unifying force that cannot be rivalled. Even though Nigerians are divided along ethnic, religious, political and geographical lines, we become united, shunning rivalry and misunderstanding when sports come in – this happens especially when the country faces international competitors. Nigeria has benefitted immensely from the ability of sports to promote national integration, unity and youth development. It has been used for national mobilisation and socialisation. Sports have the same effects on the nation as it has on the state, the community, the family and the individual. Today, there is no doubt that Nigeria is not strange in the sporting world, but her potentials are yet to be fully maximised considering her population of over 160 million people with about 70% being youths. The large number of potential sportsmen and women that Nigeria has is overwhelming as against the epileptic and at times lacklustre outcome of our engagement in competitive sports at national and international levels. A look at Nigeria's performance in the All-African Games, the Commonwealth Games and the Olympic Games clearly depicts this. The only time that Nigeria came first in the All-African Games, since its inception in 1965, was in 2003 despite her nickname "The Giant of Africa." The table below shows the picture better

TABLE I: Nigeria's performance in the All-African Games from inception to date

Year	City/Country	No. Of medals won	Position
1965	Brazzaville, Congo	7 gold, 5 silver, 4 bronze medals	2nd overall behind Egypt
1973	Lagos, Nigeria	18 gold, 25 silver, 20 bronze medals	2nd overall behind Egypt
1978	Algiers, Algeria	22 gold, 15 silver, 15 bronze medals	2nd overall behind Tunisia
1987	Nairobi, Kenya	33 gold, 31 silver, 38 bronze medals	2nd overall behind Egypt
1991	Cairo, Egypt	43 gold, 51 silver, 54 bronze medals	2nd overall behind Egypt
1995	Harare, Zimbabwe	36 gold, 31 silver, 40 bronze medals	3rd overall, behind South Africa and Egypt
1999	Johannesburg, S.A.	64 gold, 28 silver, 37 bronze medals	2nd overall behind South Africa
2003	Abuja, Nigeria	85 gold, 90 silver, 65 bronze medals	1st overall
2007	Algiers, Algeria	50 gold, 55 silver, 54 bronze medals	4th overall, behind Egypt, Algeria and South Africa
2011	Maputo, Mozambique	31 gold 28 silver and 39 bronze medals	3 <sup>rd</sup> overall, behind Egypt and South Africa

The record of Nigeria's performance at the Olympic Games is much worse.

TABLE II: Nigeria's performance in Olympic Games between 1952-2012

Year	City/Country	No. Of medals won
1952	Helsinki, Finland	No medal
1956	Melbourne, Australia	No medal
1960	Rome, Italy	No medal
1964	Tokyo, Japan	No medal
1968	Mexico	No medal
1972	Munich, West Germany	No medal
1976	Montreal, Canada	No medal
1980	Moscow, USSR	No medal
1984	Los Angeles, USA	No medal
1988	Seoul, South Korea	No medal
1992	Barcelona, Spain	3 silver, 1 bronze medals
1996	Atlanta, USA	2 gold, 1 silver and 3 bronze medals
2000	Sydney, Australia	3 silver medals
2004	Athens, Greece	2 bronze medals
2008	Beijing, China	1 silver and 3 bronze medals
2012	London, United Kingdom	No medal

Since the time Nigeria started participating in the Olympic Games, she has won only two gold medals. The table also depicts a downward trend from 1996, where we won six medals. to the last Olympic where we won no medal at all. It is like the story of one

step forward and many steps backward, retrogression. Nigeria has sports talents, coaches, trainers and sport scientists but she is not performing as she should because the synergy that should ensue amongst the factors is lacking; and their values have not been adequately harnessed.

Futhermore, it is noteworthy that Nigeria has participated in the Commonwealth Games since 1950 and her record in this regards is presented below:

TABLE III: Nigeria's performance in the Commonwealth Games to date.

Year	City/Country	No. Of medals
1950	Auckland, New Zealand	1 silver medal
1954	Vancouver, Canada	1 gold, 3 silver and 3 bronze medals
1958	Cardiff, Wales	1 silver and 1 bronze medals
1962	Perth, Australia	Nigeria did not participate
1966	Kingston, Jamaica	1 gold, 4 silver and 2 bronze medals
1970	Edinburgh, Scotland	2 gold medals
1974	Christchurch, New Zealand	3 gold, 3 silver and 4 bronze medals
1978	Edmonton, Scotland	Nigeria boycotted the Games
1982	Brisbane, Australia	5 gold and 8 bronze medals
1986	Edinburgh, Scotland	Nigeria boycotted the games
1990	Auckland, New Zealand	5 gold, 13 silver and 7 bronze medals
1994	Victoria, Canada	11 gold, 13 silver and 13 bronze medals
1998	Kuala Lumpur, Malaysia	Nigeria did not participate
2002	Manchester, U.K	5 gold, 3 silver and 11 bronze medals
2006	Melbourne, Australia	4 gold, 6 silver and 17 bronze medals
2010	Delhi, India	11 gold, 8 silver and 14 bronze medals

The fortune of Nigeria has been undulating. She won more medals in 1994 games in Victoria, Canada than she did in Manchester 2002. However, there were improvements in 2010 at Delhi, India. At the FIFA World Cup tournament, the story is not so different. While our first two appearances (USA '94 and France '98) seemed quite auspicious, we couldn't make it beyond the second round. We lost out in the first round at Korea/Japan 2002 and could not even qualify for the 2006 event held in Germany. Then on the African soil, we lost out at the group stage in South Africa 2010. In the African Cup of Nations tournament, Nigeria failed to qualify for the 2010 competition (the current competition is on, we hope and pray for a good outing). What could be the basis for this inconsistent performance in sports other than the nation's inability to optimise the potential of the essential factors.

### 3.1 Factors Causing Poor Performance in Sports

• Mr Vice Chancellor Sir, permit me to enumerate and explain some of the factors responsible for poor performance in sports as follow:

- In consistency in policy formulation and administration; disregard for the prime position of training and evaluation;
- Lack of appropriate facilities ;
- Non-utilization of experts in the country;
- Frustration of sports handlers due to poor sports management;
- Inadequate motivation and care of the athletes;
- Lack of adequate recognition of the potentials of our indigenous coaches and trainers, we tend to take their achievements for granted while placing more premium on the foreign professionals;
- The neglect of physical education in our schools which could have stimulated the youths towards qualitative acquisition of sports knowledge from school; some of our public and private

primary and secondary schools lack the basic infrastructure for practical physical education and sports. How then can we catch them young?

- Fire brigade approach to preparation for big competitions for example, Britain has started training for the next Olympics while Usain Bolt is already preparing for the same;
- Furthermore, lack of synergy between participation in sports and the athletes' academic progress. The synergy would certainly promote the interest of naturally talented athletes to stay in sports while pursuing his academic interest;
- Non availability of modern technology for training and practising sports;
- Inadequate attention to the promotion and the recognition of sports science as a veritable tool for sports development.

#### 3.1.1 Policy Somersault – Inconsistency in Policy

##### Formulation and Administration

For sports performance in Nigeria to develop to the point where the nation can be a force to reckon with at mondial sports event, there must be a consistent, workable policy that takes care of both long-term and short-term sports objectives. Such policy would form the basis of all the nation's developmental efforts. So far, the Nigerian government system has not exhibited this kind of consistency. It appears as if every tenure comes up with its own plan which is hardly in tandem with the policy set in motion by its predecessor.

#### 3.1.2 Training

Of the many ingredients of success in sports, the duo of training and evaluation are very paramount. Training is the foundation for achieving success in many human endeavour. Training comes in different forms and types. It is essential for the would-be champion athlete to realize this at the onset and be prepared to face the challenges that adequate and optimal training will demand from time to time. An athlete that endeavours to complete his workout as

dictated by the trainer would experience improvements in his outing. In training, timing is essential. Often many talented athletes do not reach their peak before competitions due to time limitations. Fire brigade approach has bedevilled our training programmes and it is a cankerworm that must be eradicated.

Athletes camping are rushed towards the competition. At times athletes are called to camp few days to a major competition allowing very little period for training. The premium from good and well organized training plan cannot be realized if adequate time is not given for it. The expected victorious outcome of participation cannot be achieved if Nigeria continues as she did for the last Olympic where funds were released only about two months to the competition and a new minister for sports was freshly appointed. The athletes were not well groomed for the competition hence we won no medal.

### 3.1.3 Evaluation

Odedeyi (1992) once observed as follows:

“the constant assessment and evaluation of the fitness status of athletes before, during and after competition would serve as a pertinent means of establishing the all-year-fitness of athletes”

Coaches, trainers and the trainees should be concerned with the means of evaluating the fitness status of the athletes. Players after training should be tested and evaluated on their basic skills acquisition in a given game. This evaluation will promote accurate prediction of the players' or athletes' performances at competition. To evaluate the athletes optimally, lots of scientific tests are in existence. These include:

- Cardiovascular tests;
- Motor fitness tests;
- Motor ability tests;
- Skill tests;
- Nutritional tests;

- Social fitness tests;
- Knowledge tests etc

Also, it should be noted that evaluation of athletes involves variety of measurements of several technical, physiological, medical, sociological and bio-mechanical parameters. While coaches can evaluate some basic skills, the involvement of sports scientists and other professionals who have both the know-how and necessary equipment to do a thorough job of evaluation is very essential.

In 1990, two leading professors of Exercise Physiology, Amusa and Igbanugo, gave the performance of Nigerian Under-23 soccer team in the 1989 competition that took place in Saudi Arabia, as well as the performance of the Nigerian athletes at the Seoul Olympics as examples of the usefulness of such comprehensive evaluation. The coaches in each case reported that they found the technical report from the standardized evaluation programme (which was conducted by the teams of sports scientists led by these professors) very useful in choosing their teams and monitoring them. The story of the Daman miracle is still vivid in our minds; it was reported that sports psychologists and other trainers that accompanied the team did the miracle at the half-time.

### 3.1.4 Facilities and Equipment

The writer unequivocally agrees with Igbanugo (2010) while quoting (Asagba 2001; Awosika 1996; Igbanugo 2000; Ojeme 2000 and Talabi 1998) that the availability of the right quality of sport facilities, equipment and supplies is a vital part of sports development and success. These authors have pointed out times without number that to a large extent the quality of the facilities make the difference in the performance between the athletes in the industrialized world and those in Nigeria. It is a common knowledge that the facilities available in Nigeria is often sub-standard and badly maintained.

Athletes trained with sub-standard facilities will always feel inferior when faced with opponents from a well equipped background. Excellent training facilities have always been responsible for better outcome from training abroad as against training within Nigeria (Asagba 2001). Making state-of-the-art training facilities available should be viewed as top priority. Such facilities must be placed within the reach of the athletes, both in schools and public places. If athletes would be naturally developed, they must be trained using the state-of-the-art equipment and supplies as well. This will forestall age-falsification, the use of performance enhancing drugs and other anti-social vices that are rampant in our sporting arenas today.

### **3.1.5 Non Utilization of Experts**

Nigeria is blessed with the experts that can promote sports development through scientifically tested and trusted methods. There are professionals in sports medicine and physiotherapy, exercise physiology, sports physiology, sports sociology, sports administration, kinesiology, biomechanics, motor learning etc. they abound in our universities, colleges of medicine etc. their expertise must be recognized and harnessed by the stakeholders.

### **3.1.6 Frustration of Athletes and their Handlers**

The need for optimal motivations for athletes and their handlers cannot be over emphasized. The needs of athletes in their active days and at retirement must always be met in order for them to give their best at all times. Nigerian athletes must be remunerated more generously because of the special economic condition of the country. Frustration easily sets in when athletes cannot meet up with the basic demands of living and making ends meet, while they are still active and the fear of the unknown future is more disturbing

Education has a role to play in developing an athlete. Sufficient provision can be made for scholarships and bursary awards for the student athletes. For the less academically inclined, vocational

training should be encouraged. This will make the sporting programmes and participation in competition stimulating to the athletes and their parents. Kudos must be given to the various sporting academies that promote participation in sports with adequate care for athletes' education. These include Pepsi Football Academy, Glo Soccer Academy, Kickers Soccer Academy Ltd, Integrative Football Academy and a host of others. This is a development in the right direction, and must continue in order to prepare the sportsmen and women holistically. However, quality must be maintained in their mode of operation. Former coach of the Super Eagles, Chief Onigbinde, once decried the wanton proliferation of these academies without due cognisance to quality.

When the athletes excel, they must be adequately remunerated. The handlers too must be adequately motivated. Some coaches experience frustration due to lack of adequate understanding or knowledge of their trade. To be a good coach, technical expertise is compulsory. Oneya (2002) as quoted by Igbanugo (2010), identified coaches' problems as:

- lack of formal education and professional training;
- poor remuneration;
- lack of international exposure;
- engaging in favouritism among players in team selection;
- engaging in corrupt practices with players.

### **3.1.7 Lack of Adequate Operation of Grassroot Development of Sports**

Grassroot sport development is a potent means of meeting the psychological, physical and economic needs of the youth. This should not be trivialised but handled with sincerity and total commitment by all stake holders. Nigeria, with a population of about 160 million has a very large pool of potential athletes from which she can draw – especially considering that about 70% of this population are youths spread across the various geographical zones



with their different physiological and anatomical attributes relating to different sports either by culture, ethnicity or topography of their geopolitical zones. For example, due to the prevalence of water in the South-South region, the inhabitants are known to be excellent swimmers; the people who live in the mountainous regions such as Jos, Obudu, Idanre etc are found to be excellent mountain climbers; nomadic Fulanis due to their lifestyle could be very good in endurance sports; the Hausas due to their keen appreciation for the equestrians are known to be good horse riders; the Igbos are very physical, quite acrobatic and they also possess great stamina which could be attributed to their genetic makeup, nutrition pattern and other related factors; this trend is the same for the Yorubas, the Tivs, the Kanuris and every other ethnic group represented in Nigeria. Oni (2012), asserted that some of the best sprinters come from Remo division of Ogun State. We can harness these attributes by gathering the youths together and selecting the best from them to represent the countries in their related areas of strength and capabilities. We need to identify our areas of natural attributes and develop them meticulously to excel at all times at national and international competitions. Then we would never have to suffer the shame of being medal-less again.

Physical education will no doubt enhance grassroots development in sports because athletes are created through regular participation in organised physical activity levels that the discipline promotes both formally and informally. The exposure to intra- and extra-mural programming is promoted in the learning institutions both theoretically and practically through a well designed physical education programme. Physical education classes help to identify born athletes and enable them to optimise their natural attributes and potentials in an environment that promotes worthiness in learning and character. In other words, mastering skill acquisitions in sports is better achieved in a balanced manner when physical education is given a pride of place in our educational institutions.

### 3.1.8 Undue Politicisation of Sports Management.

This has seriously affected the healthy growth of sports in Nigeria. It promotes mediocrity and discourages commitment on the part of those who genuinely must be concerned. Sports management and administration must not be for all-comers, but for those who are genuinely interested and have appropriate skill and educational background.

### 3.1.9 Low Private sector Participation

The synergy between the private and public enterprises in promoting sports is very low. However, the recent agreement by the GT Bank to resuscitate the Principal's Cup tournaments for secondary schools is commendable. Also Nestle Nigeria Plc, MTN, Glo, Coca-Cola, Pepsi have and are still contributing in this regard. Other institutions should be encouraged to follow suit. Governments cannot singlehandedly run sports effectively. It can only assist in motivating and encouraging the private and individual sponsorship and sport promotion. Such involvement could promote tax relief for the institutions. Our national league in soccer will receive a boost if this is done on a large scale, with the necessary rules and regulations put in place and strictly adhered to.

### 3.1.10 Non availability of Modern Technology in Training and Practising Sports

The world of sports is continually changing and the use of technology is one of such areas. Nigeria is yet to come to terms with the use of these new technologies in the sporting arena and without this, she can not maximize her potentials. Our sport research institutions are virtually empty of the needed modern technologies that can meet the demands of 21<sup>st</sup> century sports practice.

Sport technologies come in different forms and perform roles such as:

## 1. Assisting the Umpires/ Referees

- i. Instant replay and other high-tech aids to help referees make the right call.
- ii. Video replay systems to check referees' calls for many years.
- iii. Basketball referees use replay systems to make sure players shoot within the time allotted by the shot clock.
- iv. In international cricket, 3rd umpire has been used with one sitting off the ground with access to Television replays of certain situations (such as disputed catches and boundaries) to advise the central umpires. The Umpires out on the field are in communication via wireless technology with the other umpire. The third umpire is also asked to adjudicate on run out decisions, which he makes without consultation with the two central umpires.

## 2. Technology application in Soccer

Despite the fact that soccer has resisted the use of high-tech assistance, there are specific areas where technology has found its usage.

- i. Replays assist in deciding offside decisions, whether a ball passed over the goal line and to clarify penalty decisions.
- ii. Soccer goal line technology: The need for goal line technology in soccer became very deep since the TV replays are only shown retrospectively after the deed might have been done by the referees. The International Football Association Board (IFAB) has laid down four criteria that the goal-line systems must satisfy:
  - The technology should only apply to goal-line decisions.
  - The system must be 100% accurate
  - The signal sent to the referee must be instantaneous
  - The signal is only communicated to the match officials.

There are other types of sports technology that are in vogue in the

advanced world. They include; Smart ball - designed to track the ball's precise position in a given time including exactly when it has fully passed the goal line; Hawk-Eye Technology – a computer and camera system that traces a ball's trajectory. It is very useful in international cricket and tennis and a host of computer softwares abound that are useful for modern day training and practise of games. Nigeria is yet to fully imbibe the usage of these technologies, as such, we cannot optimise the values of modern day sporting experiences.

Mr Vice Chancellor Sir, It is necessary to note that sport is a constituent part of the society which provides the opportunity for interaction with many social institutions and an inexorable part of the modern society. It is a phenomenon that pervades all societal institutions including the churches and the mosques. It is a very significant aspect of the contemporary society which has implication on education, politics, economics and even human emotions such as joy and sadness.

A very useful tool in international relations and politics, Omidiran (2001) observed that “When Bill Clinton, the then President of the United States of America visited Nigeria in August 2000, his remarks as he was responding to the welcome address underscore the recognition of Nigeria through the sporting prowess of Akeem Olajuwon (the ace US-based Nigeria professional basketball player) and the Super Eagles dream team that won the Olympic gold in 1996 Atlanta Olympics”. There is no doubt that sports has contributed significantly to the good image of the country and placed Nigeria on the international map of great achievers, but yet achieving excellence in this regard is still elusive.

In 2005, I was in Turkey for an International Conference. The Turkish people, particularly the youths virtually hero-worshipped me because of the sporting exploits of JayJay Okocha who played

in their national league. Indeed the values of sports are immense.

#### 4.0 WHAT IS SPORTS SCIENCE?

The question must be answered by first understanding the concept of science. The Oxford Dictionary of Current English explains Science as the systematic study of the structure and behaviour of the physical and natural world through observation and experiment. It also describes it as an organised body of knowledge on any subject. From the foregoing, sports science can be explained as the bodies of knowledge which deal with the application of scientific facts and approaches to solving problems associated with the planning, organisation and administration of sports.

Science has permeated every human endeavour, with the major goal of actualising the most valid, acceptable, provable and replicable outcome. Scientific knowledge often emanate from testable hypotheses turned into theories that are eventually supported or refuted by scientific evidences. Scientific knowledge helps to improve the status of man in all endeavours. Sports science therefore has helped in the process of developing physical education, sports and sports programming beyond the trial and error arrangement of the past years. Predictions are made accurately and with proper scientific approach, coupled with adequate training and determination. Many records have been broken and hitherto impossible feats have been easily accomplished in sports. The recently set athletic records are eye-openers in this regard e.g Usain Bolt's world record of 9.58 seconds in the 100m dash among many others. The exploits of the Williams' sisters, particularly Serena, in tennis are quite commendable.

The aim of participation in sports differs from individual to individual and purpose to purpose, but it is always to actualise a dream. For a competitive athlete, it is to be a champion, while for the health-seeker it is to attain optimal fitness and health. The world over, the best approach to fulfil the dream of participation is through the scientific method. Sport sciences provide the means for doing this and the trained and qualified practitioners are the sports scientists.

Sports science is the body of knowledge which deal with the application of scientific fact in solving problems associated with the planning, organisation and administration of sports. It includes such subjects as: Sport sociology, sport psychology, biomechanics, kinesiology, human nutrition, exercise physiology and biochemistry of physical activities, also health education as well as the scientific pattern of sports administration and organisation.

For any given sport to be viable, each of the disciplines mentioned above has a role to play. It is therefore mandatory for the sports practitioners to be conversant with these roles and the application of such body of knowledge in the development of any sport.

##### 4.0.1 Sports Psychology:

Sports psychology as it is called has been of interest and significance to those working on the area of physical education and sport. The psychology of learning and performance in particular, has been an area in which the trainer, teacher and coach have continually sought guidance as to the nature of the psychomotor abilities and skills with which they are concerned, and to the ways in which most effective performance might be achieved. It is a constructive and purposeful application of the knowledge and the findings from the study of the human mind into the factors that influence the cognitive, affective and psychomotive domain of skill acquisitions in a given sport.

Kane (1972) opined that the world is apparently at the encouraging beginning of her understandings of the way in which psychological knowledge may be applied in physical education and sport. Sports psychologists are known to be interested in people's attitudes towards physical activity and also various phenomena associated with skill learning. Kane (1972) is of the opinion that sports practitioners should be knowledgeable on the relationships between people's attitude and the various phenomena associated with skill learning. There is no gainsaying the fact that sports

practitioners would achieve much basing their activities in knowledge acquired from subject matter, such as motivation and learning, maturation and learning, individual differences and learning, reinforcement and learning, intelligence and learning and the various theories of learning and acquisition of motor skills, which are all elements of sports psychology. Today, sports psychology has developed beyond the opinion of Kane. The 21<sup>st</sup> century sports psychology works almost like magic in emotional and skill development of athletes and other sport practitioners. It is my opinion that a proper application of sports psychology in counselling would dissuade a potential performance-enhancing-drug-user. The likes of Lance Armstrong would have been spared a lot of embarrassment.

#### 4.0.2 Biochemistry of Physical Activities:

Biochemistry of physical activities is a scientific area which understudies the effect of various metabolic and hormonal activities on human performance. Portmans (1981) reported that the first symposium on biochemistry of exercise took place at the University of Brussels in 1979. It was a four-day programme, attended by 171 scientists from 20 different countries of the world. Since then, many of such academic and professional fora have taken place and served in widening the frontiers in sports biochemistry. In the realm of sports, biochemistry provides the forum for analysing the effects of various drugs, particularly the ergogenic aids on athletes' performance. Knowledge of biochemistry is used to detect the use of such drugs at competitions. But for biochemistry, many athletes would have gone undiscovered with all the atrocities that ergogenic aids might have enhanced.

#### 4.0.3 Kinesiology

Another scientific aspect of physical education is kinesiology – the science of motion. It is concerned with the understanding of the

interrelationships of structure and function of living beings with respect to the kinematics and kinetics of motion, (Cooper, Adrian and Glassow 1982). It involves the concepts from anatomy, physics and mathematics being used to determine and measure the quantities of motion, time, space and force – and to fully understand movement of living things. Amuchie (1972) maintained that kinesiological knowledge arms the sport practitioner with a professional tool with which to visualise, select, operate, analyse and modify complex sport movements. He mentioned certain functions which its knowledge fulfils in coaching, such as:

- a. Enhancement of the description of the exact movement to be performed
- b. Helping the analysis of the sequence of movements
- c. Understanding the kinesiological requirements of the activity
- d. Prevention of athletic injuries
- e. Evaluation of the worth of activities and finally
- f. Helping the coach to adjust equipment apparatus and clothing to the abilities of the athlete.

Kinesiology has been applied in the fields of athletics, physical medicine, rehabilitation and industries.

#### 4.0.4 Biomechanics

Biomechanics, which is almost synonymous with kinesiology is the application of mechanical principles of human and animal bodies in movement and at rest. It covers a broad spectrum, from theoretical study to practical application. While kinesiology deals with anatomical analysis of motion, biomechanics deal with the study of all the various types of motion the body can undergo. The knowledge of biomechanics promotes efficient use of the body movement. Williams and Lissner (1977) opined that one of the underlying goals of any human being is to learn to perform skilled movement patterns with the least amount of frustration, failure and danger. Coaches, trainers and athletes should be aware of the

science which deals with the study of movement and motion in relation to the human body. Movement is paramount to life. To survive one must move in order to eat, to breathe, to reproduce, to defecate, to develop bone and muscle and to continue all the life processes. While moving, good form should be maintained.

According to Broer and Zernicke (1979), good form is not a set pattern, rather it is the movement or movements, which accomplish the purpose with the least expenditure of energy – and this indeed biomechanics enhances.

#### 4.0.5 Exercise Physiology

Biology of exercise, a body of knowledge which deals with the study of how the human body responds to the demands of physical activity (Edington, Edgerton, 1976), is very useful in the study of responses of athletes to training. The knowledge of this subject enables the coaches to understand their athletes' reaction to specific training. Exercise or sports physiology, which is an application of physiological principles to the response of athletes to training and exercises is another form of application of science to sports. Fox (1979) maintained that sports physiology has been shown over the years to be significant in improving general physical condition and specific athletic performance. Exercise physiology is applied physiology. It is a fact that a body subjected to any form of exercise is under stress, as a result of which it experiences a state of homeostatic disequilibrium. Sports physiology dwells on studying the implications of given physical activities on the body mechanisms. A vast knowledge of sport physiology is demanded of the sports practitioners, to enhance optimal performance. If a trainer is vast in the knowledge of sports physiology, he would know the particular level of physical exertion his subjects should be exposed to. Prescription of exercise should be handled by experienced and professional practitioners with adequate support by the physicians. The physician should provide the medical history on which exercise prescription should be based. Exercise physiologists are those who are equipped with

the knowledge of exercise prescription, and they often place their subjects on exercise regimen with due considerations to the following guidelines: acquisition of medical clearance coupled with medical history of the subject, basing exercise regimen on the cardio-respiratory responses of the subject from stress test, and basing activities on the individual preference and purpose of participation.

McArdle, Katch and Katch (1981), have maintained that effective exercise regimen can be provided only through individualised programme that are based on the subject's fitness and health status, with emphasis on frequency, intensity, duration and type of exercise suitable for the individual. The training regimen that would accompany the programme should be based on the following physiological principles as advanced by Klags and Arnheim (1981): warming up, gradualness, timing, intensity, capacity level, strength, motivation, specialisation, relaxation and routine. Bucher (1979) also reported findings of Larson and Yocom on the ten factors of the component of physical fitness, which include: resistance to disease, muscular strength and endurance, cardio-respiratory endurance, muscular power, flexibility, speed, agility, co-ordination, balance and accuracy. The knowledge of those factors would enable the trainers and coaches know what to assess in their athletes while determining their level of physical fitness, and this is part of what exercise physiology provides.

#### 4.0.6 Sociology of Sports:

Sports sociology, a science which deals with how sports affect society, has been described by Bucher (1979), as the science that deals with the origin of the society in terms of its affiliation to sports and physical activities. Adedeji (1985), also recognised the fact that sports can have a lot of sociological influence in any society. He sees sports as a dynamic social force, in a given culture which can be used to unify the people. In Nigeria today, sports is regarded as a useful tool for unifying the multi-ethnic groups which make up the country. The knowledge of sports sociology will enable the sports

practitioners to know what attitudes should be exhibited by the players and crowds to promote the right sociological atmosphere in any given sporting occasion. Vices such as drug abuse, hooliganism, age falsification, even impersonation would reduce drastically with appropriate use of sports sociology in imparting sports knowledge and skill acquisition to the athletes. It is a science that is useful for moderating every stratum of the society including the players/athletes and the spectators.

#### 4.0.7 Health Education:

Onyewadume (1987), quoted McCloy (1958) that through health education, the understanding of the values of good nutrition and hygienic sporting environment are enhanced. It also promotes the knowledge of proper application of first aids in the arena.

Mr Vice Chancellor Sir, from the foregone, you will agree with me that evidently, sports science is a useful tool in the proper functioning and operation of physical education and sports. This is so because all the sports sciences explained above are what constitute physical education and it is their proper application that makes the present sports and sporting programmes as versatile as they are both in Nigeria and other places of the world. However, in Nigeria, the potentials of these disciplines are yet to be maximised due to many factors that would unfold in this lecture.

The best an individual, institution, state or nation can achieve in this regard tend to determine the height that can be attained. It is also what makes the difference amongst the high-, little- and non-achievers in sports.

#### 4.1 Factors Affecting the Effective Practice of Sports Science in Nigeria

1. Inadequate funding of the existing sports research centres, e.g. Departments of Sports Sciences of tertiary institutions, the NIS etc.
2. Lack of modern facilities required to carry out cutting-edge

research that can meet 21<sup>st</sup> century demands

3. Lack of understanding of the concept of sports science and its purpose.
4. Inadequate synergy between sportsmen and their handlers and the existing sports science centres like the department of Sports Science and Human Kinetics.
5. Weak scientific background of most stakeholders - such as the athletes and coaches - who should promote or benefit from research outcomes
6. Insufficient patronage of the university and sports research institutes to promote more meaningful effort and maximise their potentials.

#### 5.0 THE INTERRELATIONSHIP AMONGST PHYSICAL EDUCATION, SPORTS AND SPORTS SCIENCE – THE TRIO

Mr Vice Chancellor sir, at this juncture, permit me to dwell on the inter-relationship among the trio of physical education, sports and sports science. Physical education is the broad discipline described earlier as the first heritage of man. It is a vehicle for promoting the holistic education of man both in the mind and physique whereas sports evolve from the accumulation of skills that physical education imparts on the learner that makes him/her engage in organised and structured physical activities in form of games or races for leisure, recreation or competition. In other words, physical education is the precursor for mere sportsmanship or good sportsmanship. It is in physical education that the skills for sports and games are well articulated and learnt. It is the knowledge and proper acquisition of the knowledge of these skills that is the purpose of theoretical cum practical physical education. Sports science serve as the tool for promoting modern techniques in sports and providing solution to athletes physiological, psychological, sociological and other related problems thus facilitating optimal

performance. It is glaring that the three are interwoven.

Without proper physical education obtained through a well articulated format of practical, physical education class preceded by an appropriate theoretical class, a sportsman may not be able to attain the peak of sports performance.

The issue of whether athletes are born or made has been debated many times, but the fact remains that a balanced and up-to-date athlete must both be born and made. Physical education therefore inculcates sporting skills in the athletes and removes mediocrity in sports. It inculcates virtue directly or indirectly in the individual, that enhance good sportsmanship.

## 6.0 SOME OF MY RESEARCH EFFORTS AND CONTRIBUTIONS TO KNOWLEDGE

Mr Vice Chancellor sir, amongst the various disciplines pertaining to physical education, I chose Exercise Physiology as my area of interest and that is where I have contributed in teaching and research.

Certain factors have militated against the smooth undertaking of physical education as a discipline and directly affected the mounting and operation of sports science and gainful sports programming. Such factors include lack of adequate modern facilities and material to do the class of cutting-edge researches that predominate the advanced world and make them tick. Since these factors are foundational for effective scientific research and innovative development, their presence in short supply or outright absence have been the bane of Nigeria's epileptic and lacklustre performance in sports and backwardness in the ability to maximise the potentials and values of the 21<sup>st</sup> century sports science. I realised this very early in my academic career and took solace in interacting with some departments allied to mine to do some work as stated earlier.

My research focus therefore has been geared towards understanding the grey areas and ascertaining the actual effects of training on some physical cum physiological parameters in athletes at both gross and cellular level.

One of the areas of concern in sports science is the efficacy of training mode. As there are many modes of training, it is necessary to understand which of them is most appropriate to achieve a given goal in enhancing the best outcome and how such could be utilised most economically.

Odedeyi (1984) in this regard conducted a research on assessing the aerobic capacity and cardiovascular response of elite athletes on bicycle ergometer. The two protocols for usage are standing and sitting on the mode. Results showed a higher value of oxygen uptake, maximal workload and exhaustion time in favour of the sitting protocol against the standing protocol. However, the heart rate and blood pressure did not elicit statistically significant differences in both protocols. Researchers the world over support the view that physical fitness status of athletes must be monitored and maintained regularly as economically as possible. Bicycle ergometer has been described as one of the commonest mode of training apart from the step-bench; hence my interest in the study to understand how it can be more effectively used for training. So, in this study the two protocols – sitting and standing – were compared.

Table IV: Showing the comparison of physiological Responses to Exercise on Sitting and Standing Bicycle Ergometry

Variables	Sitting		Standing		't' Ratio
	Mean	Standard Deviation	Mean	Standard Deviation	
Vol of O <sub>2</sub> MI/kg/min	5.76	7.87	45.51	6.83	2.68*
Ex Heart Rate	162.80	14.03	164.00	16.73	-0.25
Systolic B/P	179.00	16.70	176.50	19.62	0.78
Diastolic B/P	91.50	13.88	97.00	9.54	1.46
Maximal Work Load	1137.50	160.95	957.79	212.46	3.02*
Exhaustion Time (min)	10.95	2.16	8.65	2.48	3.13*

The experience from this effort revealed to the researcher one of the limiting factors to ensuring the maximisation of research effort in sports science in Nigeria which is lack of adequate research facility. In the study, athletes could only exercise at sub-maximal effort-level in order to estimate the maximal aerobic capacity (Max VO<sub>2</sub>), because there were no gadgets to monitor the maximum oxygen consumption directly. Normally, the participants were supposed to ride the bicycle to volitional stoppage or their maximal ability to elicit their MaxVO<sub>2</sub> naturally, but the gadgets to monitor this was unavailable, hence forcing the researcher to use the obsolete estimation technique. Till today, the story seems to be the same.

Mr Vice Chancellor Sir, most of my other researches focused on how body homeostasis can be affected by physical exertion; with emphasis on haematologic cum biochemical variations due to training or competition. My findings and experiences from these works have assisted me in no small measure as a sports administrator and trainer on different occasions.

A study in this regard dwelt on the haematologic variations due to rigorous sessions of aerobic and anaerobic physical activities. The subjects for this study were subdivided into three groups of aerobic, anaerobic and control. The aerobic experimental groups were exposed to a twelve-week regular jogging while the anaerobic experimental group engaged in a twelve-week regular sprinting programme. The control group were not engaged in any of these activities.

Table V: Showing the Mean, Standard Deviation and Range of Post-Training Haematologic Parameters and Indices of the Groups

Groups	Haematologic Parameters and Indices	Mean	Standard Deviation	Range
Control	RBC	5.13×10 <sup>6</sup>	±0.55	(4.40 – 5.58)×10 <sup>6</sup>
	PCV	45.25	±2.63	43.00 – 48.00
	HB	15.05	±0.42	13.00 – 16.20
	MCH	30.0	±2.83	27.00 – 32.40
Aerobic	RBC	3.78×10 <sup>6</sup>	±0.90	(2.98 – 4.94)×10 <sup>6</sup>
	PCV	42.38	±2.14	41.0 – 45.50
	HB	13.99	±2.39	12.00 – 17.20
	MCH	27.75	±4.77	24.00 – 34.40
Anaerobic	RBC	4.17×10 <sup>6</sup>	±0.33	(3.86 – 4.60)×10 <sup>6</sup>
	PCV	40.33	±2.62	38.00 – 44.00
	HB	12.58	±0.56	12.00 – 13.30
	MCH	25.18	±1.17	24.00 – 26.70

Table VI: Table Showing the Test on the Significant Effects of Training on the Post Training Haematologic Parameters

Parameters		D.F.	Sum of Squares	Mean Squares	F Values	F Probability
RBC	Between Groups	2	3.8541			
	Within Groups	9	3.6630	1.9270	4.735*	0.0394
	Total	11	7.5171	0.4070		
PCV	Between Groups	2	48.9700	24.4800		
	Within Groups	9	55.1100	6.1200	3.99*	0.5720
	Total	11	104.0700	6.1310		
HB	Between Groups	2	12.2600	2.6690	2.296	0.1560
	Within Groups	9	24.0300			
	Total	11	36.2900			
MCH	Between Groups	2	48.5500	24.2730	2.270	0.1590
	Within Groups	9	96.3980	10.7110		
	Total	11	114.9450			

The outcome of this study indicated reduced values of haematologic parameters normally termed sports anaemia in the experimental group; this is supposed to be transient in healthy athletes which may result in clinical anaemia especially when coincided with malaria or other blood threatening ailments. This result lent credence to the findings of other researches viz Ajiduah and Iro (1988), Stewart et al (1972), Stenhaus (1933). Aerobic training in particular has been affirmed to cause reduction in haemoglobin components as it accompanies adjustment to its effects. (Stewart 1972; Dressendorfer et al 1981, Frederickson,



Puhl and Runyan 1983). The only index monitored in the study, the Mean Corpuscular Haemoglobin (MCH) did not show any significant difference because exercise was not observed to affect the haemoglobin content of the red blood cell it only appeared to aggravate haemolysis of the older red blood cells due to physical exertion.

Mr Vice Chancellor sir and my distinguished audience the question of how contact games or other athletic activities affect homeostasis and other physiological conditions has always been given adequate attention to forestall misadventure in our sporting arena – like the case of Sam Okwaraji, and be proactive enough to help athletes like Kanu Nwankwo who after leaving the shores of the country was lucky to have been given appropriate medical attention that is probably still unavailable in Nigeria today.

In another study to understand the effects of aerobic and anaerobic activities on the athletes at the cellular level, Odedeyi and Igbanugo (1992) with the background information that exercise – particularly continuous or persistent exercise – with increased duration, frequency and intensity often cause exercise induced haemolysis and reduced haematologic status (Odedeyi 1990, Weight et al 1991) embarked on a study to ascertain the outcome of physical exertion in form of aerobic and anaerobic exercise training programme on the athletes' erythrocyte fragility. The researchers observed in the study that increased fragility calls for improved nutrition. See the illustration below for further understanding.

Table VII: Analysis of Variance for the Pre-Training Osmotic Fragility Values for Groups

N=30

Source	DF	Sum of Squares	Mean Squares	'F- Values
Between Groups	2		176.433	
Within Groups	27	31906.50	1181.722	0.149
Total	29	32258.367	1112.392	

As shown in the table, the F-value of 0.147 was less than the critical value of 3.35 at 0.05  $\alpha$ -level. This shows that the differences in values of the groups pre-training data were not statistically significant. This was used to determine the homogeneity of the groups. Table VIII however shows the outcome of physical activity as significant.

Table VIII: ANCOVA of Erythrocyte Osmotic Fragility after Aerobic (Jogging) and Anaerobic (Sprinting) Programmes

N=10

	Source of Variation	Sum of Square	DF	Mean Square	F	Significance of 'f'
AEROBIC	Covariates	23380.149	1	23380.149	236.535	0.001
	Main Effects	474.074	1	474.074	*4.796	0.043
	Explained	23854.223	2	11927.111	121.334	0.001
	Residual	1680.351	17	98.844		
	Total	25534.574	19	1351.397		
ANAEROBIC	Covariates	19114.127	1	19114.127	203.294	0.001
	Main Effects	208.622	1	208.622	*3.619	0.045
	Explained	19322.749	2	10142.289	107.872	0.001
	Residual	1598.373	17	94.022		
	Total	20921.122	19	1151.734		

The 'f' value of 3.619 ( $P < 0.045$ ) was greater than the table value of 3.59 ( $P < 0.05$ ); the null hypothesis relating to the test was therefore rejected.

Note that the first part of the table showing the result of ANCOVA indicated a statistically significant difference in the pre- and post-training values for the aerobic groups at 0.05  $\alpha$ -level with the significant 'f' value \*4.796, while the second part of the table for the Anaerobic group indicates a statistically significant difference in the pre- and post-training values for the group at 0.05  $\alpha$ -level with the 'f' value of \*3.619. These results were pointers to the fact that the two training protocols had significant effects on the erythrocyte fragility.

The plotted post-training cumulative and derivative fragiligrams also lent credence to the findings above. Table IX shows the values for the graphs, while figures I-IV provide the graphical illustrations

Table IX: Values for Pre- and Post-Training Cumulative and Derivative Fragility Tests for the Groups

%NaCl	Cumulative Values % Haemolysis						Derivative Values % Haemolysis					
	Aerobic		Anaerobic		Control		Aerobic		Anaerobic		Control	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
0.00	100	100	100	100	100	100	-	-	-	-	-	-
0.20	80	96	85	88	88	75	-20	-4	-15	-12	-26	-25
0.30	84	98	73	87	82	67	4	2	-12	-1	8	-8
0.40	68	82	70	87	82	64	-16	-16	-3	0	0	-3
0.45	50	67	50	71	51	47	-18	-15	-20	-16	-13	-17
0.50	33	48	37	55	25	47	-17	-19	-13	-16	-26	0
0.60	15	30	16	41	16	20	-18	-18	-21	-14	-9	-27
0.80	11	18	12	28	15	7	-4	-12	-4	-13	-1	-20
0.90	10	16	16	24	11	1	-1	-2	4	-4	-4	-6
1.20	7	14	8	20	9	0	-3	-2	-8	-4	-2	-1
Mean	45.80	56.90	46.70	60.10	46.70	42.80						
S.D.	10.05	10.00	9.06	13.78	13.75	10.34						

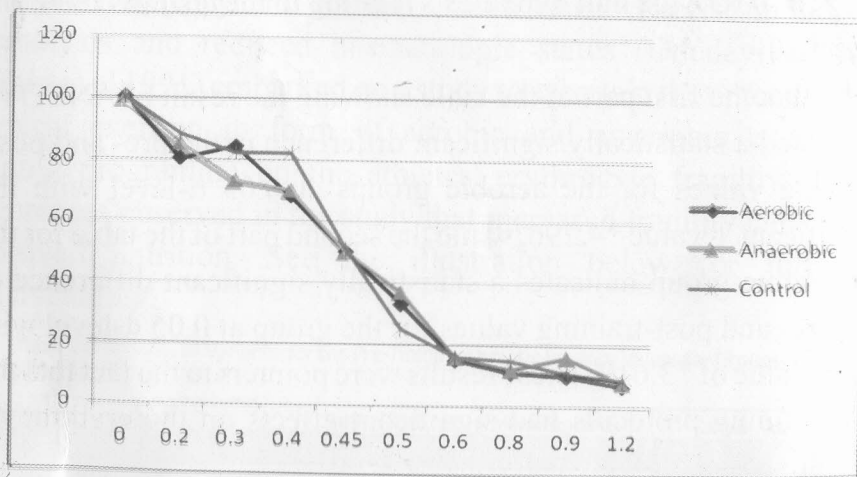


Fig I: Pre-Training Cumulative Fragiligram for the Groups

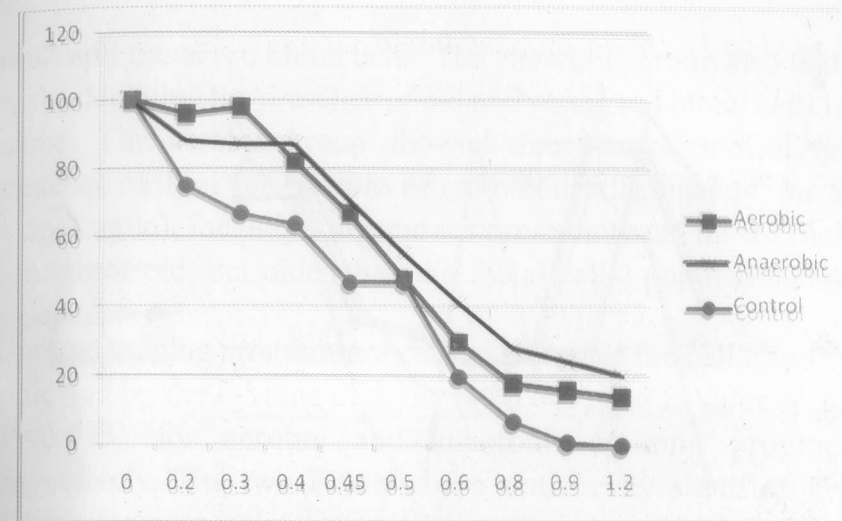


Fig II: Post-Training Cumulative Fragiligram for the Groups

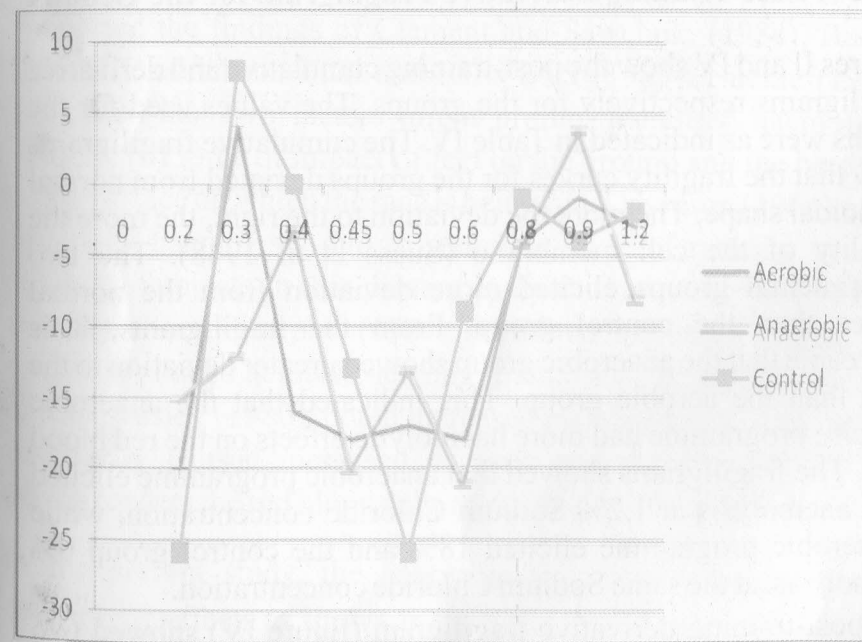
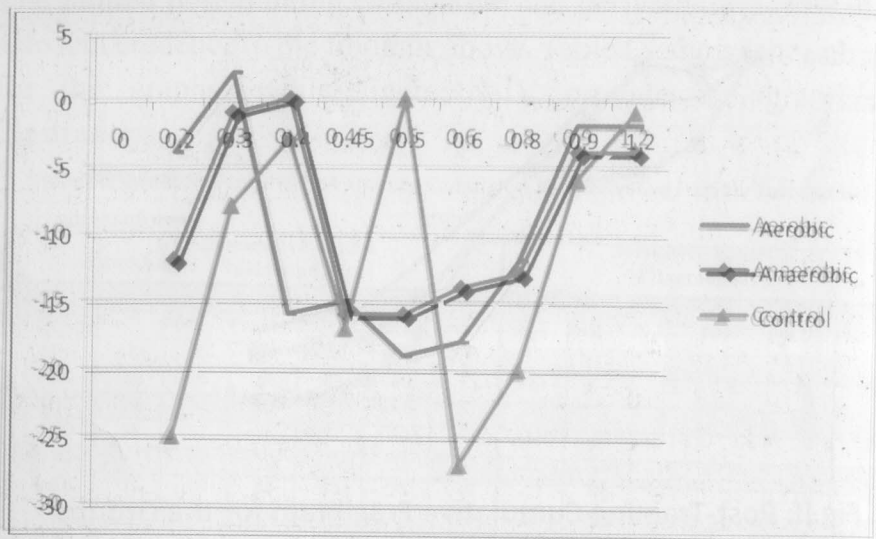


Fig III: Pre-Training Derivative Fragiligram for the Groups



**Fig IV: Post-Training Derivative Fragiligram for the Groups**

Figures II and IV show the post-training cumulative and derivative fragiligrams respectively for the groups. The values used for the graphs were as indicated in Table IV. The cumulative fragiligrams show that the fragility curves for the groups deviated from normal sigmoidal shape. The more the deviation to the right, the more the fragility of the cell membrane (Suess et al 1948). The two experimental groups elicited more deviation from the normal curves than the control group. From the fragiligrams, it is noticeable that the anaerobic group showed greater deviation to the right than the aerobic group. This indicated that the anaerobic exercise programme had more haemolytic effects on the red blood cells. The fragiligrams showed that anaerobic programme elicited 20% haemolysis at 1.2% Sodium Chloride concentration, while the aerobic programme elicited 18% and the control group 0% haemolysis, at the same Sodium Chloride concentration.

The post-training derivative fragiligram (figure IV) showed two peaks for control group which indicated the presence of two populations of the red blood cells for the group which consist of

adult and foetal red blood cells. The anaerobic group also had two peaks depicting the presence of old and young red blood cells in the group. The aerobic group showed three peaks, indicating the presence of three populations of red blood cells, namely: the adult (very fragile), foetal (young and very resistant) and mixed (neither young nor old, but older than the foetal cells) populations in the group.

The two training programmes caused increased red cell fragility, as indicated by the F-value of 4.796 ( $P < 0.043$ ) and F-Value of 3.619 ( $P < 0.045$ ) for aerobic and anaerobic training programme respectively. The two F-values are statistically significant. The cumulative post-training fragiligrams also showed a considerable deviation from normal sigmoidal shape, which indicated increased fragility and consequently increased haemolysis. This finding supported the findings of Clement and Sawchuk, (1984), Buckle (1965), Fredrickson Puhl and RUNYAN (1983). Buckle (1965), suggested that two factors might prompt increased haemolysis, namely: (i.) force of impact of feet on the ground and the hardness of the surface on which the race is being run. Davidson (1964) noted increased haemolysis due to stamping style of running in their subjects. Subjects in this present study did not wear well padded training shoes. Murphy (1967) attributed increased fragility to exercise induced acidosis, leading to increased blood pH. Carlson and Mawdsley (1980), noted increased metabolic secretion, which resultantly caused increased acidosis and decreased blood pH which renders the red blood cells more susceptible to fragility.

In the present study, the anaerobic programme caused greater haemolytic effects as shown in the tables and figures. This finding might have been stimulated by greater production of lactic acid in the athletes. Guyton (1981) observed that increased haemolysis

might have been promoted by the passage of red blood cells through tight spots of the circulatory system e.g. as in the spleen with a diameter of 3 micron as against 8 micron of the red blood cells. The picture shown by the derivative fragiligram by the various programmes indicated that red blood cells, depending on their age and maturity level, get degraded at different stages of their lives without actually attaining the final age of maturity (normally 120 days, depending on the intensity of the exercise trauma (Oyewale and Durotoye 1988).

The finding of increased fragility lends credence to the fact that physical training caused increased haemolysis and a reduction in red blood cell count. This may have direct negative influence on oxygen supply in the athletes. Weight et al (1991) noted that exercise-induced haemolysis has been implicated in the sub-optimal status of endurance-trained athletes. They also concluded that the noticed erythrocyte turnover may be sufficient to precipitate an iron deficiency in endurance athletes when dietary intake or absorption does not meet the accelerated erythropoietin demand.

Athletes and their handlers often worry about what would be the outcome of some activities on the health and wellness of sportsmen and sportswomen. In another work, Odedeyi (1991) therefore studied the effects of exercise induced haemoglobin degradation on serum bilirubin accumulation.

Hyperbilirubinaemia has been attributed to:

1. Excess production of bilirubin (as in haemolytic anaemia) that may result from vigorous exercise
2. Decreased uptake of bilirubin into hepatic cells
3. Disturbed secretion of bilirubin into the bile canaliculi or

#### 4. Intrahepatic or extrahepatic bile duct obstruction

There is also an assertion that when the causes are due to items 1 - 3 above, the unconjugated bilirubin rises, whereas when the cause is due to bile duct obstruction, bilirubin glucuronide regurgitates into the blood and the conjugated bilirubin is elevated.

The fundamental hypothesis for this study was whether the exercise induced haemolysis as a result of rigorous sprinting would provoke sharp increase in haemoglobin degradation leading to hyperbilirubinaemia that could manifest jaundice in a healthy athlete. The workload is as shown in Table VII.

Table X Sample of Training Prescription per Week

Day	Prescription
Monday Set 1	8×100 @ 0:20 (1.00)
Monday Set 2	8×100 @ 0:20 (1.00)
Tuesday Set 1	6×100 @ 0:20 (1.00)
Tuesday Set 2	6×100 @ 0:20 (1.00)
Wednesday Set 1	8×100 @ 0:20 (1.00)
Wednesday Set 2	8×100 @ 0:20 (1.00)

#### Key to the prescription

8 = Number of repetitions

100 = Training Distance in Meter

0:20 = Training time in minutes and seconds

1.0 = Time of relief interval in minutes and seconds

The biochemical analysis of bilirubin value of blood was done in the medical pathology laboratory of Obafemi Awolowo College of Health Science, Sagamu. Results from the study are explained in the tables below.

Table XI: Showing the Pre and Post Training Values of the Serum Bilirubin Levels

N=20	Pre		Post	
	Mean	S.D	Mean	S.D
<b>Control N=10</b>				
Total Bilirubin mg/ml	0.72	+0.3119	0.73	+0.1767
Conjugated Bilirubin mg/ml	0.46	+0.2276	0.47	+0.1075
Unconjugated Bilirubin mg/ml	0.18	+0.0789	0.20	+0.0947
<b>Experimental N=10</b>				
Total Bilirubin mg/ml	0.65	+0.2415	0.78	+0.2348
Conjugated Bilirubin mg/ml	0.46	+0.1955	0.56	+0.1897
Unconjugated Bilirubin mg/ml	0.19	+0.0720	0.22	+0.0632

From table XI, it is seen that the experimental group elicited an appreciable increase in the total conjugated and unconjugated serum bilirubin values at post training level. This supposedly meant that exercise caused increased haemolysis and a rise in serum bilirubin values.

Table XII: ANCOVA of the Total, Conjugated and Unconjugated Bilirubin Values after Training N=20

	Source of Variation	Sum of Square	DF	Mean Square	F	Significance of 'f'
<b>TOTAL BILIRUBI</b>	Covariates	0.187	1	0.187	3.708	0.071
	Main Effects	0.015	1	0.015	0.301	0.590
	Explained	0.202	2	0.096	1.899	0.180
	Residual	0.858	17	0.050		
	Total	1.060	19	0.050		
<b>CONJUGATED BILIRUBI</b>	Covariates	0.080	1	0.080	3.571	0.076
	Main Effects	0.032	1	0.032	1.341	0.248
	Explained	0.112	2	0.056	2.501	0.112
	Residual	0.380	17	0.022		
	Total	0.492	19	0.026		
<b>UNCONJUGATED BILIRUBI</b>	Covariates	0.005	1	0.005	0.579	0.457
	Main Effects	0.002	1	0.002	0.305	0.598
	Explained	0.007	2	0.003	0.45	0.667
	Residual	0.135	17	0.008		
	Total	0.142	19	0.007		

The critical value having been set at 3.59 ( $p < .05$ ) the null hypotheses relating to the parameters were accepted because the values of 0.301 ( $p < .590$ ), 1.431 ( $p < .248$ ) and .305 ( $p < .588$ ) were not statistically significant for the total, conjugated and unconjugated bilirubin respectively.

It was observed from the study that the serum total bilirubin increased by 20% after the training programme in the experimental subjects, the serum conjugated and unconjugated bilirubin were also increased by 14.85% and 11.63% respectively. However, the non significantly different increase presupposed that the increase was not statistically significant because the increase did not exceed the physiological limit of bilirubin accumulation in normal individuals (Nigerian males). These normal values were 0.4 - 1mg/100ml and 0.0 - 0.5mg/100ml for total and conjugated bilirubin respectively, (UCH, Routine Laboratory Manual 1991). This study has shown that, though physical exertion as sprinting can cause increased degradation of red blood cells, it will not cause more than normal level of bilirubin accumulation in the body. This shows that exercise would lead to increased haemoglobin degradation which does not result in pathological bilirubin accumulation as in jaundice. This showed that except the liver is diseased, exercise is not deleterious to the body in spite of the increased haemolysis due to training (Odedeyi 1992). Literature has shown that the liver metabolises increased bilirubin in the blood as soon as much of it is formed due to haemolysis under normal condition.

Krupp et al (1979) noted that total and conjugated bilirubin can be significantly elevated in normal subjects by fasting for 2 - 48 hours by prolonged caloric restriction. However, uncontrolled accumulation of bilirubin in the plasma has been attributed to the

existence of liver damage, biliary obstruction or increased haemolysis. The liver has been noted to be capable of increasing its metabolising activity to about 10 times its normal abilities to forestall the pathological effects of hyperbilirubinaemia that may result from increased haemolysis due to exertion (Green 1980). Not many works have studied the relationship of bilirubin accumulation to exercise, however, Carlson and Mawdsley (1980) suggested the monitoring of the serum herptoglobin or bilirubin levels to determine the rate of blood haemolysis.

In conclusion, this study showed that exercise-induced increased haemolysis would cause a rise in blood bilirubin values which is neither statistically significant nor medically deleterious.

Thus, it is recommended that athletes should always be tested for liver functions before being exposed to rigorous training and any sign of liver malfunction should be detected and treated as quickly as possible before and during athletic training. It is also recommended that malaria attack should be treated with dispatch so as to forestall undue aggravation of blood haemolysis that may result from acute malaria attack that may coincide with increased training intensity.

Further to understanding the effects of exercise on the body fluids and their components, Odedeyi and Oroge (2010) studied the values of saliva and blood constituents after endurance running on the treadmill. Results from the study are shown in the following tables.

Table XIII: Table Showing the Calculated 'T' Test Values of Pre and Post Exercise Salivary Parameters

N=25

SALIVARY CONSTITUENTS		SUM	MEAN	RANGE	SD	'T' VALUE	REMARK
AMYLASE	PRE	866	59.84	04-82	+28.06	*9.4	Significant @ 0.05
	POST	1470	37.64	16-96	+21.64		
SODIUM	PRE	3450	138.65	128-142	+2.64	*8.93	"
	POST	3525	141.99	138-145	+3.39		
POTASSIUM	PRE	108.145	4.326	3.60-4.95	+5.36	*7.57	"
	POST	118.950	4.758	3.40-5.26	+6.55		
CHLORIDE	PRE	2497	99.88	96-105	+2.55	*9.84	"
	POST	258	10.32	102-106	+1.43		
BICARBONATE	PRE	603	24.120	20-27	+2.26	*16.88	"

Table XIII shows that the calculated values for all the salivary constituents such as the amylase, sodium, potassium, chloride and bicarbonate were higher than the critical table value of 1.656 at 0.05-level and therefore the various related null hypotheses were rejected. The mean values of these parameters as shown in the table were higher after the exercise than before the exercise. They indicated a sharp rise in their values. This showed that exercise had caused an in the values of amylase, sodium, potassium, chloride and bicarbonate ions.

TABLE XIV: Table Showing the Calculated 'T' Test of Pre and Post Exercise Haematologic Parameters

HAEMATOLOGIC PARAMETERS		SUM	MEAN	RANGE	SD	'T' VALUE	REMARK
RBC	PRE	91	364000	3.2x1000 -	+251	*19.53	Significant t @ 0.05
	POST	79	316800	3.9x1000 2.6x1000 -	+234		
PCV	PRE	1093	43.72	40-47	+2.68	*13.81	"
	POST	1015	40.60	37-44	+2.52		
HB	PRE	363	14.52	12.80 -	+73	*12.85	"
	POST	315.50	12.62	15.50 11.00 -	+76		
MCH	PRE	1163.25	46.53	42.00 -	+4.87	*16.36	"
	POST	873	34.92	54.40 31.30 -	+3.32		
MCHC	PRE	831	33.24	35.50 -	+1.43	*5.69	"
	POST	780	31.20	30.80 27.90 -	+1.80		
				33.70			

Table XIV shows that the mean values of the haematologic parameters such as the RBC, PCV, MCH, and MCHC have reduced at post exercise. The reduction had caused a significant statistical value at 0.05-level of significance. A look at the table showed that with the critical value of 1.656, the calculated value

for each of the parameters was higher. Exercise therefore had caused some statistically significant reduction in the haematologic parameters.

This study elicited a mean difference of 37.64 u/l before the exercise procedure and 59.84 u/l after the exercise procedure for the salivary amylase. This shows an increase in the level of amylase during the exercise. This supports the findings of Chicharro et al (2004) that exercise caused the increase in blood catecholamine which invariably result in the increase in amylase level. He also reported that exercise increased the sympathetic activity and high protein concentration which was due to increased B – sympathetic activity in salivary glands. This according to them was possibly evoked by the action of adrenergic mediators.

The following mean differences were obtained in the values of the salivary constituents before and after the endurance running on treadmill to volitional stoppage:

Table XV: Showing the Mean Differences Obtained in the Values of the Salivary Constituents Before and After Endurance Running on the Treadmill to Volitional Stoppage

	Mean (before exercise)	Mean (after exercise)
Sodium	138.65mmol/L	141.99mmol/L
Potassium	4.24mmol/L	4.76mmol/L
Chloride	99.88mmol/L	104.32mmol/L
Bicarbonate	24.12mmol/L	28.96mmol/L

The above finding corroborates the work of Ben-Aryen, Roll, Lahav, Dlin and Paparo (1989) who concluded that the increase in the value of salivary constituents after endurance exercise was positively correlated to the exercise induced increase in salivary protein concentration. Young, and Scneyer (2000) also buttressed this assertion that the changes in salivary electrolytes such as Sodium, Potassium, Chloride and Bicarbonate after endurance

exercise were in response to sympathetic stimulation of the nervous system.

This study elicited a decrease in the value of red blood cells during endurance running on treadmill to volitional stoppage. The increased fragility of red blood cell count lends credence to the fact that physical exertion caused increased haemolysis and a reduction of red blood cell count. (Odedeyi and Igbanugo, 1992).

There was a decrease in the value of packed cell volume during endurance running to volitional stoppage on treadmill. This finding is in line with the finding of other researchers, (Nielsen, Hilde, Grindvic, Optad, Perkristan, Lysbetrsg and Tortein 2007), who found that reduced haematocrit level as observed in some soldiers under endurance combat training was attributed to increased rennin and aldosterone activity and sodium concentration.

A reduction in the concentration of haemoglobin during endurance running on treadmill to volitional stoppage was observed. This observation supports the findings of other researchers, (Guyton, 1981; Fredrickson et al 1983) that the reduced value of haemoglobin is in line with the reduced red blood cell count. The work of Odedeyi and Igbanugo (1992) also corroborated this finding.

The mean difference of 32.24g/dl before the exercise protocol and 31.19g/dl after were obtained for the mean corpuscular haemoglobin concentration; while the mean difference of 46.53/pg and 34.92/pg were obtained before and after the exercise protocol for the mean corpuscular haemoglobin. These findings are in line with findings of other researchers, (Weight, Loryne and Jacobs 1991), who noted that microscopic haematuria and haemoglobinuria occurred after walking and running strenuously for long period. Odedeyi, (1990) also observed that these observation could be ascribed to increased erythrocyte membrane-

protein abnormality.

From this study, it was concluded that physical exertion such as endurance running on treadmill to volitional stoppage has effect on both the salivary and haematologic constituents of the athletes, resulting in the reduction of haematologic profile and increase in the biochemical constituents of saliva of the athletes. Thus, it was recommended that regular medical checkups of athletes should be maintained to detect both the unusual physiological and metabolic manifestations that could hamper their optimum performance.

One of the major concerns of the sports scientist is to study the role of physical activities in the improvement of individuals' quality of life. Odedeyi and Oroge (2011) carried out a study to analyse the cardiorespiratory fitness and exercise tolerance of obese alcoholic, non-obese alcoholic, obese non-alcoholic and non-alcoholic non-obese male individuals. The population for the study included 2000 clients, who visited four fitness centres in Abeokuta metropolis; and had no history of cardiorespiratory disorders. The samples were purposively selected to include 50 obese male individuals and 50 normal weight individuals who were non alcoholic and another set of 50 male obese individuals and 50 normal weight individuals who were alcohol consumers. Results of the study are shown in the tables that follow.

Table XVI: T-Test Analysis of Subjects' Responses on Physical Efficiency Index (PEI)  
N=100; df=98

	Mean	Standard Deviation	Standard Error Mean	T-Values	P
Normal Weight Non Alcoholic	58.2284	±4.6800	0.8620	*14.5730	>0.05
Obese Alcoholic	42.9669	±5.7400	0.8110		
Normal Weight Alcoholic	53.6560	±5.7300	0.8100	*9.3210	>0.05

Table XVI above presents the outcome of the t-test analysis of subjects' responses in Physical efficiency test. When the mean values of 58.23 for normal weight, non alcoholic individuals and the mean value of 42.97 for obese alcoholic individuals were used, the resulting 't' value of 14.573 was gotten. The gotten 't' value is



statistically significant at 0.05  $\alpha$  level. Also, when the mean values of 53.66 for the normal weight alcoholic individual was compared with the mean value of 42.97 of the obese alcoholic individual, the calculated 't' value of 9.321 was statistically significant since the critical value was 1.662 at 0.05  $\alpha$  level. This shows that normal weight non alcoholic individuals have performed best in the physical efficiency test.

Table XVII: T-Test Analysis of Subjects on Exercise Tolerance

	Mean	Standard Deviation	Standard Error Mean	T - Values	P
Normal Weight Non Alcoholic	1.3700	$\pm 0.5910$	0.8360	*2.4060	>0.05
Normal Weight Alcoholic	1.1126	$\pm 0.4760$	0.6720	*7.2420	>0.05
Normal Weight Alcoholic	1.1130	$\pm 0.4760$	0.6730		
Obese Alcoholic	0.5720	$\pm 0.2290$	0.3250	*4.3000	>0.05
Obese Non Alcoholic	0.8640	$\pm 0.4230$	0.5990		
Obese Alcoholic	0.5720	$\pm 0.2290$	0.3250		

Table XVII shows the outcome of the 't' test analysis of the subjects' level of exercise tolerance. The calculated student 't' of 2.406 and 7.242 were both significant at 0.05  $\alpha$  level and critical value of 1.662. This also showed that normal weight, non alcoholic individuals performed better than the normal weight alcoholic subjects. Also, normal weight alcoholic also performed better than the obese alcoholic individuals. Furthermore, the obese non alcoholic subjects also performed better than the obese alcoholics in exercise tolerance.

Table XVIII: T-Test Analysis of Subjects on Vital Capacity Test

	Mean	Standard Deviation	Standard Error Mean	T - Values	P
Normal Weight Non Alcoholic	1.4460	$\pm 0.5690$	0.1010	*5.7540	>0.05
Normal Weight Alcoholic	0.8644	$\pm 0.4320$	0.1010		
Normal Weight Non Alcoholic	0.9200	$\pm 0.4490$	0.06350	*4.2310	>0.05
Obese Alcoholic	1.0840	$\pm 0.5170$	0.07308		
Obese Non Alcoholic	0.8644	$\pm 0.4310$	0.08810	*0.6330	>0.05
Obese Alcoholic	0.9202	$\pm 0.4490$	0.08810		

Table XVIII shows the result from the 't' test analysis of the subjects' performance on vital capacity test. The normal weight non alcoholic individuals have performed better than the normal weight alcoholic while the obese alcoholic have performed lower than the obese non alcoholic. In both cases, the 't' values of 5.75 and 4.23 were significant at 0.05  $\alpha$  level. The performance of the normal weight alcoholic and obese alcoholic have not depicted any statistically significant value since the value of 0.633 for the calculated 't' was less than the critical value of 1.662.

Table XIX: T-Test Analysis of Subjects on Forced Vital Capacity (FVC) Test

	Mean	Standard Deviation	Standard Error Mean	T - Values	P
Normal Weight Non Alcoholic	1.9590	$\pm 0.4240$	0.5990	*11.4620	>0.05
Normal Weight Alcoholic	0.9690	$\pm 0.4390$	0.4396		
Obese Non Alcoholic	1.3610	$\pm 0.5399$	0.7636	*3.6300	>0.05
Obese Alcoholic	1.0030	$\pm 0.4440$	0.06281		

Table XIX shows the outcome of the analysis of the subjects' values on forced vital capacity. The normal weight, non alcoholic has a mean value of 1.959 against that of normal weight alcoholic individual value of 0.969. While the obese non alcoholic had a mean of 1.361 against the obese alcoholic value of 1.003. The calculated 't' for both cases were 11.46 and 3.63 respectively. These values were statistically significant and their correspondent hypotheses were accepted at 0.05  $\alpha$  level with the critical value at 1.662.

Table XX: T-Test Analysis of Subjects on Peak Expiratory Flow (PEF) Test

	Mean	Standard Deviation	Standard Error Mean	T - Values	P
Normal Weight Non Alcoholic	161.5200	$\pm 49.9900$	7.0710	*6.8200	>0.05
Normal Weight Alcoholic	103.0800	$\pm 34.2600$	4.8450		
Obese Alcoholic	92.9000	$\pm 16.5100$	2.3340	*4.5100	>0.05
Obese Non Alcoholic	122.3400	$\pm 43.0500$	5.0880		
Normal Weight Non Alcoholic	161.5200	$\pm 49.9900$	7.0700	*10.2700	>0.05
Obese Alcoholic	85.8800	$\pm 14.5900$	2.0600		
Normal Weight Alcoholic	110.3400	$\pm 40.8200$	5.7700	*3.9900	>0.05
Obese Alcoholic	85.8800	$\pm 14.5900$	2.0600		

Table XX depicts the subjects' peak expiratory flow in the study. The normal weight non alcoholic individuals fared better than the normal weight alcoholic individuals. The obese non alcoholics also fared better than the obese alcoholics on the same variable. The calculated 't' of 6.82 and 4.51 were both statistically significant and their corresponding hypotheses were accepted at 0.05  $\alpha$  level and critical value of 1.662.

Also, normal weight non alcoholic individuals with a mean of 161.52 performed better than the obese alcoholic with a mean of 85.88. Also, the normal weight alcoholic individuals performed better than the obese alcoholic with a mean of 110.34 as compared with 85.88 for obese alcoholics. The calculated 't' of 10.27 and 3.99 were both statistically significant at 0.05  $\alpha$  level, and the corresponding hypotheses were accepted.

The results from this study has elicited some findings which either corroborated or contradicted some earlier findings. Discussions on the findings are therefore presented as follows.

#### **Outcome on Physical Efficiency Index of the Subjects**

The statistically significant differences observed between normal weight non alcoholic and obese alcoholic and the normal weight alcoholic and obese alcoholic supports the findings of Jana (2007), who showed that fitness alters obesity paradox in men. Paul, Mc Auleyi, Peter, Kokkinos et al (2010) observed also that overweight and obese man can only live long if they increase their levels of physical activities on high cardiorespiratory challenges. The physical efficiency index is a measure of the level of cardiorespiratory fitness of a person using the Harvard step test as a medium of testing. This study shows that normal weight non alcoholics performed better than their peers who are either obese alcoholic or normal weight alcoholic individuals. However, the normal weight alcoholic individuals performed better than the obese alcoholic.

Yet, some studies have shown that there was no difference in the values of physical efficiency index of normal weight alcoholic and obese alcoholic using the Harveard step test. Barbara, Braun et al (2006). These researchers also postulated that relationship between alcohol consumption and physical fitness shows a rise in the parameter as ethanol intake increases in women and non smoking but alcoholic men and mildly decreases as ethanol consumption increases among men that smoke. They also predicted that alcohol – fitness relationship can change as physical activity levels decline with age. The physical fitness index of normal weight alcoholic and their non alcoholic counterpart depicts a higher value for the non alcoholic.

#### **Outcome on Exercise Tolerance of the Subjects**

Rin (2007) concluded that alcohol intake causes reduction in exercise tolerance while abuse of alcohol may result in reactions in the systemic and peripheral nervous system. These may manifest in form of heart failure, respiratory insufficiency, anaemia and a rise in the body adiposity. However, Cloninger, Sigvardon and Watson (1988) had observed acute, moderate alcohol as precursor to increased exercise tolerance. In another study, Scott and Bernard (2000) explained that sedentary individuals display a lower maximal cardiac output due primarily to lower maximal stroke volume, this affects exercise tolerance in obese men. Findings from the present study contradicts findings of Cloninger, Sigvadon and Watson (1988), who concluded that acute moderate alcohol drinking increased exercise tolerance but it should also be noted that the subjects for this study were not chosen on one-time acute alcohol consumption testing, but were purposively selected on the basis of their habitual alcohol consumption lifestyle. In this study, the non alcoholic and normal weight subjects exhibited higher tolerance for exercises on a treadmill, when engaged in running to volitional stoppage

### **Outcome on Vital Capacity of the Subjects**

This study has shown statistically significant difference in the vital capacity of the normal weight non alcoholic and normal weight alcoholic in favour of the non alcoholic. This result is contrary to the results of Sparrow et al (1983). They concluded that alcohol consumption did not significantly influence the baseline level of forced vital capacity or forced expiratory volume after controlling for age, height, tobacco smoking habit and educational attainment. When the values of the vital capacity of the obese non alcoholics were compared, there was a significant difference. Other researchers have reported identical findings Scott and Bernard (2000), Sakamoto, Ishikora et al (1993) reported that sedentary individuals display a lower maximal cardiac output, due primarily to a lower maximal stroke volume. The respiratory mode of obese men at rest is characterised by rapid and shallow respiration due to less compliance which is caused by increased adiposity in the thoracic and abdominal regions.

In this study, the normal weight and obese participants who are alcoholics exhibited significantly different vital capacity in favour of the normal weight alcoholic subjects. This finding corroborates the finding of Scott and Bernard (2000), Sakamoto et al (1993), who reported that sedentary individuals exhibit lower maximal cardiac output due to lower stroke volume.

### **Outcome on Forced Vital Capacity**

In this study, a significant statistical value was realised when the values for the normal weight non alcoholic and normal weight alcoholics were compared for forced vital capacity in favour of the normal weight non alcoholic. The spirometer measurement was done for both sets after running to volitional stoppage on a treadmill as a measure of their endurance. This finding contradicts the report of other researchers (Sparrow et al, 1983); who observed

that alcohol consumption did not significantly influence the baseline level of forced vital capacity or forced expiratory volume of some subjects.

### **Outcome on Peak Expiratory Flow**

Results from this study showed that there were statistically significant differences in the elicited means on this parameter in favour of the normal weight subjects. This finding supports the views of Hakala, Stenius and Sovijarvi (2000) who concluded that weight loss reduces airway obstruction and peak expiratory flow variability in obese individuals. The findings of Katri et al (2011) also shows that obese patients benefit from weight loss through improved pulmonary mechanics and a better control of airways obstruction.

From the research, it was concluded that non alcoholic male individual participants who are of normal weight displayed higher exercise tolerance than their obese alcoholic counterparts. In the same vein, the physical efficiency indices of normal weight non alcoholic participants surpassed those of obese alcoholic male individuals. To this, the normal weight non alcoholic participants displayed better cardiorespiratory fitness level than obese alcoholics.

Spirometry indices such as vital capacity and forced vital capacity are higher in normal weight non alcoholics, normal weight alcoholics than obese non alcoholic and obese alcoholic male participants; while no differences are shown in the peak expiratory flow of all groups.

From the result of this study which was carried out to analyze the cardiorespiratory fitness, exercise tolerance of obese, non obese alcoholic and non alcoholic male subjects, the following

recommendations were made for both further research on the subject and with the hope that serious considerations will be given in deferring weight management until the alcohol problem is adequately addressed:

1. To attain good weight reduction programme, male individuals should desist from alcohol consumption. Alcohol is a significant source of calories and drinking may stimulate eating particularly in social settings.
2. Exercise should be a must; not just a matter of will for obese male individuals. Regular exercise makes the circulatory and respiratory systems more efficient by enlarging the heart muscles, enabling more blood to be pumped with each stroke, and increasing the number of small arteries in trained skeletal muscles, which supply more blood to working muscles.

Although, cardiovascular/cardiorespiratory health benefits are associated with moderate beer/wine drinking, male individuals should follow the principle of psycho-somatic health and social problems associated with alcohol consumption such as heart failure, respiratory insufficiency, anaemia and obesity to desist from drinking alcohol while attempting to reduce their weight.

Still wanting to ascertain the effects of some natural physiological phenomenon on performance, Odedeyi (1998) examined the effects of performance of activities to promote the development of muscular strength, flexibility, agility and cardiorespiratory fitness in the menstruating females. Fifty (50) secondary school female students who have experienced their menarche were used as participants for the study. The repeated measure design was used and the students served as their own control. Data were collected

on the third day of pre-menstrual, menstrual and post-menstrual phases. Findings showed that apart from burpee the participant elicited lower statistically significant differences in performing the activities due to menstruation at the pre- as compared to the post-menstrual phases. This finding calls for more research in this direction as it was recommended by Arnheim (1983). However, Emiola (1989) opined that if the female participant is healthy and barring any emotional problems, menstruation would not affect performance negatively.

When it was observed that students' participation in practical physical activities and leisure/recreational activities have dwindled drastically, a research was conducted on some factors that could influence students' participation in recreation and physical fitness programmes (Odedeyi, 1997). One hundred and fifty (150) participants were randomly selected from the population of Tai Solarin College of Education for this study. Results showed that the quality of recreation facilities, degree of the quality of financing and the availability of manpower to maintain the facilities had significant influence on participation. This result was in line with the findings of other researchers (Omojowo (1987); Amusa and Onyewadume (1992); Goodman and Knapp (1981) and Penman (1977)).

On the need for necessary support for teaching Physical Education and coaching, Onifade and Odedeyi (1998) recommended adequate and genuine administrative and manpower support to run physical fitness and recreational facilities. Odedeyi and Onifade (1997) also recommended the teaching of Physical Education with cognisance to its relevance to the existing physical sciences in the secondary school to promote its scientific knowledge.

In another study to identify the performance related attributes of female students, Odedeyi and other researchers (1999) examined and provided information on the performance ability of female students of the department of Physical and Health Education of Lagos State University and concluded that the body weight, height, pondreal index, quetlet index and body mass index of the participants did not differ from the already established norms. These results corroborate the reports of Sinning (1973), Katch, McArdle, Czula and Pechsar (1973) and Agbonjinmi (1993). It has been established that the physical indices are fairly effective in predicting some anthropometric factors (Inagaki and Kim 1993, Natswura, Tanaka and Iganaki (1992)).

Mr Vice Chancellor Sir, there are many types of training programmes. Odedeyi and Babalola (1992) conducted a research on understanding the effects of circuit training on the performance of selected physical fitness variables. The circuit consists of five stations designed to task flexibility, strength, power, endurance and agility.

From the results obtained from this study, a 4-week circuit training programme has significantly caused increase in arm strength and body agility without significant increase in leg power, trunk flexibility and muscular endurance. The obtained results were in line with the findings of other researchers in some instances, while they differ in others. Oduyale (1988) noted a non-significant effect in leg power due to a 4-week legbounding exercise in seven male athletes. He observed that a period of four weeks as used in this study may not be sufficient to effect any significant increase in leg power. All physical fitness components will significantly improve in an individual exposed to adequate and appropriate training programmes (Klafs and Arnheim 1979).

The arm strength significantly increased at the end of the training in line with the findings of Micheli (1983), who observed a dramatic increase in a training study of thirty subjects. Shea (1980), and Moritani (1986) found improvement in strength of subjects after training. Ashok (1989) noted increased strength in males of school ages, with differences in strength indices and with regards to age. Clarke (1973) explained that the factors that call for increase in strength through training include: intensity, frequency, duration and mode of training. The improved ability in press-up in the present study is in line with Fox's (1979) observation that weight resistance programme increases strength. Explaining the causes of such increase in strength, Fox (1979) noted that muscular hypertrophy is enhanced due to weight resistance programme. This hypertrophy has been attributed to increased diameters of already existing fibres, without the development of any new fibres. The subjects in this study exhibited increased muscular strength for the upper arms and shoulder girdle.

Flexibility of the subjects was not significantly improved in this study. This was not in conformity with the findings of Emiola (1986), who observed a significant increase in hip flexibility after a 12-week training programme. The disparity in findings may be due to differences in the training duration. Clarke (1973), noted that individuals can improve joint flexibility to an extent due to training, in line with the findings from this study, where increment was noticed in the subjects, but which was not statistically significant. As observed by Fox (1979), stretching exercises will significantly increase flexibility with a two-day-per-week for a five-week long programme, however in this study, an insignificant increase in flexibility was observed after a 4-week programme of three training sessions per week. The joints of an athlete should be flexible, but the degree of flexibility should not be beyond normal so as not to lead to muscular trauma and joint injury as observed by Fox (1979).

A significant effect was observed in the performance of dodge-run due to training. This was an indication that agility improved with training. Fox (1979) also observed increased agility due to training. This must have resulted from neuro-muscular coordination improvement due to training.

A non-significant increase in abdominal and back muscular endurance was observed in this study, contrary to the findings of Emiola (1986) who reported increase in muscular endurance after twelve weeks of training. This presupposes that for training to have significant effects on muscular endurance it must span a longer period than the time spent on this present study.

### 7.0 OPTIMISING THE TRIO IN PROMOTING HEALTH, WELLNESS AND GENERAL FITNESS

It is essential at this juncture to make a brief mention of how the trio can affect the health and wellness of an individual. The world over, the simplest unit of physical activity programme is referred to as the physical exercise regimen. In a publication of Technogram (a wellness company), exercise was described as a medicine. This explains why exercise is to be prescribed just as drugs are. It has been established that if exercise is prescribed appropriately, it can be used to treat diseases such as hypertension, overweight, obesity, diabetes, osteoarthritis, osteoporosis, depression and cardiovascular diseases. In all, exercise prescription should be based on the process of: evaluation, exercise recommendation, the use of general physical activity, structured aerobic exercise, structured resistance exercise and flexibility.

Mr Vice Chancellor Sir, I need to mention here that just as there is drug abuse, there is also abuse of exercise. The repercussion of abusing the use of exercise can be very grave. This can be viewed from abuse in terms of non-exercise, over-exercise or under-

exercise. Non-exercising can be as detrimental as over-exercising while under-exercising has a cumulative effect of non-exercising over time.

To exercise adequately, certain conditions must be fulfilled. Some of these conditions include:

1. Giving due consideration to the medical record (prepared by a physician) of the participant before drawing up an exercise regimen
2. Giving a stress test to the participant to ascertain the level to which he/she can be pushed before adjustment could manifest.
3. Establishing the interest of the participant before prescription is made
4. Identifying and utilising available and easily accessible modes
5. Strictly adhering to the principles of exercise prescription which include specificity, duration, intensity, overload and frequency.
6. Accommodating training of the indices of physical fitness such as strength, endurance, agility, flexibility, balance, stamina as dictated by the level of health and fitness of the participant.
7. Graduating exercise regimen with a degree of precision to avoid overloading at the initial stage and preventing overtraining as well as undue burn-out.

Nowadays, there are many fitness clinics being paraded about. Oroge(2008) in a survey to ascertain the quality and quantity of such clinics reported that there are about nine-hundred and fifty-seven (957) fitness centres set up across Nigeria, with less than 2% of such centres being managed by qualified trainers or exercise scientists. Leaving the practice in the hands of the untrained is a canker that has led to untimely deaths of unwary participants. The bases for prescribing exercise or physical fitness programme are strange to the uninitiated, yet they dabble into it.

Stress and at times physical fitness test cannot be conducted by just anybody. In South Africa, seven (7) job seekers died during a pre-employment physical fitness test in December 2012. In Nigeria, the story is not different. In a screening fitness test conducted by the Federal Road Safety Corps recently, the young lady who topped the list was eventually dropped because her medical report later revealed some hidden cardiovascular diseases – this is really unacceptable. Before exposing people to any rigorous physical fitness test, their level of fitness must first be ascertained through a well articulated and conducted stress test.

At this juncture, I like to give kudos to the management of the Gateway United Football Club of Ogun State for using the physical fitness test to detect some unfit players who were eventually laid off.

Ogun State is known for engaging the State Executives and Civil servants in regular health walks and joggings in order to keep these personnel fit. This is a good example for the masses to follow, however, efforts must be geared up to ensure that participants engage in the programme with proper monitoring by the physicians and exercise specialists to promote its positive values and optimise its benefits. In other words, there must be a data bank for every individual to keep a record of progress in fitness level and the health benefits they have derived as the programme progresses.

Reports of people, even supposed elite athletes collapsing while exercising due to lack of pre-exercise fitness test occur at times in Nigeria. This calls for concerted effort to forestall the occurrence. It is worrisome to note that our national athletes do not bother to undergo physical fitness tests on a regular basis except when perhaps they are due for high level competition and then it becomes training to win by all means as a result of the fire brigade approach in our preparation. All these must stop.

Finally, I wish to highlight the usefulness of the trio in achieving the millennium development goals (MDGs). The eight MDGs are:

- Eradicate extreme poverty and hunger.
- Achieve universal primary education.
- Promote gender equality and empower women.
- Reduce child mortality.
- Improve maternal health.
- Combat HIV/AIDS, malaria and other diseases.
- Ensure environmental sustainability.
- Develop a global partnership for development.

There is indeed a need for a concerted effort to put Nigeria on the right track to achieve the MDGs. It is a known fact that sports and physical education can contribute to the specific objectives of Millennium Development Goals. Each of the eight objectives and goals are sports related because eradication of extreme poverty and hunger is achievable through sports. The sports industry has helped to achieve this in Nigeria. Universal Primary Education came to Nigeria in the early seventies with sports and physical education being part of the inalienable culture, gingering the interest of many towards participation in physical education and sports. Gender equality and women empowerment has been promoted more in the sports arena than anywhere else, because just as there are many successful male athletes, so are there successful female athletes. It is just a matter of how either gender can maximise the various opportunities that the trio can offer. Child mortality has been reduced through sports participation and maternal health has improved due to regular attendance at fitness clinic or individual participation in sports. Sports has provided good role models from athletes and individuals who live normal lives without recourse to anti-social activities that can cause HIV/AIDS and other diseases.

Presently, participation in fitness programme and regular exercising are being recommended as means to improve the body resistance of HIV/AIDS patients. Sports is a tool for stimulating people towards promoting the preservation of human natural environment. Also, sports is a very useful and reliable source of providing endless opportunities for innovative partnership for intra and international development.

My dear listeners, you will agree with me that invaluable as exercise and fitness programmes can be, the need for careful planning and execution under the guidance of those that are professionally qualified to do so cannot be overemphasised.

### 8.0 CONCLUSION AND RECOMMENDATION

Mr. Vice Chancellor sir, I believe that from the content of this lecture, the values of the trio of physical education, sports and sports science in their services to humanity have been discussed. The assertions that they are invaluable have been proven to a large extent. All hands therefore must be on deck to optimise their benefits to mankind for better and more purposeful results at all times.

As some lacuna and lapses have been enunciated in the lecture, it behoves me to make some recommendations that would ensure the optimisation of the trio for the benefit of mankind. Apart from the ones that have been made in the body of this lecture, I wish to further make the following recommendations:

1. To optimise the values of physical education in the Nigerian educational system and the lives of our people, the subject must be made compulsory at all levels of primary, and secondary school education (both senior and junior) and made optional at the tertiary level.
2. Provision for adequate and up-to-date equipment and facilities

for teaching and practicing sports science should be given adequate attention. Importation of such equipment should be made duty-free.

3. Training is essential to attain champion-state, therefore, adequate time must be set aside for training. Also, athletes must be made to engage in competitions frequently as possible. This gives the opportunity to stabilize the effect of training.
4. Evaluation of athletes' status serves as a means for determining the level of preparedness of athletes to meet up with the challenges of the competition. It also indicates the appropriateness and adequacy of the training programmes. It should be a part and parcel of the training programme.
5. The federal and state governments must understand the place of adequate and state of the art facilities for success and make a concerted effort to provide and maintain them always.
6. The use of experts should be adopted in the promotion of sports development. This is necessary for the country to meet the 21st century standard of sports development.
7. Motivation of athletes, their handlers and other sports practitioners should be given due attention and support by the Government at all levels.
8. All fitness clinics must be duly registered and manned by those who are professionally trained to do so.
9. NAPER, NASSM, INSHER and other physical education and sports science related organisations should be duly registered to be empowered to assist in formulating policies and enforcing them to bring sanctity to the practice of sports related business in Nigeria.
10. Workshop to fine-tune the standard for teaching physical education, sports science and practicing sports should be



organised regularly in the country. The last time we had an all-embracing one was in 1986 (Odedeyi and Adesanya (1986)).

11. Government should promote and motivate better public and private promotion of sports and sporting business in the country.
12. A more pragmatic approach for grass root development of sports should include identification of the natural and geographical attributes of all aspects of Nigeria and selecting talents to be developed for various sports

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*It is not of him that willeth, nor him that runneth but of God that sheweth mercy.*

Romans 9:16

I am grateful to my parents - who are here represented by my mother, Madam Amudalat Modupeola Abegbe Odedeyi - who struggled hard to ensure that we were educated and catered for us prayerfully to ensure that we live to achieve our goals in life. My father, Alhadji Biliameen Ajadi Ajikore Odedeyi of blessed memory taught us to trust God in every situation till he passed on in Minna, Saudi Arabia while performing Hadj in 2001. He was a father in a million. The main legacy you left behind is the education of your children and today, part of the dividends of your struggle in life is being celebrated.

My sincere appreciation goes to my grandparents for their care while I was a baby and the support they gave to my parents to ensure that I lived when they were not so sure that their Adisa could survive. To my late grandmother, Madam Alice Jokotade Abebi, I say a big thank you for your efforts as regards my education at the primary school - the African Church Central School, Ita Iyalode; and for introducing me to the Christian faith early in my life. Today, I am not only a Christian, but a worker in His Vineyard. May the Lord be praised.

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also here today. I will always remember with deep appreciation, what my grandmother in-law did to take care of Abisayo our first daughter – abandoning her trade for over a year to stay with my wife at ijanikin. I will always cherish you in my heart.

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I strongly appreciate the house of Clergy in Ijebu Diocese for accepting me as one of them and the Diocesan board of Egba Anglican Communion for allowing me the privilege of serving as the Bishop's Adviser on Education. I strongly cherish the presence of my Lord Bishops; the Rt. Revd. Ayo Awosoga, Bishop of Ijebu Diocese and the Rt. Revd Oludaisi Adekunle, Bishop of Egba Diocèse. My spiritual father and mentor, Papa Venerable Tunde Abiala and Mama Abiala, this is your day of joy. I am grateful to God for your lives. The church dignitaries and my other colleague clergymen here today, I really appreciate the bond of love that binds us. May the work of God in our hands continue to prosper.

I appreciate the members of the house of laity here present for their love and support for our church ministry, God will bless you. Members of the Anglican Church of the Blessed Virgin Mary, you are here; I cherish your commitment to the work of God and the love that exists between us all. May the Lord continue to bless and prosper all of you.

I cherish all my senior colleagues and peers for your unalloyed support. I also appreciate your coming today to honour me. These include Prof. Demola Onifade, Prof. Ayo Agbonjinmi, Prof. Rafiu Okuneye, Prof. Fasan and other friends at the Lagos State University; Prof. Ikulayo, Prof. Grace Otinwa, Dr Adeyeye, Dr. Phillips and my colleagues at the University of Ibadan; Prof. Ogundele, Prof. Asagba, Dr Babalola, Dr Morakinyo, Dr Abass, Dr Adegbesan and the others. All my academic colleagues at international level at the University of Cape Coast in Ghana. University of Education in Winneba Ghana, Kenyatta University in Kenya. My academic friends include Dr. Babalola Adegbamigbe, Dr. Lanre Aiyejuyo etc of Lagos State college of Education, Oto Ijanikin.

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Mr. Vice Chancellor, I wish to state at this juncture that since I joined this university in 1985, I have enjoyed the support of everybody at the departmental-, faculty- and university- level. Everybody has been my friend and I have succeeded through their indefatigable support. I wish to recollect the efforts of the first set of management staff and principal officers. Prof. Olubi Sodipo the first Vice Chancellor, Mr. Tunji Sotoyinbo (the first registrar), Mr. Babatunde Onigbinde (the first bursar) and Chief (Mrs) Laide Soyinka (the first librarian) actually laid a solid foundation for the university.

At the faculty level, having the privilege of working under the guidance and able leadership of Late Prof. Amos Tinuayo Oduyale one of the patriarchs of Physical Education, acting dean of Faculty of Education and Head of Department of Physical and Health

Education was a rare blessing. He was the one who ensured my appointment into the university and guided me carefully to acquire the traits that an accomplished academician must possess very early in my academic career.

Others who were equally supportive include Prof. Kayode Ajayi, Prof. Titilayo Hassan who appointed me as the first faculty B.Ed Sandwich programme co-ordinator - my first big administrative challenge which actually fortified me to withstand the usual stress of administration. He also appointed me as the Head of what later became the Department of Sports Science and Health Education (SSHE). All the members of staff of SSHE were, and are still very cooperative; this has played a major role in bringing the department to its present enviable status. They include Dr Kayode Oke (former head of department, a brother and a friend), the then Dr O. O. Omotayo (a former head of department, under his tenure the department's name changed to Sports Science and Health Education), Dr Tola Oduyale, former Head of Department and my twin brother in Exercise Physiology, Dr Sunday Ogunleye (our current head of department), the late Dr G.A. Adebayo (the first alumnus to head the department, who was affected by the laying-off of staff, he contributed immensely to the growth of the department. May his soul rest in perfect peace), Dr Femi Kalesanwo (a former head of the department and also an alumnus), Dr Ayo Okundare (an alumnus) Dr Funsho Salomi (also an alumnus), Dr (Mrs) Tokunbo Tejumola (another alumnus) and Dr Olawunmi. They are all very supportive and progressive. I really appreciate the unity of purpose that exists in the department.

During my tenure as the Dean of Faculty of Education I enjoyed the support of all the staff of the faculty; both academic and non-academic. The faculty actually blossomed then and was declared a model faculty by the National Universities' Commission (NUC). It

became the golden faculty in the university because of the doggedness and commitment of all the staff in the faculty. I was very lucky to be succeeded by Prof. Biodun Ogunyemi, my evergreen ASUU chairman and the "Eagle" himself.

All the former deans before me laid a solid foundation for the faculty. Apart from the ones I have mentioned earlier, Prof Taiwo Ajayi, Prof (Mrs) Ajibade, Prof (Mrs) Adesemowo (during whose tenure I became a professor), were outstanding. The current dean of the faculty, Prof (Mrs) Bilesanmi Awoderu, a very energetic and forward looking scholar has also given a boost to the image of the faculty through her dynamic leadership style.

I can never forget the ever supportive role of the following persons in the faculty; Prof Niyi Bennedict (a senior colleague), Dr (Mrs) Bennedict and a host of others. Prof. Lasun Gbadamosi - a very energetic and purposeful scholar and administrator, a former dean of the faculty, who resuscitated the topmost relaxation center in the faculty is very dynamic; he never for once denied me of his support. Prof. Alaba Adenuga (one of the best faculty sub deans ever produced in the university), Dr. Taiwo Edun, Dr. Abayomi Oscar, Dr George Eweniyi and the Heads of Department and Coordinators of programmes in the faculty cannot be forgotten for the commitment and selflessness with which they ensured quality and success at all times. During my tenure as Dean, the late Canon Dr. Isaiah Adeniji was one of the HODs that worked assiduously to earn our faculty NUC's full accreditation for all our programmes. May his soul rest in peace. I will also like to mention the efforts of the faculty officers that worked with me, Mrs Yetunde Abass-Olisa and Mr Donald Oyemade were very resourceful.

As the Provost of the Post Graduate School I have enjoyed the support of all the provosts and deans. They are simply wonderful. The members of staff of the Post Graduate School have all been very supportive, particularly the Secretary of Post Graduate School

Chief Mrs. Owotomo a mother and an astute administrator. I am very grateful to you all.

My Vice Chancellor Sir, I must appreciate the roles all the vice chancellors in this university have played in my academic career;

Prof. Olubi Sodipo employed me, and provided the quality of leadership that was uncommon. He exuded confidence, a sense of purpose and a positive influence on us. At the time, we were confident that Ogun State University (as it was called) was the best.

Prof. Bankole appointed me as the Head of Department of Physical and Health Education for two terms. He stood for the best quality all the time.

Prof. Tunji Oyeneye ensured the occupation of the permanent site and contributed his quota to the system. He offered quality mentorship to the younger scholars and I benefitted from this in those days.

Prof. Lai Ogunkoya came to the university to rejuvenate it after some period of interregnum and this affected all of us positively.

Prof. Soyode, in whose tenure I became a professor, ensured that most of our outstanding arrears were paid. He also appointed me as the Head of Department for another term. I later became the dean during his tenure.

Prof. Odotola Osilesi came with all good intention and did his best. The university maintained the full-accreditation status during his tenure. The university faced some challenges then as usual but the "tsunami" completely derailed the system when it came. He appointed me as the Chairman of the Students' Disciplinary Committee.

Prof. Sofola from UNILAG contributed his own quota in the administration of the university. He appointed me as the chairman of the university sports council.

Prof. Wale Are Olaitan, the first Alumnus to become the Vice

Chancellor of the university contributed his own quota in the running of the university.

The current vice chancellor Prof. Saburi Adesanya came in when the morale of the staff was at its lowest ebb, an astute administrator, his arrival has brought a lot of respite to the system. Our hope has risen and the sun of the university is really shining again. The efforts of the other members of the new management team is also noteworthy: Professor Sule-Odu, the Deputy Vice Chancellor, an astute administrator and a dear friend, a diehard lover of the university; the Acting Registrar, Mrs Osunsanya (a very diligent woman); the Bursar, Mr Tonade, an accountant par excellence and my friend; and the Librarian, Mrs Faustina Sola Oyesiku, my dear sister in-law and "wife" who will go the extra mile to ensure that the library meets accreditation demand every time are all worthy of commendation.

The various chairmen of the Governing Council have been very active in their own ways. Permit me to express my deep affection for the likes of Prof. Akin Mabogunje the first Pro Chancellor, and especially Prof. Biyi Afonja who was an astute administrator; He ensured that all our outstanding arrears were paid and made life somehow more comfortable for the staff. The university's full accreditation was achieved during his Pro Chancellorship.

The present chairman of the governing council Dr. Oshin a thoroughbred medical practitioner and a very positive minded person has been doing a lot since he stepped into the saddle of Pro Chancellorship of the university. Hope has risen again and the goodwill of the university is gradually returning, however I believe that by the time our colleagues who were affected by the insensitive laying off of our staff who are now in diaspora are all brought back the story will change for better. I salute the efforts of all the members of the University Governing Council both past and present, God will bless you all. Governments will come and go, but

the roles they played will always be remembered.

The problem of this university since inception has been funding. Archimedes once said "Give me a place to stand and I will move the world"; this seems to be in tandem with the yearning of OOU to our amiable Governor. "Give us adequate funding, Your Excellency, and we will prove our mettle beyond all imagination".

The unions in this university (ASUU, SSANU and NASU) have been selfless and dogged in fighting for the rights of the workers. Their efforts have been complimented by the works of the various councils with the likes of Mr. Fola Adeola who believed that the union should be allowed to express their feelings and make their request known to the council for necessary processing to promote efficiency and commitment. In my own opinion, any council that does not believe in this principle cannot achieve much.

I appreciate the role of ASUU, my union for being totally committed to the welfare of the workers, but for these unions what will be the present state of the Nigerian universities and other tertiary institutions? Let's see how we can work together with our unions to get the best for our educational system in Nigeria in an environment devoid of the incessant strike actions that has seriously bedeviled our academia. I believe also that it is high time we reached a consensus on how to forestall strike actions for the "health and fitness" of our academic setting. Every worker should endeavour to uphold the virtues of these Unions and project their positive images in all their dealings.

Mr Vice Chancellor Sir, permit me further to appreciate the following: Prof Ayo Fadahunsi, Prof S Ade-Alli, Dr Abosede, Dr Kola Odunaike, Dr Ogunbote etc, I appreciate you all. To Dr K. B. Olurin, I appreciate you for your love and especially regular advice. this has always been of immense value to me.

Mr Vice Chancellor Sir, there are some other relations of mine who played very significant roles in my life. Since my parents were not so lettered, they relied on some of their relations whom they had strong affection and harmonious interaction with. Among these are the following: Comrade Jare Adefemi, whom my parents said we should watch closely and imitate, he later became my godfather at baptism and his wife my godmother; Chief Michael Olugboyega Dosunmu who was virtually my father in the north while I was studying, a very benevolent man who will always go the extra mile to support his kith and kin; my aunty, Mrs Gbemisola Soleye, who provided succor for me as a student in the north and rendered assistance at the shortest notice; and my dear brother, Stephen Olutunde Dosunmu, who gave me the needed assistance to ensure my success at the secondary school level. He is ever there for me. May the Lord bless you all.

At this juncture, let me express my profound gratitude to my wife, Mrs Winifred Olufunmilola Temitayo Adufe Odedeyi, for supporting me unflinchingly since I met her in 1982. She is my own jewel of inestimable value. Your support through my academic journey and sacerdotal responsibilities is unequalled. May the Lord continue to prosper you. My children, Abisayo Ajoke, Akin-Olawale Ayodeji, Temitope Oluwaseun and Omotunde Modupeoluwa are all wonderful gifts from God. My nephews and nieces Mosopefoluwa, Adeola, Tolu, Rolayo, Adeolu, Taiwo, Kehinde, Moyosoreoluwa, Joseph, Samuel, Abraham, Oluwakemi, Ademiposi, Eniola, Inioluwa, Imisioluwa, Ahmed, Oluwatosin, Gideon, Esther, Jomiloju, Busayo, Peace, Nifemi, Grace, Glory etc, are all wonderful. I love you all.

To whom shall I return all my thanks again if not to my God the owner of time who has permitted this memorable occasion. All glory, honour and adoration be unto Him forever.

Kindly sing along with me this chorus;

*All glory must be to the Lord  
For He is worthy of our praise  
No man on earth should give glory to himself  
All the glory must be to the Lord.*

Thank you for listening, God bless you all.

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