

Chapter I

INTRODUCTION

*“No one can arrive from being Talented alone.
GOD GIVES TALENT;
Work transforms Talent into Genius”*

ANNA PAVLOVA

Every individual has a need for movement, whether this is the fundamental requirement of the movement of inner organs or the movement of the muscles. Body movements may be either inborn, or acquired, although the exact determination cannot be identified. Accepted movements are certainly attributable to society, and are cultivated to form developed pattern of behavior according to social politeness. General aims of education through physical activities are to let the participant understand that regular systematic movements are both a part and philosophy of life, and the sport is a school of life.

Movement is an integral part of early child's life. Although children are generally more active, physical education programmes are necessary to develop movement skills for increased level of physical fitness. Evidence suggests that a child who is active at an early age will probably be more active as an adult (Pangrazi & Daver, 1981).

A range of conditions contributes to individual orientation. Differences between people are determined by factors such as cultural, political and socio-economic backgrounds. National characteristics also play a determining role in differentiating individuals. Conditions therefore contribute to differences between people, inter individual differences distinguish one individual from another, where as intra-individual differences occur within a person according to the situation, for example, the athlete under stressful conditions. The athlete must be viewed as a unique entity, where individual personality is accounted for those involved in sports need of motion throughout the entire life cycle whilst acknowledging individual differences (Frank W. Dick, 1998).

The individual differences may be attributed to lots of reason; such as genetics, cultural socioeconomic backgrounds, nutrition, especially institution of physical education programme. Physical education program mainly adopt a sound health and fitness to the growing children. Those of us who believe that developmental training has been neglected or badly handled, and that physical training can provide a remedy, must decide how to fit it in to the limited at our disposal. The training with skills which must be the supreme manifestation of physical education in schools; in most schools there could hardly be any question of devoting whole periods to physical training (Devendra Balayan, 2006).

Within this limited and unstructured physical training, the students cannot attain the physical and motor fitness requirements, which lead to the further specific sports training. The process of growing reaches beyond the readily observed anatomical indications. Within the athlete there are proceeding structural and functional changes which are part of the growing process. While these changes in the athlete's physiology are preparation for adult life and the possibility of a progressive intensity and extent of loading consistent with the advanced athlete's training, they also represent high energy expenditure, moderate exercise to normal growth. Organized training for boys and girls should be introduced around 10-12 years of age. However, the physical education teacher must set the environments and systematized training as characterized by a sound programme of all round development which does not produce exhaustion of already reduced energy reserves (Frank W. Dick, 1998).

Talent identification can ensure that no child misses the chance to develop a natural talent or attribute children can be gradually introduced to competition through simple competition structures such as class vs class and school vs school, then moving onto national and international competition consequently young fitted talent may be identified. Where the child can enter a sport (depending on the accepted system operating in the country), his subsequent participation remains his decision and that of his parents. However it makes a lot of sense to observe young athletes and thereafter select them for a sports depending on their specific somatypes and displayed tendencies, effectively reducing the occurrences of disappointments of at a later stage and giving the child the chance to move on to another sport which shares a similar core training preparation. The incidents of cost or mishandled talent are frequent and not

something of the past. The youngster finishing with artistic gymnastics can make a very useful transition to athletics, particularly with the addition of more jumping events for women (Frank W. Dick, 1998).

In India, there are some famous systems operated for talent selection. Even though our Indian sports performance improvements is very slow compared to international scenario. In addition to lack of advanced scientific equipment, research and evaluation leads to slow progression. In this regard, the researcher attempts to do the research on the basis of identification of subjects depends on the somatotypes and identified motor fitness variables with respect to the track and field events. Then they are underwent the anaerobic training programme for development on motor fitness and performance variables of track and field events.

Sports Projects Development Area (SPDA)

This Scheme, started in 1988, aims at providing basic sports facilities at 78 locations throughout the country, where a comprehensive and integrated system of coaching and training is provided to talented young sportspersons in the age group of 9 to 14 years. This is aimed at providing in-house facilities to the talented youth in their own states. A maximum of three Olympic disciplines, in addition to one indigenous game, are offered for training.

Three Olympic disciplines should generally include at least one of the three mother disciplines, i.e. athletics, gymnastics, swimming in each centre. Thirty out of 34 SPDA Centres have started functioning, with a total strength of 679 sportspersons. An amount of Rs. 1.00 crore is budgeted for the construction of these Centres (met equally by the Centre and the concerned State), and all running costs are met by SAI.

Sports Hostel Scheme

This Scheme was introduced to provide basic facilities in each State and National level Championships. All running costs, including equipment, training, etc. are provided by SAI. Each hostel has a sanctioned strength of 50 boys and 30 girls. 18 hostels have so far been established with 895 children.

Boys Sports Companies in the Army

This scheme is an extension of the N.S.T.C. scheme and was approved for implementation from the year 1991-92. SAI and Army authorities have jointly launched this Scheme to scout talented boys upto the age of 14 years from rural, semi urban and tribal areas and train them in sports.

Seventeen Boys Sports Companies for 2000 boys are to be set up during the VIII Plan at selected Regimental Centres. The boys will be put into Regimental Schools which will be affiliated to the CBSE. On attaining the age of 17 years and on completion of 10th standard, the boys will be absorbed in the Army, if they so wish. Thereby, a job is guaranteed to them. The running costs are borne by SAI. It also provides a one time grant to the Army for creation and development of sports infrastructure, purchase of essential sports equipment upto Rs. 3.00 lakh and for training kit/aid upto Rs.1.00 lakh. Thereafter, an annual grant of Rs. 50,000/ is provided. 17 Boys Sports Companies have become functional with a total strength of 859 sportspersons.

Sports Promotion in Other Countries

(Impact of National Coaching Scheme of Sports Authority of India: http://planningcommission.nic.in/reports/sereport/ser/stdy_ncspts.pdf Displayed date 16.10.2012)

Sports Promotion in USSR

The amateur sports movement covers all who join sports societies and engage themselves in the various sports at their place of work or study. It extends to physical culture groups or sports clubs organised at factories, construction sites, office and the collective and the state farms. Any wage-earner has the right to join the sports club of the organisation at which he works. There are over 2,10,000 such sports groups and clubs in the Soviet Union.

The Soviet Union has sports programmes for all age groups, ranging from school children to people over sixty. The Soviet Union has set very high standards for its sportsmen and women under different classifications. There are over three thousand five hundred stadia, more than 65,000 gymnasia, well over half a million sports fields

and nearly 2,000 well kept swimming pools in the USSR. Nearly a lakh football grounds are dotted all over the country. The use of equipment as well as training by coaches are available free to all citizens.

Sports Promotion in Germany

The Spartakiad is a household word in the German Democratic Republic, where every third citizen takes part in one sport or the other. Almost all pupils are involved in these nation-wide competitions known as the Spartakiad Children's and Youth Games. Millions of boys and girls pursue a sport of their choice after the school-level. This is apart from the compulsory physical education course they all have to undergo. Children attending the kindergarten from the age of three take part in all games and sports organised within their age groups. This helps them choose a particular sport in which they can make the grade and advance to the top. More than a million pupils undergo training in school sports clubs and about half this number have their stint at the local branches of the country's Sports federations.

At the base of the Separated movement competitions are held within a school in a number of events with the winners advancing to the next round. Winners at the school competitions graduate to the district-level contests from where they qualify for the next stage covering competitions in all the counties. They culminate in the National Separated Games held separately for the summer and the winter events. More than 10,000 competitors, take part at the final competition in Berlin with a total of 4,000 medals at stake-with all the ingredients for a full-dress rehearsal for the Olympics. A lot of young talent is discovered in the process. Sports celebrities like swimmer Kornelia Ender, high-jumper Rosemarie Ackermann and runner Marita Koch-all began their career at the Spartakiad Games. The GDR's DTSSB-the Sports Organisation has 8,000 sports clubs and the total membership of 2.6 million that is over 15 per cent of the population of 17 million, six million are covered by the National Sports Programme.

Sports Promotion in USA

The apex organisation in the country that governs all sports and games represented at the Olympiad is the Amateur Athletic Union of the United States (AAU). It is a union of 55 district associations with more than 3,500 member units and physical fitness activities for at least eight million citizens. About 10,000 members representing the AAU plan conduct the sports programmes at all levels of competition and in every section of country. As an umbrella type organisation, the AAU is the rallying groups for all amateurs taking part or interested in sports under its jurisdiction. It has the largest representation in the US Olympic Committee.

Sports Promotion in UK

Correction 16.10.2012 An important feature of British sports and recreation is its amateur element. The Government is not directly concerned with the organisation of sport and recreation but there is a Minister in the Department of the Environment who has responsibility for the coordination of policies in this field. The Government provides financial and other assistance for the promotion of sports through a number of bodies like the Sports Councils.

1.1 Background of the Study

The idea for this study originated during 2008 while the researcher doing his M.Phil research work in the field of somatotype and track and field performances. The observed literature discuss and contrast mostly on theoretical perceptive regarding talent identification programme, and how it is implemented, develops and changes over the time. Even the talent identification and the duration of the programme vary from country to country. This study is an attempt to make new perceptive of the talent search, combined with the morphological components named as somatotypes and field tests. This study also attempts to test the follow-up developmental anaerobic training on talented children in different perceptive components.

1.2 Track and Field Events

The track and field athletics is more of a direct manifestation of the Olympic motto, “Citius, Altius, Fortius”, which means “faster, higher, stronger”. Now there are many international events, where the track and field athletics is a major attraction. The track and field events achievement in International competition is more prestigious to any country. So all countries implement different plan to improve the track and field performance and win medals.

Track and field events are generally individual sports with athletes challenging each other to decide a single victor. The racing events are won by the athlete with the fastest time, while the jumping and throwing events are won by the athlete who has achieved the greatest distance or height in the contest. One of the most appealing aspects of the sport is the ability for all types of athletes to participate and excel. But to be successful the athlete must possess a combination of mental and physical strengths as well as dedication for proper training.

The performance parameters in children and adolescent athletes, success in sports as measured by competitive performances, depends upon a number of significant mental and physical components, physical components like somatotypes, motor skills, physiological parameters, genetic endowment, training level and psychological components such as motivation, anxiety, stress and self confidence, and also injury prevention plays a significant role in competitive performances. For the most part motor skills are age and gender dependent. In general the efficiency of the movement progressively improves throughout the childhood and in to early adolescence and is highly dependent on environmental influences. Performance is influenced by the effect of genetic factors on specific traits in 30 to 85 % of cases.

The sport of athletics would device tests to indicate a child’s talent for jumping, throwing, speed events and endurance events. The original batch of identified youngsters would then be further reduced to provide children who have identified indicated specific talent for athletics.

It is suggested that sports performance may be optimized by the early identification of individuals with positive genetic and somatotypes markers and negative risk factors. Although mesomorphy and lesser extent ectomorphy are positively associated with enhanced performance, successful athletes tend to have or acquire somatotypes characteristic of individuals already successful in a particular sport.

1.3 Talent Identification Programme

Testing athletes for potential is a method based on scientific facts rather than the trial and error method. Tabachnik (1991) stated that the naked eye or a haphazard system of screening for talent will allow many potentially outstanding prospects to fall between the cracks; thus a scientific approach is essential.

Investigators have concluded that it is possible to predict, with a high degree of accuracy, the ideal track and field event in which athletes have the greatest potential (Foreman, 1989, Henson et al., 1989). Although athletic prediction is somewhat speculative, there is an event for everyone, and the coach must use every tool possible in helping those individuals find the events for which they have the greatest potential for success. Predictive testing is one such tool that may be used to find talented individuals.

Smith indicated that talent identification is not the only benefit of testing; it could also serve as a diagnostic device to help determine an athlete's original status and reveal changes produced by training. Tests can help coaches to determine the state of preparation and level of development of athletes' physical qualities (Afanasiev, 1982). Sharkey (1986) reported that athletic performance evaluation can determine current fitness level of athletes, identify individual differences, assess progress in training, spot potential in newcomers and guide athletes to the proper event or sport.

Talent identification at early ages is one of the major methods to improve the performances. Some of the leading western countries got benefit from the model. But in India we are not implementing the talent identification procedure properly. Athletic talent identification is approached from many different angles, depending on which countries are looking at and the sport for which athletes are being recognised and recruited.

Many children strive to attain excellence in sport. However, although talent identification and development programmes have gained popularity in recent decades, there remains a lack of consensus in relation to how talent should be defined or identified and there is no uniformly accepted theoretical framework to guide current practice. The success rates of talent identification and development programmes have rarely been assessed and the validity of the models applied remains highly debated (Roel Vaeyens et al., 2008). Today it is acknowledged that appropriate support and training are essential if talented individuals are to fulfill their potential. Partly for this reason, the early identification of talented athletes is an increasingly important consideration for researchers and practitioners alike. Once talented individuals have been detected, crucial but limited support resources can be optimally deployed to further refine and develop these talents. Without such support however, the needs of talented children may not be met and their gifts remain undeveloped. Consequently, effective talent identification system is an essential precursor to talent development as it will direct support to those individuals who have the greatest potential to achieve senior international success in sport.

Tamilnadu Government has ordered to conduct a battery of test to assess the motor qualities in children studying in std. VI, VII, and VIII in all schools since 2002. These qualities help to identify speed endurance, strength, explosive power and agility level of child and also indicate the child's potential to play particular game/sport. The best talents among these students were privileged to undergo specialized coaching in different location in state. The battery test conducted three times per year, the best students in the schools were admitted to the special coaching camp. The battery tests consist of 50 mts run (speed), 800 mts run (endurance), shot-put (strength), long jump (explosive power) and shuttle run (agility) (G.O.Ms. No.130, 2002).

Talent Identification in Western Countries

Throughout the history of the modern Olympic Games, the United States has remained among the top ranking countries in track and field events. For the period of 1948-1984, the United States ranked first in terms of medals won and number of finalists for both sexes (Landry, 1987).

After 1984, USA track and field ranking is not consistent, because east European countries such as the Soviet Union, and Germany, Jamaica and China continuously improve their performance in tremendous manner. Much of the success of above countries has been attributed to carefully plan long range system of talent identification and talent development (Jarven, 1981, Smith, 1981). Thomson and Beavis (1985) reported several organized talent identification programme such as east Germany, the Soviet Unions, West Germany, Australia and Netherlands.

Talent identification in track and field in the United States is not formalized as it is in many other countries throughout the world. The system of talent identification and development in the United States occurs through mass participation and natural selection (Henson, Turner & Lacourse, 1989; Smith, 1981). In this method needed more scientific advancement in laboratories, instruments, qualified coaches, sports scientists. It was achieved in United States by numerous research studies in the field of track and field and other sport.

The current Perceptive of Talent Identification Model

Although researchers have identified important characteristics for athletic performance and developed test to measure those characteristics, organized talent identification programmes have not been employed in United States to the extent that they have been in other countries formalized. Talent identification programme have been extensively used in the former Soviet Union, and the former West and East Germany (Thomson & Beavis, 1985). Once the model was established for a particular event, the appropriate standards and rate of improvement were employed to choose talented individuals in the different selection phases.

The time course for elite athletic development lies between 10 and 15 years from the onset of specialized and dedicated training. There is need to carefully decide on the age selection too early and the results will be unreliable, too late and perhaps the universal eagerness of children will be lost. The role of physical education teacher is to develops a child's physical potential. To do this the child must first discover in what areas he/she has potential and hence the need for some talent selection model.

A model talent identification programme needs to predict performance from young children, so the researcher made suitable framework or base from existed literature. Abbott and Collins (2002) suggest four key criteria which meet the demands of the talent identification model.

Criteria for an Effective and Successful Talent Identification Programme

For any talent identification tool to be effective at identifying children who have the talent to excel at senior level sport, at least four statistically (Thomas & Nelson, 2001) and theoretically (Abbott et al., 2002) based criteria must be satisfied. The important criterion has been explained below.

Discriminability

To effectively compare the capacity of participants, scores on the tasks employed within a program need to adequately discriminate between performances.

Appropriate Norms

To meaningfully interpret performances on tasks they must be compared with normative data from a representative group.

Appropriate Algorithms and Weightings

The algorithms and weightings employed must be appropriate and justifiable.

Relative Performance Stability on Selection Criteria

If the above criteria are met, a talent identification program could then only effectively identify those children with the most potential to excel at the senior level if relative values on the variables remain into adulthood.

Somatotypes

In general, we say that the body types or well-developed individuals are required for the any hard work, competitive sports, and even recreational sports. It was well known from the ancient literature like ancient Olympics, modern Olympics and festival games in Indian villages. The preferences of well-developed or suitable body types are required to the specific sports and games.

Importance of Somatotypes

1. Somatotypes concerned with the influence of maturation on growth rate, possible adult form, the influence of build, on their performance.
2. Relation between physique and performance are slight during prepubescence but tend to increase over the adolescent years.
3. Body build may become a factor of increasing importance as growth in height and weight ceases.

In India, we have very limited research in this area. Somatotypes studies result are not applicable for all countries but the concept applicable to any region. Even our country needs different research in different geographical region, different races, and different needs.

In the research point of view, we are far behind than western countries and East Asian countries on somatotypes and sports performances. We have only countable studies about somatotypes, but western countries have done a numerous study on 19th century onwards. It is one of the vital reasons to develop their sports domination in international arena. They planned in systematic way, for example fifteen years plan that started from the child's 5th year, because a child somatotype almost same for their adult somatotype. Therefore, this is very useful to select the suitable person to the suitable sports.

We have very few studies about somatotypes and sports performances from 1938 to 1989. American eminent researcher J.E.L Carter (2002), has collected nearly 500 research studies from 1938 to 1989 for his instruction manual. In this collection

approximately 90% of the research work is on European and American somatotypes, nearly 5% of research works on Asian somatotypes.

1.4 Motor Fitness and Track and Field event Performance

The term motor fitness, while often used synonymously with physical fitness was coined to include elements which physical fitness components yet was not to encompass the various neuromuscular coordination skills which make up general motor ability. Motor fitness takes into account efficiency of basic movements and therefore would involve such element as power, agility, speed and balance.

It seems important that we should not be too careless in the use of the various terms. It well may be that it is more desirable to develop motor fitness than basic physical fitness in the schools (Johnson & Nelson, 1988).

The motor components relates to the development and performance of gross motor abilities. Since the beginning of the eighties the distribution between health related and performance related physical fitness has come into common use. Health related fitness was then viewed as a state characterized by an ability to perform daily activities with vigor, traits and capacities that are associated with low risk of premature development of the hypo-kinetic diseases (those associated with physical inactivity). Health related fitness includes cardio respiratory fitness, muscular strength, flexibility and body composition. Performance related fitness refers to the abilities associated with adequate athletic performance, and encompasses component such as isometric strength, power, speed, agility, balance and hand eye coordination (Gaston Buenen, 2009, 75).

Muscular strength is the capacity of an individual to exert muscular force against a resistance. The physiological and mechanical factors such as size and number of muscle fibers, proportion of fibers activated, coordination of muscle groups, conditions of muscles and action of the lever can determine the force in any particular movement (Herbert and Terry, 1994, 9).

The strength improvement is associated with weight training, other potential benefits for prepubescent children include improved flexibility, favorable changes in

blood lipid profile, enhances bone and connective tissue development, favorable changes in body composition, reduces musculo-skeletal injuries during sports participation, improved motor skills, increased muscular endurance and positive psychological benefits (Herbert and Terry, 1994, 374).

Increased strength by training is explained both as a result of hypertrophy and neural adaptation. It has been shown that the maximum isometric force correlate well with the physiological cross sectional area of the muscle (Chapman et al., 1984). A study by Ikai and Fakunga (1970) showed on the other hand little correlation between increased strength and increased cross sectional area. Thus neural adaptation is important in that study. If a muscle increases its force gradually more and more fibers are recruited according to Henneman's size principles.

Many American physical educationists have produced strength indices for use in prediction of general athletic ability. It is obviously impossible to measure the strength of the each and every muscle in the body. However, various kinds of strength measures are used to measure the specific strength related to the specific movement or sport.

Muscular endurance represents the capacity of the individuals for continuous performance of relatively heavy localized activity such as working a pump handle or sawing wood. Muscular endurance depends to a large extent upon strength, but also upon other qualities, among them the efficiency of the blood supply in the muscles involved, and the viscosity of the muscle tissue. Muscular endurance is obviously a most important component of motor fitness for work or play and it should figure in any test or appraisal of fitness levels (Herbert and Terry, 1994, 8).

The other motor fitness component explosive strength, which is important in many sports, is tested as jumping height in a vertical jump test. Alternatively it can be tested in a horizontal jump (standing long jump). Explosive strength shows itself in the ability to propel one's own body or some other object rapidly through space. It is here that speed of movement makes its most effective contribution towards total motor fitness. Speed is often thought of merely the fleetness of foot, but in fact it is much

more frequently called into play to help in the utilization of the muscular force in the performance of their acts of power.

In terms of explosive movements to transform slow muscle fiber to fast muscle fiber characteristics, studies on rats suggest that the frequencies of impulses should be high but the number of impulses should be low. If these results can be extrapolated to man, they suggest that to develop explosive muscular strength, each training session should have a lower number of impulses to the muscles, that is low training volume, but the impulses should be given at the high frequency (Herbert and Terry, 1994, 8-9).

However the maximum shortening velocity of an unloaded muscle is also proportional to the length of the muscle. When the muscle length is increased by increasing the number of sarcomeres in series, the maximum shortening velocity will increase proportionally to the change in length. The muscle length is easily increased by stretching exercises. Good flexibility exercises especially in the hip joint, is also required to optimize the lifting technique in some exercises (Herbert and Terry, 1994, 100).

The other motor fitness component is speed. It gives the quickness of movement of a limb, whether this is the legs of the runner or arm of the shot putter. Speed is an integral part of every sport and can be expressed as any one of, or combination of maximum speed, elastic strength and speed endurance.

Speed is prerequisite in sports, which depends on speed of muscle coordination and neuro-muscular coordination. Sportsman experience is the need for enhancing the speed of movement, to establish and achieve their goal, so as to conquer the honor in their sport. Training develops or improves sport skills. Generally as the adaptation to training takes place, the efficiency of the skill improves.

Cardio-vascular endurance, which is the ability of the body to perform over time, is essential to success in all sports. In high-intensity sports of a short duration, such as sprinting and weightlifting, endurance is similar to a backbone to the activity, assisting in the speedy and efficient recovery from the stress of the event or training. Anaerobic interval training boosts athletic performance because it builds new capillaries in the body. That makes it easier for the body to take in oxygen and deliver

it to the muscles. Those muscles thereby develop a higher tolerance to the lactic acid. The heart muscle grows stronger during this process and the end result is improved performance by the cardiovascular system (Elizabeth Walling, 2011, http://www.naturalnews.com/031442_interval_training_athletic_performance.html).

Flexibility is the counterpoint to muscular strength. The greater the range of motion presents in the joints of an athlete, the greater the ability to move dynamically. An inflexible athlete is unlikely to ever achieve outstanding athletic performance. Inflexibility in human joints creates imbalance in the connective tissues and muscle structures, which will reduce the ability of the muscle to achieve maximum power, and will increase the risk of injury.

Improving flexibility, like the development of other fitness abilities, is a slow process. To increase the range of motion of a joint the muscles have to be stretched beyond their normal point of resistance. This should be done daily with appropriate flexibility exercises. Anaerobic training potentially can have a positive impact on flexibility, primarily if the individual has poor flexibility to begin with.

Coordination is the ability to perform movements of various degrees of difficulty very quickly and with efficiency and accuracy. It is considered that an athlete with good coordination is capable not only of performing a skill well, but also of rapidly solving a training task. The coordination required for running, jumping and throwing can be developed from a young age. Girls between the ages of 8 and 11 and boys between the ages of 8 and 13 have exceptional rates of learning. Basic coordination exercises that are learned at this age become the foundation for later event specific skill development. In the mature athlete coordination exercises and drills remain important as they maintain a balance against the imbalance caused by very specific training.

1.5 Anaerobic Training

In maximal dynamic exercise such as running or cycling, it seems likely that if the duration is less than 2 minutes, the major energy source will be anaerobic but that the contribution from the aerobic pathways will make progressively greater contribution to the total as the duration of the exercise increases. At 2 minutes duration there will be a roughly equal contribution from aerobic and anaerobic pathways, but beyond that time, the aerobic pathway will make the major contribution to energy turnover (Soliman, 2002).

The anaerobic parameters in track and field are generally applied to events that seek to utilize the ATP-CP, alactate, or lactate energy systems during the activity. In these events, pure speed and power dominates the training theory.

Since the inherited factors of the anaerobic performances are out of question (Bouchard et al. 2000, Malina and Bouchard 1991) these spectacular results can be evaluated as the joint consequence of selection and sport training. We can say, the well educated trainers often apply those elements of exercise science which are top secret for the scientist nowadays. For instance, the limited available data indicate, that athletic training can trigger a dramatic increase in glycolytic enzyme activity, while at the same time, there is little supporting evidence that similar programs can alter peak lactate levels.

This area of research suffers from a lack of recognized guidelines (such as those available for aerobic training) for the duration, frequency and intensity of anaerobic training that should be expected to stimulate anaerobic changes. The most important question in this respect, how else anaerobic (sprint) training might improve performance? In addition to strength gains, at least three other changes may enhance performance and delay fatigue in highly anaerobic events. These three changes are (Wilomre and Costill 1994) actually improvements in efficiency of movement, aerobic energetic, and buffering capacity.

Training at higher intensities improves the skill and coordination. We can assume that anaerobic training optimises fiber recruitment so as to allow more

efficiency in movement. Training at fast speeds and with heavy loads improves the efficiency thus, economizing the muscles' energy supply (Saltin and Rowell 1980).

Anaerobic training does not stress only the anaerobic energy system. Part of the energy required for sprints that at last 30 seconds is derived from oxidative metabolism. Consequently, repeated bouts of sprint-type exercise also increase the aerobic capacity of muscle (Saltin et al. 1976). Although this change is often small, we can reasonably expect that this enhancement of the muscles' oxidative potential will assist the anaerobic energy systems, effort to meet muscle energy during highly anaerobic effort.

Additionally coaches and athletes recognize that the somatotype, growth type are an important variables in performance. Physique studies clearly show that distribution of a specific sport differs significantly from distribution of other sports, because athletes would be athletes and coaches naturally hope to identify the optimal physique for an event. Often they are tempted to duplicate the physique, training and technique of a proved champion. While this approach has some merit, each champion has elusive qualities and characteristics that somatotype, growth type, training and technique cannot describe or account for. Experience teaches that sometimes champions succeed despite, as well as because of unidentified differences.

Anaerobic sprint training, due to the intensity and duration of time the stress is applied, does not cause the same ill-effects on muscle mass and power. It causes significant caloric expenditure; yields positively for excess post exercise oxygen consumption and provide some enhancement to the cardiovascular system. During sprint training, the heart works very hard to meet the energy demands necessary for the success of the exercise bout. The heart, like any muscle, responds to the stress with an appropriate adaptation response, namely an increase of left ventricular contractility. The ability of the left ventricle to contract directly relates to the amount of blood that gets pumped out of the heart per beat to the working muscles of the body – stroke volume. By utilizing short duration, sprint-type activities, the strength of the heart will improve. However, at the muscular level, the individual will not experience the same adaptations normally associated with aerobic training, specifically in fiber migration, mitochondrial density, and an increased presence of aerobic enzymes.

There is much published literature that studies the motor fitness qualities of a sprinting ability. However, little research is available that seeks to show the amount of anaerobic work that should be implemented across a wide variety of events in track and field.

The above mentioned theories and research studies are very much helpful to know the importance of anaerobic training and its significant contribution to determine the high level performance in any sports. So the researcher selected this training as the follow-up training for talented children. For the purpose of the study the following objectives were formulated.

1.6 Objectives of the Study

1. To develop talent identification model and evaluate by the key criteria developed by Thomas & Nelson, 2001 and Abbott et al., 2002.
(To examine the relationship between the talent identification model of sprinters & jumpers and throwers and selected performance variables in track and field events).
2. To compare the experimental group and control group of sprinting, jumping, and throwing talents due to the impact of developmental anaerobic training program.

1.7 Statement of the Problem

The purpose of the study was to find out the effect of talent identification programme and follow-up development programme on selected motor fitness and performance variables of track and field events in school boys.

1.8 Hypotheses

Taking into account the theoretical considerations, the results of the revived literatures from 1980 to 2011 and discussions with experts in the field of talent identification, the following hypotheses were formulated.

H₁: The talent identification program would be a meaningful way to select the students with respect to sprint & jumping and throwing events.

H₂: The separate talent identification model would be predictors of sprint & jumping Events and throwing event performance.

H₃: The anaerobic training would significantly improve the selected motor fitness and performance variables in track and field events for experimental groups than control group of sprinting, jumping and throwing talents.

1.9 Assumptions

Validity of the study was relied on the following assumptions

1. The researchers assumed that the subjects performed to the best of their abilities in all aspects of this study.
2. The participants were tested accurately by standardized test items.

1.10 Delimitations

The study was delimited to the following aspects

1. The purpose of the research study hundred and fifty six (156) students were randomly selected to the talent identification programme with voluntarily and cheerfully from Tisaiyanvillai, Tirunelveli District.

2. The selected students were equally divided into two groups of 78 each, namely group A and group B. After this process thirty (30) students were selected from the group A on the basis of talent identification programme (Sprinting& jumping talents-15 and throwing talents-15), named as the experimental group.
3. Similarly thirty (30) students were selected from the group B on the basis of talent identification programme (Sprinting& jumping talents-15 and throwing talents-15), named as the control group for nullifying the growth factor.
4. The age of the subjects ranged between 12 and 14 years.
5. The follow-up developmental anaerobic training was assigned to the experimental group for a period of 12 weeks for 4 sessions per week and 60 minutes workout was given in each session.
6. The talent identification model was developed on the basis of standardized model used in the GDR and USSR.
7. Selected motor fitness and performance variables in track and field event were assessed by the standardized testing procedure.

1.11 Limitations

The study was limited in the following aspect.

1. Methodological variation such as air temperature, atmospheric pressure, and relative influence on the result of the study were recognized as limitation for the study.
2. The subjects living condition, life style, diets, personal habits, family heredity, emotional status, motivational factor were not taken into consideration for this study.
3. The subject's social, economic and cultural backgrounds were not being taken into consideration.
4. The subjects routine work and habitual free play were not controlled and their possible influence on this result of the study as noted as limitations.

5. The influence of growth and development of the subjects, age ranged between 12 and 14 years were considered as the limitation of the study.
6. The test and reading were taken as the normal room temperature.

1.12 Definition of Technical Terms

Track and Field Event

Track and field event is a sport that consists of a wide variety of events in running, walking, jumping and throwing (Hamilton et al., 2008).

Motor Fitness

Motor fitness refers to the ability of an athlete to perform successfully at their sport (Herbert and Terry, 1994, 30).

Muscular Strength

Strength is defined as muscle capacity to generate force (Wilmore, Costill, & Kenney, 2008). Muscular strength is the highest force that can be produced during one maximum voluntary contraction (Cometti et al., 2001).

Muscular Endurance

It may be defined as the ability/capacity of the muscles or muscle group to perform repeated contractions against a resistance/load or to sustain contraction for an extended period of time with less discomfort and more rapid recovery (Singh et al., 2010, p.337).

The ability to repeat a series of muscle contractions without fatiguing (<http://www.topendsports.com/fitness/muscle-endurance.htm> Displayed 16.10.2012).

Speed

Speed is the quickness of movement of limb, whether this is the legs of a runner or the arm of the shot putter. Speed is an integral part of every sport and can be expressed as any one of or combination of maximum speed, explosive strength and speed endurance (Singh et al., 2010, p.328).

Speed is the rate of motion or equivalently the rate of change of distance, therefore; speed is the product of force and distance (Wilmore et al., 2008).

Explosive Power

Explosive power is the ability of the body to release maximum force muscle contraction in the shortest possible time (Singh et al., 2010, p.336).

Explosive power is defined as the ability to express significant tension in minimal time.

The ability to produce maximal forces in minimal time is called explosive power. Strong people do not necessarily possess explosive strength (Zatsiorsky, 1995).

Cardio-respiratory Endurance

Cardio respiratory endurance can be defined as the functional efficiency of the heart and lungs. The functional efficiency is defined here as the success of the heart, blood vessels and lungs in satisfying the oxygen requirements of the body (Singh et al., 2010, p.338).

Cardiorespiratory endurance is the ability of the body's circulatory and respiratory systems to supply fuel and oxygen during sustained physical activity (http://sportsmedicine.about.com/od/glossary/g/cardio_fit_def.htm displayed date 16.10.2012).

Flexibility

In general flexibility is the quality of the muscles, ligaments, and tendons that enables the joints of the body to move easily through a complete range of movement endurance (Singh et al., 2010, p.337).

The ability to achieve an extended range of motion without being impeded by excess tissue (<http://www.brianmac.co.uk/conditon.htm> displayed on 16.10.12).

Coordination

The ability to integrate the motor fitness components so that effective movements are achieved (Singh et al., 2010, p.336).

Somatotype

Somatotype is the quantified expression or description of the present morphological conformation of a person, with the three numerical rating (William &Carter, 2009, 55).

Endomorphy

The first somatotype component called endomorphy, describes the relative degree of adiposity of the body, regardless of where or how it is distributed. It also describes corresponding physical aspects, such as roundness of the body, softness of the contours, and relative volume of the abdominal trunk and distally tapering of the limbs (William &Carter, 2009, 55).

Mesomorphy

The second somatotype components called mesomorphy, describes the relative musculo-skeletal development of the body. It also describes corresponding physical aspects, such as the apparent robustness of the body in terms of muscle or bone, the relative volume of the thoracic trunk and possibly hidden muscle bulk (William &Carter, 2009, 56).

Ectomorphy

The third somatotype component called ectomorphy, describes the relative slenderness of the body. It also describes the corresponding physical aspect, such as the relative stretched-outness, the apparent linearity of the body or fragility of the limbs, in absence of any bulk, be it muscle, fat or tissue (William & Carter, 2009, 57).

Anthropometric somatotypes

The anthropometric somatotype can be calculated from a set of 10 measurements: height, weight, four skinfolds (triceps, subscapula, supraspinale, and medial calf), two biepicondylor breadths (humerous and femur) and two girths (upper arm flexed and tensed and calf) (William & Carter, 2009, 57).

Anaerobic Training

Regular, chronic physical exercise consisting of sprint, repeated, intense bouts (usually less than 30 sec) resulting in increased contractile strength or force production, buffering capacity and increased glycolytic and/ or phosphagen enzymes in the muscles involved (Wilmore & Costill, 1988).

1.13 Significance of the Study

1. Presently no scientific method exists for the track and field coach to objectively determine the specific potential of athletes. As consequence, training has largely been a hit and misses process, and athletes have not always developed their optimal potential. A review of literature revealed that talent prediction is an important and beneficial procedure helping athletes reach maximal performance potential.
2. The result of the study may be useful to anyone involved in preparing athletes for competitive sports, which place an emphasis on sprinting, jumping and throwing events.

3. The results of the study will obtain dispute the use of examined tests in sports performance assessment, and also applying the tests for other purposes such as evaluation of training procedures and selection of young athletes.
4. The Anaerobic training results in greater fast twitch (Type II) fiber requirement and consequently greater improvement in power and rate of force development.
5. The talent identification programme will be used for the coaches, physical education teachers for selecting the students for specific events like sprinting, jumping, and throwing events.
6. Those involved with track and field programmes in the national, state and school associations may also find the research of interest.