Chapter I

INTRODUCTION

In sport it has become an accepted practice to strive to win, and to win at any cost. This is contrary to earlier philosophy of Pierre-de-Coubertin who said

"The important thing in the Olympic Games is not winning but taking part for the essential thing in life is not conquering but fighting well."

Sport has since then occupied an important place in all cultures. It is an undisputed fact that the national character expresses itself not only in the folk music and literature, but also in typical form of sport. Frequently, the twin images conjured up by the name of the nation and its favourite games are so closely linked, that they almost merge. For instance, England and Cricket are inextricably linked as are the Latin American Countries and bull fighting. In India it is Hockey that takes place of pride and rightly so, for it is in this sphere that India had been World Champion for almost three decades at a stretch from 1928 to 1956.
Children of all ages engage in competitive and recreational sports in large number. A young child is influenced in choosing a sport, by his instincts. Interests also play an important role, because some form of exercises may be more useful to him than others, depending upon the career he has in mind. Heredity and sense of imitation also attract him. Some children engage in sport simply because they are more popular around them, without realizing that their potentialities lie somewhere else. It is not difficult to stimulate an active desire among a child for participation. But the limiting factors are actually different: weakness of organs, a general sluggishness, nervous excitability, hesitation, fearful movements, all kinds of physical failures, paralysing shyness in the presence of other people, and many other such obstacles that block the road of progress. They can be overcome with much perseverance and by spending time on them. There are many elements that go to make-up the individual's self-sufficiency of sporting youth. The general formula which used to be sufficient will now have to be corrected and supplemented by the initiative of each individual. This recipe for wisdom has become a recipe for training and success in sporting matters. A variety of sports and games are available in competitive outlets to the growing athlete. Most children select a sport for their participation primarily because their peers accepted it or
because their parents have introduced it to them. Climate also can be influential in a child's selection of a sport activity. The result of this development is that competition has increased to such an extent that at the Olympic and international competitions an athlete after achieving glory retires in the mid of twenties barring some rare performances. This has eventually compelled coaches, trainers and all those concerned with the development of sport to pick-up children at an early age in order to train them in long term planning for optimum results. This has posed a problem to the physical educationists and sports scientists to find out methods for selection of potential sportsmen at a very early age. This has resulted in an increasing interest in talent spotting in all sports. Every one has realised that truly outstanding sports performance can be achieved by individuals with an extraordinary gift to follow the schedule requirements of a given sport. Specially talented sportsmen in comparison with less gifted players have a greater chance of success given the same amount of coaching. The prior knowledge of the ultimate achievements of a sportsman at the peak of his performance is of prime interest to anyone involved in the cultivation of young athletes. This includes coaches, teachers, physicians and parents as well as the researchers.
Talent selection earlier was based on personal experience, an intuition or 'good eye' of the coach or scout serving as a major tool. Few are the published studies which offer a more scientific approach to prediction of future success. This lack of published information stems from the fact that the ultimate performance of the mature athlete is a resultant of a large number of factors, such as genetic, sociological and psychological as well as the type of habitual activity and training one has been exposed to throughout the years. It is not simple for the researchers to isolate a single factor keeping all other factors constant, in order to learn more about these parameters.

Taking into account the characteristic nature of the games like volleyball, basketball, hockey and soccer, and the differences in the amount of the nature of demands made by each, it may be logically deducted that individuals participating in these games will exhibit differentiation in growth patterns. An individual for superior performance in any sport is selected on the basis of physical structure and body size he or she possesses, which has proved to be appropriate for high performance in the given sport. The importance for height for basketball, a pole vaulter or a high jumper is well known to coaches, so also the typical structure of boxers, gymnasts, distance runners and throwers are well established.
But progress of a sports person or his ultimate performance does not exhibit any direct relationship to the specific qualities he possess for that sport. Ultimate success is a result of complex and intricate phenomena of physical, mental and social factors.

In the recent past there has been a more systematic search for spotting talent and in determining a combination of factors responsible for ultimate success. The sports scientists, working with the top coaches in the sport concerned single out the basic physical characteristics and psychological qualities which might be the performance limiting factors. It is, therefore, necessary to find individuals with these attributions and characteristics using a series of tests at a very young age. But, perhaps, the major obstacle in expanding our knowledge on prediction method is the need for longitudinal studies ideally starting in childhood and continuing through adolescence to adulthood. Such studies are interinsically hard to perform and rather costly. Untill further information is accumulated, one may have to resort to the second best source of information namely cross-sectional technique. There are infact a large number of cross-sectional studies in which performance has been correlated to morphological and functional parameters. Such techniques may be of help provided two conditions are met, firstly the predictor does not change but it keeps its
relative position and secondly there is a strong relationship between the predictor and the performance criterion in adulthood, e.g. there is evidence of strong relationship between the type of sport and the somatotype. But this does not always mean that a child of a high mesomorphic type, would have the physical potential for a high calibre weight lifter. Even though it is assumed that relative degree of mesomorphic in the child would remain practically unchanged, yet the assumption remains to be proved. At the moment one can only assume that ectomorphy which is the characterisation of the skeletal length measurements will not change much during maturation. Whereas mesomorphy and specially endomorphy would change considerably throughout the years, being dependent on factors such as nutrition and activity patterns. Another possible predictor of performance is aerobic capacity, this function as measured by VO\textsubscript{2} max correlates highly with endurance type performance in adults. The difference between top endurance athlete and sedentary is hundred percent, which means that top endurance athlete has been at a high profile even before starting his career. This fact is further supported by a study of Klissouras\textsuperscript{1} who reached the conclusion that the variability in

VO₂ max is some ninety three percent genetically determined. But it may be pointed out here that he made his measurements on children only and it is yet to be seen that such strong genetic determination holds true during adolescence and adulthood also. This doubt is supported by a study of Lomaev and Allen² who tested among one hundred forty one a pair of monozygotic twins. Although both had the same VO₂ max at the age of thirteen years, their values were different by some twenty percent two and four years later. Klissouras³ himself has reported a forty percent difference in aerobic capacity of a pair of twenty one year old monozygotic twins, one of whom had been a trained athlete. Heredity may have a role to play but many more links seem to be missing. One of the factors that might interfere with the validity of any prediction procedure is the biological age. It is quite possible that a child shows a promising potential which merely reflects the fact that he is an early maturer. Inversely a child who performs poorly may be a late bloomer, who within two years or so may catch-up with the rest and


even excel in sports. A study by Kanitz\(^4\) showed that young swimmers who had reached the national finals were compared with those who reached semifinals. The swimmers possessed higher values on height, lean body mass, vital capacity and more functional and morphological characteristics. However, when dental age and secondary sex characteristics were compared the finalists were distinctly more mature, than the semi-finalists. The confusion regarding relationship between early or late maturation and success in sports has been brought out, among other studies, by Novotny\(^5\) regarding case histories of World class athletes who had been either early maturers or late maturers. It has been found that a child may have promising physical characteristics plus an impressive familial history and yet when exposed to the hardships of training he or she does not make it. This could be due to the psyche or a combination of both factors which would reduce one's functional adaptability to training. At the moment no test is known to us which can a priori inform the coach about his young athlete's chance of responding favourably to years of training. We can


safely say as performance is the end result of a large number of factors a careful and more systematised approach is needed to determine factors that may have an influential role in determining the ultimate success in a given sport.

Similar observations were made by Clarke\(^6\) in Medford longitudinal study. He observed that boys who make and are successful on interscholastic athletic teams in both elementary and junior high school are definitely superior to their peers in maturity, body size, muscular strength, endurance and power. Thus the decision as to whether boys are physically ready for such participation should be determined by factors other than grade or age in school. Actually without age limitations, natural selection take place based on past at least on the factors listed. The outstanding athletes in Medford study had significantly higher mean skeletal age than did the other group. The outstanding elementary athletes were advanced in maturity relative to chronological age. The size of athletes as compared with non-participants was more significant at the junior high school level, as well strength and power were consistent differentiates of athletic ability. The athletic

ratings were made of 12 years old elementary school boys and their characteristics were traced back to nine years of age. In general the traits with longitudinal significance in differentiating between outstanding athletes and non-participants were 60 yds shuttle run, standing broad jump, total body reaction time. The longitudinal significance of the physical characteristics of young athletes may be extended to specific sports - Elementary athletes may not be junior high school athlete and outstanding junior high school athletes may not have been outstanding in elementary schools. Longitudinal profiles show distinguishing differences among athletes in these categories.

From the preceding discussion it is evident that search and selection of potential sportsmen on more scientific lines is a great concern in countries dominating in the sports arena. However, such is not the case in India. This aspect has not been given, serious consideration. Consequently, athletes are selected from the available pool mainly on the basis of their performance in a given sport. It is often forgotten that such talents have already reached their peak performances with little scope for further spectacular improvement inspite of intense growing schedules. They need to be identified at a very young age. The continuous failure of Indian teams to perform well and win laurals at the International
competitions have raised a great debate.

Everytime after our misadventure in an international sports arena the most debatable point heard in various forum is that we have eight hundred million people, but we can not produce even one World champion. Even smallest nations are making headlines on the sports front. In the Beijing Asian Games even lowly placed Pakistan had displaced us from our more or less static fifth place. In comparison to such small countries we have more modern facilitites, infrastructures, proper atmosphere, climate, good physical training institutes and enough financial backing from the Govt. But the debates ends up with the blame being shifted from one to other.

However, the rublings, though short lived have brought some awareness in certain quarters to make the beginning. One point of consensus that seems to be emerging among sports organisers, coaches and researchers is that if our sportsmen have to perform well, it is necessary to catch them at the appropriate age and nurture them systematically and scientifically. Earnest efforts are being made to find right type of talent to fit into the exact slot where they are expected to excel. One thing needs to be remembered that talent always remains hidden. A lot of meaningful efforts and perseverance are needed to unearth it and then polish it for excellence. Rightly the Govt. and its agency Sports Authority of India
have worked on some schemes to groom young talent from rural, urban and tribal areas and have made elaborate arrangements to nurture such promising individuals for excellence. One of such schemes is spotting and nurturing of sports talent. The scheme envisages to start a movement in the country to bring about sports consciousness, commitment and greater awareness among the parents and younger children that participation in sports is an essential requirement for proper growth and secondly to spot talent in young children involve, nurture, and develop them into potential champions. Under the scheme competitions are conducted at district level, state level and then national levels in about ten sports disciplines, and the most promising children are picked up and admitted to selected schools where necessary arrangements for their education and training are made. The children are tested on selected motor fitness parameters, besides specific skill tests are also conducted for each discipline. The scheme is about four years old, so it is very difficult to analyse the success or failure. But one thing seems to be clear that not much scientific basis has been adopted in selecting the above criteria. Firstly the eight items representing physical and physiological parameters are being used uniformly to each sport discipline which is never the case in reality. Because of the specific demands of each activity,
predictor factors for each given sport ought to be different. Secondly the evaluation on the skill front is also not fully acceptable. A child's skill level at the age of 10-12 can vary according to the background and opportunity he/she has in gearing the sport and can never be a true predictor of the actual potentiality. Because one may be having a skill in one game mainly because he has been involving in the games, because his peer played it and not because of his talent in that sport. It is, therefore necessary to attempt more scientifically to search for a more appropriate criteria for spotting talent for various sports.

**Statement of the Problem**

The purpose of the study was to develop a model for talent selection in Hockey, Football, Volleyball and Basketball based on selected motor, physiological and structural factors.

**Delimitation**

The scope of the present study was delimited to male children between the age of 16-18 years.

**Limitations**

1. As the players employed in the study were selected from different institutions, any variations in their life styles, diet,
daily routine habits, socio-cultural background which may indirectly influence the predictor factors was considered as the limitation of the study.

2. The subjects employed in this study were those children who were selected for various games on the basis of a common motor fitness test and a skill test specific to each game. Predictor factors as may be influenced by the skill acquisition level of the children in each game was recognised as the limitation of the study.

**Definition and Explanation of Terms**

**Model**

A model conveys information that is used to guide performance. In this the term 'Model' means to suggest an overall information pattern which would base on motor, physiological and structural factors in order to help spot promising and potential children with the help of such criterion information.

**Motor Factors**

The elements of motor qualities that enable an individual to undertake activities that involve movement patterns, are called motor factors. The commonly recognised factors are speed, strength
flexibility, agility, power and cardiovascular endurance.

**Physiological Factors**

The factors that involve the functioning of the circulatory respiratory and related systems during an activity are defined as physiological factors.

**Structural Factors**

The factors that relate to body measurement like length of limbs, girth and width of limbs are called structural factors.

**Significance of the Study**

Due to our poor performance at International competitions in the recent years a great concern has been shown by the coaches, sports organisers and public in general. The Govt. also seems to have seriously considered the plight of our sportsmen at the 1986 Seoul Asian Games. And misadventure of our sportsmen in 1990 Beijing Asian Games is still very fresh in our memory. Adequate funds have been allotted to draw out long term plans for selecting and training sportsmen in order to enable them achieve the highest performance at an appropriate age. Therefore, one major problem confronting sports experts is to draw out some criteria for selecting children at the youngest possible age who would be the
potential champions of tomorrow. The Sports Authority of India have launched a national sports talent contest where the children are screened at district and state levels and finally participate at national level contest. They are, then, selected to be intensively trained under the guidance of expert coaches. However, the criteria adopted by the Sports Authority of India seems to be a tentative one, without having sound scientific basis. The children are tested in eight items besides a skill performance evaluation for the specific sport. Firstly the items selected for general fitness evaluation do not have much rational behind it and moreover they form a common evaluative criterion for screening children in almost ten disciplines which is not a very appropriate approach, because physical and physiological demands of each sport may vary in accordance with the specific nature of the game. Secondly a good weightage in the final screening is accorded to skill performance. Again this is a debatable point:- Because at the age of ten or twelve years skill cannot form any criteria because skill is an acquirable quality. And as such one who had an opportunity to participate in a sport must have acquired some skill level and others who did not, may be lacking in this profile. Therefore this is not a true representative and reflection of one's future potentialities at that age. The present study will
therefore, help to suggest a criteria that will be scientifically developed and have relevance to the sport in which the children are to be selected.