PRACTICE AND CHALLENGES OF TALENT IDENTIFICATION IN ATHLETICS EVENTS AT ETHIOPIAN YOUTH SPORT ACADAMY

BY

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June, 2020

Addis Ababa, Ethiopia

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A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY IN PARTIAL FULFILMENTS OF THE REQUIREMENTS FOR THE DEGREE OF MASTER IN SPORT SCIENCE

June, 2020

Addis Ababa, Ethiopia

DECLARATION

I hereby declare that this MSc thesis is my original work and has not been presented for a degree in any other university, and all sources of material used in this thesis have been duly acknowledged.

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ACKNOWLEGDEMENTS

First of all, I would like to express my deepest gratitude to my almighty God and his mother Kidest Dengel Maryam, for supporting me to complete my research.

I am extremely grateful to my dear advisor Assistant Professor Wondimu Tadesse for the continuous support of my M.Sc. Thesis, for his patience, inspiration, enthusiasm, and immense knowledge. His guidance helped me in all the time of my research. Besides my advisor, I would also like to extend my deepest gratitude to Addis Ababa University Dean of student, Sport science departments, Academic vice president, and President's office who gave me this golden opportunity to do my M.Sc.

My most appreciation and gratitude goes to Ethiopian youth sport academy Directors, Coaches, and Athletes, to their greater cooperation in the data collection process of my research.

Finally, I would like to extend my sincere thanks to my Family and my Friends, specially Abaey and Techale, for your great support and motivation.

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LIST OF ACRONYMS AND ABBREVIATIONS

20 MSRT :	20m Shuttle Run Test
ADP :	Air Displacement Plethysmography
BIA :	Bioelectrical Impedance Analysis
BMI :	Body Mass Index
DXA :	Dual energy X-ray Absorptiometry
EYSA:	Ethiopian Youth Sport Academy
FFM :	Fat Free Mass
FGD:	Focus Group Discussion
H.E :	Higher Excellences
TD :	Talent Development
TI :	Talent Identification
TID:	Talent Identigication
UK:	United Kingdem
USA :	United States of America
VO_2 max :	Maximun rate of Oxygen Consumption

ABSTRACT

The purpose of this study was to assess the practice and challenges of talent identification in athletics events at the Ethiopian youth sports academy. The design of the study was a descriptive Survey. The subjects in this study were 75 athletes, 5 athletics coaches, 2 academy directors. Data were collected through questionnaires, semi-structured interviews, and document analysis. The data gathered were analyzed and interpreted by using descriptive and inferential statistical methods. Both qualitative and quantitative methods (approaches) were employed in this study. To gather the data for this study, the stratified sampling technique was used to select athletes and purposive sampling technics are applied to select Coaches and Academy Directors. The results of findings show that the mean score of the four independent factors (environmental or sociological, physical and physiological, psychological factor, facility and equipment) were 1.7416, 1.5208 and 1.4715 and 1.7533 respectively, means that facility and equipment were relatively the dominate variables used by the academy in talent identification. Also, it was concluded that all the factors (facility and equipment, psychological, physical and physiological, environmental or sociological) have a positive and statistically significant relationship with talent identification, from those factors, the physical and physiological factor has a high effect on the process of selecting talented athletes above all the other factors. Finally, it was recommended that work on coaching expertise at the grassroots level, develop and apply standardized scientific talent identification criteria and methods, fulfill basic athletics facility and equipment's for the process of talent identification, give full attention, follow-up, and support from all concerned bodies, prepare strategic competition opportunities in all regions and give a chance for athletes to participate in it, Produce a healthy, strong bond between regional and national athletics federations, regions, and academy, build talent identification center at a regional and national level.

Keywords: *Talent identification, Athlete, Athletics, athletics events*

CHAPTER ONE

INTRODUCTION

This chapter deals with the background of the study, statement of the problem, objective of the study, significance of the study, delimitation of the study, operational definition and organization of the study.

1.1. Background of the Study

Sport is an activity people perform according to an established set of rules with the purpose of competing with an opponent or a team and by applying a set system of points based on which the winner is determined. Basically, sports are divided into team sports and individual sports. A characteristic of all sports activities is that they differ in structure and content (Burger et al., 2016).

Sport has power and fulfills an essential role in global society. It contributes to the social, physical, psychosocial and behavioral attributes of both participants and non-participants. Sports participation should be available to everybody to maximize their total abilities through physical activity (Manamela, 2016), also he defines sport as an activity that can be physical, competitive and recreational that contributes to fun and enjoyment, development and achievement.

Athletics is a group of sports that include a lot of different competitions like running, jumping, throwing, and walking. Track and field like cross country running, race walking and road running are the mostly common types of athletic competitions (Tutorialspoint, 2019). Sporting organizations invest substantial time and financial resources to identify talented athletes from an early age. However, due to the complex and versatile nature of the talent pathway, identifying and pursuing excellence is a difficult endeavor (O'Brien-Smith et al., 2019).

The researchers Assefa et al.(2017) reported that a modern sport has a history of over half a century in Ethiopia and within this period, many types of sports have been introduced. Also the researcher states that athletic sports, different from other sports, has been playing a crucial role in introducing the country to the outside world.

Scientific evidence on identifying and channeling sport talent at an early age is prevalent because at an early age children learn a broad range of fundamental emotional and physical skills that could contribute to their later specialization in a given sport (Côte et al., 2009).

Talent identification (TI) is big business. From sports, through art, to education, researchers in all domains are struggling to find a way to identify the best in their field. Nevertheless, finding the most efficient and most effective talent identification method is a very complex task, which although its speciously current 'rise' to prominence, has been a apprehension for quite a while (A Abbott et al., 2002). The motivations of sport organizations to identify talented athletes from a young age continue to raise, but until now effective talent identification leftovers a challenging task (Mann et al., 2017). Nowadays, sport talent identification and elite development is one of the most important concerns of sport society and managers have crucial roles (Moosaee et al., 2017) and also it becomes a dominant problem for sport science when the struggle for international success in sport, namely, the accountability of Olympic medals, converted political (Gonçalves et al., 2012). Identifying talented athletes within all kind of sport activities is can be viewed on a temporal continuum based on the objective of the selection or identification process: identifying and selecting for the current performance versus identifying and selecting for a phase point in the future (prediction). It is an evolutionary procedure and practice that significantly contributes to the identification, selection and development of talented (or those showing talent) persons for the purpose of assisting these persons in reaching their potential and besides assist sporting organizations to effectively allocate their limited resources in the most productive and beneficial way (Silva & Wayne, 2006). The researcher Roberts et al. (2019) reported that the objective of selection (performance vs prediction) impacts insights of talent and the selection decisions completed. Also the researcher states that within high performance sporting organizations, the prediction of elite performers (‘talent identification’, or TID), is a priority.

Choosing the best individual for a sport, the key processes in all countries is talent identification. Measurement criteria for determining, for each of the identified youth sports, the increasing use physical examination, motor physiological, and biomechanics has provided. Using these tests, allowing for team sports for every country to provide the cost, time and the manpower, training for adolescents and youth sports fields in a fully conscious act. Identify the best talent also permits countries to gain their limited athletic resources. Identification of scientific talent is an important factor in growing athletes (Meyers et al., 2013). Countries such as the USA, China, Germany, the UK and other rich countries invest enormous finances in technologies for discovering sports talents (Burger et al., 2016).

In the universe of sport, whether team or individual, among the large group of those engaged very few will attain the highest level and can aspire to be recognized as outstanding talents. Talent identification and selection converted a dominant problem for sport science when the competition for worldwide success in sport, namely, the responsibility of Olympic medals, turn into political. The first steps in this direction were taken by the Soviet Union and other countries through extensive and expensive science-based programs aiming to raise the level of performance in every athletic discipline. The rationale after these enormous investments was that outcomes would progress if the preparation started at earlier ages, the right children were concerned with the sports where their natural potentials best fit, the amount of training under accurate supervision raised human limits, and training was scientifically organized and supervised by educated personnel (Gonçalves et al., 2012).

Sport academies in the world are the main success for a lot of elite athletes, although in Ethiopian youth sports academy is a public institution entrusted to train potentially endowed youngsters in Olympic Sports. The Academy was envisioned by H.E the late Prime Minister Meles Zenawi, and it was established on May 28, 2013 by H.E Prime Minster Hilemariem Desalegne. Its Mission is Produce capable and victorious athletes at national & international sport occasions through the provision of scientific training methods to skilled youngsters, build the capability of sports professionals and disseminates sports research products vital to the national sports development. The vision of Ethiopian youth sport academy is to envision the Academy by 2023 as Africa's principal and standardized center of excellence of all time blue-ribbon athletes and fruitful professionals in various sports for a prolonged standing pipe line. Its Objectives are to produce physically and mentally competent and ethical sound young sport elites for national and international competitions, to render capacity building training to professionals in different sport fields, to conduct research and studies which contribute to the quality of different sport disciplines and disseminate the results thereof, to serve as a center of excellence for different sport disciplines at national level (Federal negarit gazeta, 2011).

However, the researcher observed that the practice of talent identification process in Ethiopia was complex and it's not scientific or it has no clear criteria, mostly implemented by observation of the athlete's current or previous performance that means by competition experience and accepting coach idea, so these trained is not enough or not effective to identify talented athletes because

athletes, current performance might be affected by many factors like environmental or social, physical or physiological, psychological and facility and equipment.

Therefore, the study, to the best knowledge of the researcher, strived to investigate the practice and challenges in identifying talented athletes in athletics events at Ethiopian youth sports academy, Addis Ababa. Furthermore, the study called upon further researches to be conducted in the study area.

1.2. Statement of the Problem

Athletics is a dynamic sport and it is competed in a constant changing environment. Generally sport is a phenomenon where the specific circumstances are challenging to predetermine of ever simulate. There are a many several of inherent structures to sport that makes athletes very unique in addition to this challenge, the issue of accurate and reliable talent identification models and methods can be seen. Various factors are effective in success of athletes. Natural talent is one of the factors effecting on this spectrum. Researchers believe that identifying capable people is one of the most important aspects to help athletes to success (Werkiani et al., 2012). Choosing or identifying the best person for a sport, the main processes in all countries is talent identification ,it allows countries to gain their limited athletic resources (M. Boostani et al., 2011).

The researcher Angela Abbott et al.(2005) states that talent identification (TI) has undoubtedly become big business. Through a range of different fields including sport, education, art and business researchers are continually struggling to find effective methods to identify the best performers for the future. In addition to this the researcher states that implementation of an effective TI system seems highly appealing for a wide range of organizations and performance domains.

Talent identification (TID) programs are an essential part of the selection process for elite-level athletes. Despite the fact that many sport organizations utilize TID programs, there does not looks like to be a clear set of variables that consistently predict or forecast future success or achievements (Johnston et al., 2018). It's orientation within wide variety of sports and events, and further selection is a complex multidimensional process (Krasilshchikov, 2015). An effective talent identification (TI) system is an essential precursor to talent development (TD) as it will direct support to those individuals who have the greatest potential to achieve senior international success in sport (Krasilshchikov, 2015).

Early discovery of sport talents is the first step in creating a top athlete (Burger et al., 2016). An effective talent identification (TI) system is an essential precursor to talent development (TD) as it will direct support to those individuals who have the greatest potential to achieve senior international success in sport (Angela Abbott & Collins, 2002). Talent identification and development processes that an athlete experiences share an important reciprocal relationship. In other words, effective identification may be aided by effective development processes and vice versa (Angela Abbott et al., 2005).

Due to the lack of coordinated and ad hoc approach to talent identification, in Ethiopian from the project up to the national level, due to several significant challenges and there is no uniform, modern and scientific talent identification approach. As a national level, Ethiopian youth sports academy is a big governmental sport organization, it's working highly focused on selecting talented athletes from all over the country then works with those athletes to develop their talents. So the researcher argues that identifying this practice and challenges may contribute to facilitating the desired enabling environment for sustainable talent identification. Talent identification is a priority for all modern sports. Because of its complex nature and importance, a lot of researches are conducted in the world on this topic, however, in an Ethiopian context some researchers try to access the practice and challenges of the talent identification process, therefore in line of this Biruk Kebede, (2017) assessed the prospect and challenges of talent identification of athletes having studied the project, but he didn't clearly figure out all the critical problems of the practice and challenges of identifying talented athletes, in light of the predominant factors for talent identification, the relationship between the practice and challenges faced and talent identification, the effect of (Environmental, physical, psychological and facility and equipment) on talent identification, and the criteria's while selecting talented athletes. So, in order to fulfill the gap from those points of view, the researcher conducted this study on the title of practice and the challenges of talent identification in athletics events at Ethiopian youth sports academy, Addis Ababa.

1.3. Objectives of the Study

1.3.1. General Objective

The general objective of the study was to investigate the practice and challenges talent identification in athletics events at Ethiopian youth sport academy, Addis Ababa.

1.3.2. Specific Objectives

The specific objective of the study is to:

1. Identify the predominant factors for talent identification.
2. Investigate the relationship between the practice and challenge faced and talent identification in the academy.
3. Assess the effect of (environmental, physical, psychological and facility and equipment) on talent identification.
4. Determine the criteria's that have been practiced by the academy for selecting talented athletes.

1.4. Research Question

The followings are the questions of this study to go through:-

1. What are the predominant factors for talent identification?
2. What is the relationship between practice and challenge faced and talent identification in the academy?
3. What are the effects of (environmental, physical, psychological and facility and equipment) on talent identification?
4. What are the criteria's that have been practiced by the academy for selecting talented athletes?

1.5. Significance of the Study

The current research is devoted to examining, the practices and challenges of talent identification faced in the Ethiopian Youth Sports Academy. This will help:-

- To narrow the practical gap that the academy faces in the talent identification process.

- The findings of the study also contribute Ethiopian athletics federation, the practice coaches and stakeholders of youth athletics projects, to have better knowledge of the core problems and solutions.
- It provides preliminary information to other academies, coaches, sports managers, and practitioners when they are developing a sports talent identification tools.
- It also serves as a spring board interested researcher to conduct further research on the study area.

1.6. Delimitation / Scope of the Study

The study was conducted only at the Ethiopian Youth sports academy in Addis Ababa town, around the Imperial hotel. The study was exclusively restricted only EYSA Directors, coaches, and youth athletics athletes who are currently doing training in the academy. The study focused on the practice and the challenges, of identifying talented athletes in athletics events at Ethiopian youth sports academy, Addis Ababa.

Figure 1.1: Ethiopian youth sport academy location

(Located *at: 9º00º05ºN 38º47º46ºE.)*

Source: Google maps

1.7. Limitation of the Study

Because of the pandemic, Covid-19 outbreak the researcher cannot conduct group focus discussions. The researcher think the data collected from the FGD might have enriched (triangulate this qualitative data along with quantitative data) the current research and helped to get deep information pertaining the TI issue. However, to overcome this issue the researcher has used document analysis, reports as an alternative information source. The other serious limitation of the study was that some athletes did not return questionnaires timely and it was difficult to conduct interviews with some academy Directors because they were very busy at their own work and personal life.

1.8. Operational Definition

The following key terms were used throughout this document to ensure clarity of measuring and usages the terms are defined as below:-

Athlete: - Is someone who trains regularly in athletics sporting discipline under the supervision of a coach.

Athletics: - Is a group of sporting events, like running, jumping, throwing, and walking.

Coach: - Is a person who trains and guides an athlete to excel at their potential and to be a top performer.

Environmental Factors: - Are all factors related to environments or the natural world that have an impact on the talent of an athlete like climate, demographic characteristics, and so on.

Facility and Equipment: - It might be stadiums, gymnasiums, health spas, buildings, structures, sport machinery, sports tools, and others that are important to achieve the goal of an athlete.

Identification: - States the act of organizing establishment to find out, diagnosis, selection, and choice of an athlete.

Physiological Factors: - Are things related to the athlete's physical body and that has an effect on the talent of an athlete.

Psychological Factors: - These are all variables related to sport psychology like stress, anxiety, arousal, motivation, self-confidence, commitment, and others that affects an athlete.

Skill: - This is the ability of an athletes to perform well and it can develop through practice or learning.

Sociological Factor: - Is all factors related to society and that has an impact on the talent of an athlete like wealth, religion, education level, family size, population density, and so on.

Talent Identification: - Is the process of identifying current athletes that have the potential to excel by athletics sport discipline.

Talent: - is the natural ability or skill of a person, which can be developed through time.

Youth Sports Academy: - Is a governmental sport organization working highly focused on the development of youth athlete's talent.

1.9. Organization of the Study

The content of the study was organized into five chapters. Chapter one deals with background, statement of the problem, objectives of the study, limitation and delimitation, the significance of the study, definition of terms used in the research document and the organization of the study. Chapter two discusses about the review of literature related to the area of study. Chapter three deals with research design and methodology of the study. While in Chapter four has data analysis, result and discussion of the study and Finally, Chapter five presents summary of major findings, conclusions, recommendations and suggestions for future research. Furthermore, the study, enclosed list of keywords, acronyms and abbreviations, list of tables and figures, references and appendix.

CHAPTER TWO

LITRATURE REVIEW

2.1. Introduction

In many areas of specialization, ranging from music, art, dance, and literature to sports, science, chess, mathematics, and foreign-language acquisition, there is abundant evidence that young people differ from one another in their attainments and in the apparent ease with which they achieve them. Even within a family there may be noticeable differences: for example, a child who struggles at a musical instrument without much success may be overtaken by a younger sibling (Howe et al., 1998).

Talent identification, selection and development of youth athletes is an important issue for , youth sport academies, clubs and athletics federations, as they are challenged to find talented youth athletes who may have successful professional careers in adulthood, this idea is supported by (Murr et al., 2018).

Spectators marvel at expert performance, coaches endeavor to nurture their protégés towards new heights of achievement and athletes aspire to reach `greatness'. As a consequence, the study of expertise in sport, together with the identification and development of future elite performers, is a respected area within the sport sciences (A. M. Williams & Reilly, 2000).

Choosing the best individual for a sport, the core processes in all countries is talent identification. Measurement criteria for determining, for each of the identified youth sports, the increasing use physical examination, motor physiological, and biomechanics has provided. Using these tests, allowing for team sports for each country to provide the cost, time and the man- power, training for adolescents and youth sports fields in a completely conscious act. Identify the best talent also allows countries to gain their inadequate athletic resources. Identification of scientific talent is an important factor in growing athletes (M. Boostani et al., 2011).

2.2. Basic Concept of Talent

According to Manamela (2016) talent is natural ability that can be demonstrated in physical and non-physical activities such as music, art or sport. Further he states that talent is an individual's special aptitude that is above average for specific functions. Also it can be defined as a natural ability or success that can be displayed from early childhood to adulthood.

Howe et al. (1998) states that talent is a powerful myth in the development of expertise and innate gifts are a precondition for high achievement is that young people who are not identified as having innate talents in a particular domain are likely to be denied the help and encouragement they would need to attain high levels of competence. `Talent' is both an appealing and rational justification of what underlies skill in sport. By and large, coaches take for granted that differences in talent determine who will succeed (Helsen et al., 2000), also the researchers stats that elite sport programmes often have elaborate protocols designed to detect talent early and select those individuals with certain physical or personality attributes they feel are most desirable in the sport.

2.2.1. Properties of Talent

The researcher Howe et al. (1998) states that talent has five major properties or talent can be conclude talent by five points: (1) It originates in genetically transmitted structures and hence is at least partly innate. (2) Its complete effects may not be evident at an initial stage, but there will be some advance suggestions, allowing trained people to identify the presence of talent before exceptional levels of mature performance have been demonstrated. (3) These early indications of talent provide a basis for predicting who is likely to outshine. (4) Only a smaller are talented, for if all children were, there would be no way to predict or explain differential success. Finally, (5) talents are reasonably domain-specific.

2.2.2. Athletic Talent

The researcher Harsányi (1992) states that talented for athletics are those whose inherited physical, physiological, anthropometrical, motoric and social abilities are at a level in a given period of ontogeny (under age matched environmental primarily training conditions) which ensures (with further training appropriate to the stage of psychobiological development) that at the period of peak performance (between the 20th and 30th years of life) the athlete will most probably reach the international level of athletic performances. Practice is necessary to develop athletic talent, but practice alone is not sufficient (Helsen et al., 2000).

The process by which athletic growth is achieved among elite athletes is classified into four absolutely essential key stages: detection, identification, selection, and development of talent (Hirose & Seki, 2016).

2.2.3. Skill

The researcher Pearson et al. (2006) define skills as an activities that are dependent on training and experience for their performance, as opposed to being genetically defined. Also the researcher states that the learning of skilled movement pat- terns, such as in team sports, is also dependent on the many factors including the amount and quality of practice or experience, which result in relatively permanent changes in a skilled behavior. The extent to which practice improves skilled performance also relies on a multitude of factors, including the attention and memory capabilities of the learner and the physical ability to perform the required task. With acceptable teaching and practice, refinement of motor skills can be able to continue in males through adolescence. In addition, if progressive enhancement occurs in motor skills, performance in complex motor tasks related with team sports, may be less complicated for the reason that of previous practice and experience. Enhancement might also result from increased physical and cognitive capacity for the performance of physical tasks and is consequently possibly linked to holistic maturity. As a result, checking for more abstract, complex skills of adolescents in talent identification programs will shortage the power to predict adult performance.

2.3. Talent Detection

Discovery of potential performers who are not currently involved in the sport in question(A Abbott et al., 2002). It mentions to the detection of potential performers who are currently not involved in the sport, as opposed to talent identification (TID) that refers to the process of recognizing current participants with the potential to become elite players (A. M. Williams & Reilly, 2000).

Talent Selection typically refers to the picking best trained or best performing for the moment individuals to participate in the major upcoming competitions. Talent Detection followed by Talent Identification with subsequent Talent Development (Krasilshchikov, 2015).

2.4. Talent Selection

It is occurring on periodical basis when best of the best need to be selected either to the camp, to the squad and ultimately to the team to represent the nation in the most prestigious international competitions (Krasilshchikov, 2015).

2.5. Talent Development

Talent Development is traditionally linked to the development of a talent through sports after talented individuals got involved in regular training (Krasilshchikov, 2015).

2.5.1. Recommendation for Youth Projects to Develop Talent

School districts can play an important personality in talent identification among youth. The primary need is to educate coaches, teachers, and parents on how to properly identify athletic ability without prematurely excluding children because of delayed or non-precocious development in cognitive and physical skills. Conversely, not all coaches are appropriately trained to identify and develop talent. A paramount concern for all involved with youth sport should be to educate coaches and teach them to apply the same actions and means of identifying and developing talent. Generating educational opportunities and standardized practices should guarantee equal opportunity for discovery of talent. Until then, coaches will continue to use their instincts and personal desire to educate themselves (Gray & Plucker, 2010).

2.6. Talent Identification

Talent identification (TI) has undoubtedly become big business. Across a variety of different grounds including art, sport, business and education, researchers are repeatedly attempting to find effective methods to identify the top performers for the future. The researcher Angela Abbott et al. (2005) states that these fields are united in many societies around the world by high status of competition to achieve success beside limited financial resources. Choosing the best person for a sport, the main processes in all countries is talent identification (M. Boostani et al., 2011).

Talent identification, part of the physiology and sports psychology, which contains; It be able to be due, from the first athletes to be champions, among other people, be distinct, to nurture them, and then led them to the world championships and Olympics Games (M. Boostani et al., 2011).

According to Vaeyens et al. (2009) talent identification programmes are planned to identify young athletes who retain extraordinary performance for success in senior elite sport, and to select and recruit them into talent improvement programmes. In the same vain the researcher states that the purpose of talent promotion is to increase athletes' potential by means of a variety of official measures designed to accelerate talent development (e.g. further competition and training opportunities, high-profile coaching ,effective time management, scientific and medical

intervention, individual funding, and counselling and welfare). To reaching top results may be divided into four key phases: detection, identification, development and selection, with the identification being considered by the authors the key phase in the overall success (Burger et al., 2016).

Identifying athletic talent is another challenge that is challenging at any age and at various levels of play. Although we typically target talent identification efforts in youth and adolescence, athletic talent identification occurs at all ages and levels of athletic play. The achievement of professional sport hinges upon appropriate identification of athletic talent. Given that billions of dollars are at stake, talent identification and development (TID) are the main concerns for professional sports as well as for those who aspire to become a part of the professional lines. Attaining notoriety also plays a big role in talent identification and development. Many coaches, parents, schools, friends, and family members dream of the prestige associated with becoming a renowned athlete or being associated with a "talented" athlete. Inspirations for fostering and identifying athletic talent may be ego driven by the desire to be connected with an athlete who attains widespread athletic notoriety (Gray & Plucker, 2010).

2.6.1. Talent Identification Benefits

According to M. Boostani et al. (2011) talent benefits can be expressed in different dimension, which is briefly as follows:

Talent identification in the process of guiding people toward the strings are physically, physiologically and psychologically more suitable for them, With scientific talent identification, people will probably get better results, and this prevents them from frustration due to lack of success is a result of participation in exercise and sports, enjoy more and are more in retested in the field, Due to the nature of the process, they attract great coaches and most teams are very efficient and sport psychologists are also sometimes available, Due to the nature of this process, public health and people are more secure, Means less cost and better results are obtained, To identify the right people, increases the useful life of athletics, Identify susceptible individuals and to accelerate learning and development will be more motivated, The talent identification, confidence, coach and athlete increases, Framework for the convergence near the talent identification and knowledge in athletics provides empirical and scientific findings, The time required to achieve peak athletic performance (in a particular sport) reduces chosen by the people,

of the high volume of work, energy and talent will keep the coach. Athletes who have higher ability, coach training programs raise efficiency.

2.6.2. Talent Identification Methods

According to M. Boostani et al. (2011) there are two basic methods of choice for talent:

A. Natural selection is a common method to the natural procedure of development is the athlete in a particular sport. Under this method, athletes affected by environmental factors such as tradition, school, dreams of parents community and friends in a specific sport activities are and develop their athletic performance, is determined through natural selection; This means that they are random in sports activities that have the talent.

B. Scientific selection is a method in which children select a coach that has verified capabilities inherent in a particular sport. Thus, in comparison with those identified by natural selection, time required to achieve peak performance in sports who have been elected to the scientific method, is much shorter. Consequence of scientific selection, selection of talented people and leading them in a proper sport.

2.6.3. Talent Identification Criteria

Achieving peak athletic performance for athletes with specific physiological characteristics abilities and psychological characteristics of outstanding environmental movement is strong. And to identify differences between individuals, may encourage and guide them toward a specific sport of activity, be useful or, they may succeed where the activity is low, keep away. People can be with respect to their ability, to sports or activities that led to the best; they deserve it and can be successful at it (M. Boostani et al., 2011). Also the researcher states about the measurement criteria for determining, for each of the identified youth sports, the increasing use physical examination, motor physiological, and biomechanics has provided. In the same vain, such as the Canadian National Ballet School, this means selecting children from the age of 7 based on physical maturation, anthropometric characteristics, personality tests, studies of their parents, and so on (Helsen et al., 2000).

Not everyone in the process of selecting talent identification, to abandon the concept of not exercising. These people can, and even participate in recreation programs that meet their needs,

physical and social forms. Criteria for optimal training program for talent identification are better. According to M. Boostani et al. (2011) Some of these criteria are:

2.6.3.1. Health

Health is a basic requirement for those participating in the exercise. Therefore children must participate in training programs are under medical examination. Coaches must be based on recommendations from health practitioners that the only people who have chosen to participate in training programs. During the tests, the doctors and specialists in testing should pay attention to the possible impairment of physical and organic and recommendations based on your provider. Accordingly, those with structural abnormalities in the organs, they chose not to exercise a dynamic and stirring. Also, the physiological status of individuals plays an important role in the process of talent, such as physiological disorders can be a limiting factor.

2.6.3.2. Anthropometric Features

Body sizes of individuals such as height, weight and length of limbs will play major roles in many sports. So much talent identification as one of the main criteria is considered. Talent identification purposes taking into consideration physical growth and maturation, absolute size and proportionality, somatotyping and body composition (Preedy, 2012). For talent identification purposes, measurements of kinanthropometry take into consideration physical growth and maturation, absolute size and proportionality, somatotyping and body com- position as measured by a variety of methods. (Kinanthropometry is the study of human size, shape, proportion, composition and maturation to assist in the evaluation of growth and of the effects of exercise, performance and nutrition) (Preedy, 2012).

2.6.3.3. Inheritance

Inheritance as a biological phenomenon is complex, plays an important role in planning practice. Although education, training and social conditions can be inherited ability to gradually change, but children tend to inherit their parents' psychological and biological characteristics.

2.6.3.4. Psychological Characteristics

In some countries, mental preparation and motivation of top talent identification in the system as important psychological factors are mentioned. However, we know that there are a psychological attributes and skills, which are higher performance and apart from the ordinary to the extra ordinary

to the extraordinary athletes. Impact of psychological factors on sports performance, research has shown that, psychological functions such as psychological parameters can greatly affect the performance of sports people have chosen. Success in competitive sports requires a specific set of psychological factors. Motivation, one of the psychological characteristics that influence the performance of athletes in sporting competitions and have an important role in planning and talent identification in sports is psychological training for athletes. By developing psychology, discussing psychological skills has become more important in performing sport activities. Psychology is the main factor of sport competition. Nowadays the athlete's psychological factors are typically taken into consideration besides their physical and technical fitness. Physical fitness is not solely the guarantee of success (M. A. Boostani et al., 2011). Also he states that the optimal performance of sport skills in championship level, related to physical, technical and psychological fitness. All psychological fitness programs have common issues (motivation, concentration, self-confidence, controlling psychological levels, imaginary and goal setting).

2.6.4. Talent identification Factors and Predictors of Talent

Identification of scientific talent is an important factor in growing athletes (M. Boostani et al., 2011). Through unique arrangements of physical, mental and behavioral characteristics, talented athletes be able to exploit their strengths to accomplish their goals (Angela Abbott et al., 2005).

According to Bonal et al. (2019) and A. M. Williams & Reilly (2000) some of the major factors and predictors of talent are:

2.6.4.1. Environmental or Social Factors

The family and especially the influence of family tradition is presented as a major factor during the career of players, as well as when choosing basketball as a sport to practice and future professional dedication. Sports Context: In the Sports Context category, the attention of all the sub- jects towards the positive influence of the coaches stands out among the results. Intra Individual Skills: has its own advantage and disadvantage to refer to motivation, both in a positive way (family tradition and personal ambition as maximum motivations), and in a negative way (over-training). Where a person live, social and economic situation, and facilities that are available to him, all the sports of the athletes selected for its impact (M. Boostani et al., 2011).

Gagné (2004) reported that environment exerts its positive or negative impact in many different ways. Environments can be examined by both at a macroscopic level (geographic, sociological, demographic) and a microscopic level (size of family, neighborhood services, socioeconomic status, neighborhood services). For example, young gifted persons who live far from large urban centers do not have easy access to appropriate learning resources (sports training centers, music conservatories, magnet schools). Within the child's home environment, the parents' financial comfort, the absence of one of the caregivers, the number and age distribution of siblings within the family, as well as many other elements of the immediate environment can have some degree of impact on the child's talent development. Psychological factors, for example the parents' their personal psychological health or value of educational pursuits, are included in the 'persons' category below. The concept of environmental contribution brings to mind spontaneously important persons, be they parents, the extended family, siblings, friends, mentors, educators, idols and so on.

According to Mat-Rasid et al. (2019) the first component consists of high factor loading in speed variables (10 meter run, 20 meter run, 40 meter run) and endurance (predicted VO_2 max). The second component was constituted by anthropometric variables (weight, height, sitting height and arm span). Although third constituent contains flexibility variable (sit and reach). These selected variables of anthropometric and fitness are, for that reason, revealed as the crucial attributes those must be prioritized for a talent scouting in sports.

2.6.4.2. Physical and Physiological Factors

In this category, most of the participants on the research agree on the need to improve basic physical abilities. Physiological measures have also been used in an attempt to identify key predictors of performance (maximal oxygen uptake (VO2max), anaerobic power, grip, and trunk strength and heart volume (absolute and relative).

Physiological functions, such as anaerobic power, anaerobic capacity, aerobic capacity, VO2max, blood lactic acid tolerance, heart function-cardiovascular and resistance to fatigue.

The researcher Angela Abbott et al. (2005) in their research states that Germany and the Soviet Union select 'talented' performers on the basis of physical and performance measures, which are believed to be correlated with excellence in sport. At least five major difficulties arise from identifying and eliminating potential athletes on physical and performance actions: (a) It is

challenging, if not impossible, to forecast the mature value of a genetically driven variable through non-linear procedures of development. (b) Performance is constrained by a range of factors and not all of these are 'genetically' driven. (c) The concentration has been on discrete performance measures that only reveal inadequate evidence about athlete's adaptability and development potential. (d) Selection might be based upon unstable characteristics during significant transitional periods in the athlete's career. (e) As TI processes should be concentrated on the coming performance capacity of individuals, not enough emphasis is given to influences that underpin effective development towards one's potential

Motor abilities such as reaction time, coordination of nerve-muscle, power strength, endurance, flexibility, agility, balance, and visual-motor coordination. Physical capabilities linked together in the development process and are not allowed to happen. A physical education can help the development of other physical factors.

2.6.4.2.1. Anthropometric Factors

Physical predictors of talent: There is research evidence to suggest that players' anthropometric characteristics (e.g. stature, mass, body composition, bone diameter, limb girth). They also highlight the importance of height, as a significant facilitator component to reach the elite (although not essential).

2.6.4.3. Psychological Factors

Both physical and psychological factors help in identifying why birth date is such an influential factor in selecting `talent' and perceiving `lack of talent' (Helsen et al., 2000).

Research has verified that the application of psychological behaviors (e.g., effective performance evaluation, goal setting and reinforcement) is essential to this development process and consequently underpins the potential of an individual to become a successful and consistent elite athletes (A Abbott et al., 2002).

Psychological characteristics such as concentration, arousal, motivation, ability to overcome stress, courage, tactical intelligence, spirit of cooperation and emotional balance. Psychological profiling. Intuitively, it is thought that successful players are distinguished from less successful ones on the basis of psychological factors. The theory is that a talented player possesses personality characteristics that can assist learning, training and competition. Even though coaches and scouts

might argue that talented and less talented athletes can be differentiated on the beginning of their psychological `make- up', researchers have yet to identify definite personality characteristics, or an overall psychological profile, that are predictably associated with success in sport.

2.6.4.3.1. Cognitive Factors and Game Intelligence

A promising approach to talent identification involves the measurement of perceptual - cognitive skills such as anticipation and decision-making. When compared to their less skilled counterparts, skilled players are: (a) faster and more accurate in recognizing and recalling patterns of play; (b) better at anticipating the actions of their opponents based on advance visual cues; (c) characterized by more effective and appropriate visual search behaviors; and (d) more accurate in their expectation of what is likely to happen given a particular set of circumstances (M. Williams & Davids, 2016)

2.6.4.4. Facility and Equipment

If the athlete does not have the necessary facilities, or simply financially unable to participate in sports. Result in a sport that's becoming less likely to select and pose (M. Boostani et al., 2011).

2.6.5. Issues in the Identification of Athletic Talent

According to (Gray & Plucker, 2010) The major issues which raised in the identification of Athletic talent are the followings:

2.6.5.1. Predictability

One problem with talent identification and development is the predictive validity of talent identification strategies. Predictability of talent is in high demand. One problem with talent identification and development is the predictive validity of talent identification strategies. Predictability of talent is in high demand. Although a few coaches and parents believe they possess the ability to predict talent, some researchers disagree (Angela Abbott et al., 2005; Helsen et al., 2000). For example, Angela Abbott & Collins (2002) discussed the lack of predictive ability of a traditional talent identification model, the Sport Interactive Model. The model utilizes a computer program that matches children to sports based on desirable sport-related characteristics. Abbott and Collins' study exposed that the model had poor test and reexamine correlation scores. Intrinsically, the model is unlikely to accurately identify potential athletic physical structure and performance capacity in young children.

The professional sports arena also has difficulty predicting talent. Professional football, as well as other sports, utilizes several skills tests to "predict" future football stars, with millions of dollars at stake in each draft day decision, yet many of the identification strategies have questionable validity.

A mixture of physical and cognitive abilities is needed to be fruitful in professional athletics. Sections abound about successful professional athletes who were forecasted to be mediocre due to exact physical measurements (e.g., height, weight). These athletes achieve his/her goal despite expected predictors of talent. The ability to predict talent is moot if we lack adequate knowledge of how to identify and, more importantly, how to nurture athletic potential (Gray & Plucker, 2010).

2.6.5.2. Age

According to the researcher Helsen et al. (2000) strong evidence suggests that athletes whose birth dates fall early in the year are more likely to be identified as "talented" and also tested the idea that physical development and an age benefit may be associated by some coaches as talent. The researchers examined studies of international, national, and provincial soccer players. The outcome revealed that players born in the first quarter of the identification year were considered "more talented" by their coaches than those born later in the selection year. These effects were maintained over time, as professional players were more likely to have been identified as talented as youngsters and provided with additional coaching. The researcher also concluded their findings by suggesting that coaches' talent identification is explained by physical ability relative to an advantage in age, because talent does not emerge until later ages. Also affirmed an additional psychological component may affect the performance of younger children when competing against more mature children within the same age group, So Date of birth may play a important role in both identifying and developing the talent of athlete. Birth date makes such an important contribution to coaches' assessment of talent is the relative benefit it affords in terms of physical maturation (Helsen et al., 2000). Growth and maturation are important concepts to better understand the identification, selection, and development processes of young athletes (Gonçalves et al., 2012).

2.6.5.3. Physical Growth and Maturation

Growth is a reference to the increase in size of the body as a whole or the size attained by the specific parts of the body, Maturation is the process of achieving a fully mature biological state.

The predominant types of maturation that are monitored during talent identification are morphological and skeletal (Preedy, 2012).

2.6.5.4. Size and Proportionality

With respect to success in specific sports, proportionality can play a fundamental role in selection. Height and body mass are two of the main discriminatory factors in selection for sport and subsequent success for both individual and team sports (Preedy, 2012).

2.6.5.5. Somatotype

Somatotyping is a method whereby the body is described in terms of a number of traits that have a relation to body shape and composition. It is an indication of the physique as a whole. It allows the assessment of the body as a whole, taking into consideration levels of adiposity, muscularity and linearity. Its application in sport and performance has been significant with the ability to compare body types across a huge range of sports and at all levels of competition. With respect to youth sport, somatotyping allows the monitoring of training, growth and maturation over time (Preedy, 2012). Somatotype of an individual categorized in to three forms, the first category is called endomorph, describes the relative amount of adiposity of an individual's body. It provides descriptors of physical aspects, for example roundness, relative volume and the distal tapering of the limbs. The second categories is called Mesomorph, it describes the level of muscularity of an individual. It also refers to the descriptors of physical aspects, such as robustness, the relative volume of the trunk and other muscle mass within an individual. The third categories is called Ectomorph, it's a description of the linearity of the body and it also describes physical aspects of slenderness in the absence of muscle or fat mass (Preedy, 2012).

2.6.5.6. Body Composition

Techniques for the measurement of body composition give a more accurate indicator of what makes up an individual's shape, thereby allowing further selection criteria to be identified. One of the simplest estimates of body composition is body mass index (BMI); however, there are issues surrounding its accuracy, particularly in adolescent boys where the increase in body mass between 11 and 16 years may be more to do with an increase in muscle mass than adipose tissue, therefore giving an incorrect estimate of relative obesity. In addition to BMI, there are a number of techniques available to assess body composition, such as skinfolds, bioelectrical impedance

analysis (BIA), hydrodensitometry, air displacement plethysmography (ADP) and dual-energy X ray absorptiometry (DXA) Some of these techniques, such as hydrodenistometry or DXA, require a high level of technical expertise and expensive equipment and can be quite timely to administer. One of the most used methods for the estimation of percentage body fat is skinfolds and body density (Preedy, 2012).

2.7. Talent versus Practice

Some studies have attempted to explain or refute the very presence of athletic talent, arguing that practice is the key element that fosters superiority in sport. Researching the talented non practices is a challenging task as we at this time have few examples of those who are talented and do not practice, yet continue to excel. Even though experts in a given field such as sport, music, and math give the idea to be doing their skill or capacity effortlessly, research evidence reveals these persons deliberately practice for many hours to achieve advanced levels of ability.

Howe et al. (1998) states that genetic variances in ability may become less important with large numbers of practice and training. Hidden within the complicated argument of talent versus practice are the roles of psychological factors, personality traits, motivation, and both the biological and environmental influences of these factors. Certainly, children born with natural athletic ability may be extra apt to practice, since practicing may provide a greater internal reinforcement than it does for those children who are less talented. Motivation to practice is an important point, as the existing research supports the significant role of practice in athletic development. Based upon the significance of practice, the effect for athletic talent identification is that we should provide numerous opportunities to all children at various developmental stages to build skills, rather than isolate the few children we merely suspect are talented based on uneducated and misguided procedures (Gray & Plucker, 2010).

2.8. Talent Identification Steps / Process

The researcher Byounggoo Ko (2014) discussed about the Process of talented athlete selection, however according to M. Boostani et al. (2011) talent identification is a process at once, but over the years and are conducted in three main stages:

2.8.1. Preliminary Stage Talent

In many sports, talent preliminary step before the age of puberty occurs at age 3 to 10. It often involves medical tests related to health, growth, public health, and to detect any movement, anthropometric and physical disorder or disease can be designed. These tests focus on three core concepts: The discovery of physical and motor abnormalities that may have a role in limiting the exercise, determine the physical growth of children using simple methods such as the ratio of height to weight, the discoveries of superior genetic traits such as height, which may lead children towards a particular sport, have a decisive role.

2.8.2. The Second Stage Talent

The most important step is selecting and dealing with teens who already have experience of training organized by the public. Methods used in the selection stage, and psychological and anthropometric characteristics to assess, because the body needs a certain level of compatibility with the characteristics and needs of each particular sport is found. Secondly, the talent identification, the significant role of sports psychology with a comprehensive psychological testing begins.

2.8.3. The Final Stage Talent

The final stage of talent identification, with national teams of volunteers in dealing. This should be elaborated with regard to the characteristics and needs of each exercise is planned. Factors needed in this stage include: health status, psychological adaptations to training and competition, and the ability to overcome stress and most importantly, having the capacity for further improvement in athletic performance.

Public awareness of the onset of exercise in sport, talent identification is of great importance in the process. Each sport has specific talent criteria, including tests and norms (M. Boostani et al., 2011).

2.9. The Influence of Maturation on Performance Parameters used in Talent Identification

The researcher Pearson et al. (2006) reported that adolescence is a period of dynamic change in physiological capabilities, sexual characteristics, physical parameters and social interaction. Puberty is identified by the development of secondary sex characteristics and the faster growth of body size and stature. Pubertal development is mediated by the changes in hormone readiness and

function and is related with most remarkable on boys with serum testosterone and growth hormone escalations. The result of growth and maturity associated changes in puberty desires to be considered within the testing and consequences of talent identification programs.

2.9.1. Height

The importance of height is sport-dependent and individual changes in the tempo and magnitude of growth during puberty (17—18% of adult height) result in problems with the use of current height for the period of adolescence for talent identification purposes. Increase in height is primarily attributed to altered hormone action at the time of puberty. As a result, during adolescence, height is strongly associated to pubertal status. Early maturing males might be taller than normal or late maturing males, throughout all phases of adolescence (13—18 years). Adolescent height is consequently unreliable for talent identification because of the big difference in growth potential throughout and following puberty. Because most members in team sports do not actively involved in elite level competition until at least 20 years, the expectation of adult height is desirable for talent identification. Height prediction approaches have usually acknowledged errors and big standard deviations nevertheless interpreters of adult height continue to be an integral part of talent identification programs for various team sports.

2.9.2. Weight

Substantial weight gain happens during adolescence, with almost 40% of adult weight increased in males between the ages of 13 and 18 years. The relations between weight gain and hormonal processes related with puberty result in early maturing males being heavier than age matched peers. Weight differences among early and late growing adolescents are the most evident on the way to the end of adolescence but once more, become insignificant for the period of adulthood.

2.9.3. Body composition

Muscle growth: Growths in muscle mass account for a large proportion of development during adolescence in males. Measures of muscularity show early maturing males have considerably greater muscle mass than late maturing males. On the other hand, radical muscularity does not continue into adulthood, with early maturing adolescents losing the previous ‘‘muscular’’ advantage over others in adulthood.

Body fat: Subcutaneous fat progressively increases during childhood in males and it will decrease at approximately 14—16 years. Reduced subcutaneous fat deposition corresponds with peak height velocity. A marked characteristic of male puberty is a decrease in fat at the extremities that matches with a slow increase in truncated subcutaneous fat. Fat deposition for the period of puberty is the effect of a complex interaction between genetics and hormone activity but is modifiable through behavioral aspects, for example changes in habitual activity and nutrition. The recommendation from the present understanding of the role of maturation on body composition would be to reduce the importance of performance measures where growth associated variables are confounders. Concurrently, it is incumbent on talent identification officials to maximize their understanding of the potential for young bodies to change.

2.9.4. Physiological Capacity

Aerobic capacity longitudinal studies in males indicates that absolute peak oxygen consumption (L min−1) increases gradually between 8 and 16 years. The greatest improvement in aerobic capacity occurs between the ages of 11 and 15 years. Increases in aerobic power are related to a number of factors including increases in fat free mass (FFM), development of the physical and functional size of the cardiovascular system and increased hemoglobin content. Longitudinal studies propose that relative VO2 peak (mL kg−1 min−1) in young males tends to reach a maximum at 8 years, then marginally decreases into early adolescence before leveling off during the remainder of the maturation process. The concurrent improve in absolute VO2 and body mass result in the somewhat stable scores reported for VO2 when expressed per kilogram of body mass in enormous studies of adolescent males. Related with the insensitivity of relative VO2 peak effects in adolescent males, unequivocal enhancement can happen in field-based endurance tests.

2.9.5. Anaerobic Power

In contrast to relative aerobic power results, a steady improvement in anaerobic power of males occurs for the period of childhood, with an increased rate of improvement at the onset of puberty. Sprint speed and jumping ability improve dramatically for the period of adolescence, with the highest rate of improvement happening between the ages of 14 and 15 years. Remarkably, anaerobic power production in adolescence is closely interrelated to body mass, with up to 92% of variance in peak power performance at a time of Wingate test described by a combination of an athlete's physical dimensions (such as height, weight, leg length, lean body mass, leg volume and

total muscle mass). The result of physical size parameters on anaerobic power performance are consequently strongly linked to maturation status. The non-linear anaerobic enhancement for the period of adolescence, the noticeable trainability of muscle power for the period of adolescence and young adulthood and the established association between body size and anaerobic power create extrapolations of results from young adolescent athletes to adult athletic performance problematic.

2.9.6. Strength

The production of human strength incorporates neural control of contracting muscle, muscle cross-sectional area and length and arrangement of fibers for optimal force production. In males, a steady increase in strength occurs for the period of childhood, followed by a larger, additional dramatic enhancement for the period of adolescence that peaks between the ages of 14 and 16 years. The development of strength closely relates to body size and serum testosterone concentration, which again links strength development to maturation status. Gains in muscle strength are more strongly associated with increased serum testosterone than nervous system development. Strength is associated with factors including serum testosterone and body size and is significantly adjustable through well implemented training interventions. Outcomes from adolescent strength testing are therefore problematic interpreters of adulthood performance. Strength, anaerobic and aerobic power have unambiguous potential to reply to training for the period of adolescence, predominantly in males who are well reinforced by anabolic hormones at this time. Pre training values in strength, anaerobic and aerobic power are unlikely to be predictive of the potential to make improvement through the synergy of growth and training.

2.9.7. Motor Performance Tests

2.9.7.1. Agility Test

Results of agility tests through adolescence are difficult to interpret for a number of reasons. Difficulties include a shortage of standardization of testing procedures, inadequate longitudinal data and a reasonably high cognitive burden on participants who might have to learn new complex testing procedure regardless of at all ability to move and change different directions. Longitudinal enhancements in agility examinations may also be attributed to enhanced lever length and gait efficiency concomitant with growth. Nevertheless, the dearth of research on agility and maturation

prohibit definitive statements on this relationship. Like physiological attributes, motor skills and agility have the prospective to progress markedly for the period of adolescence.

2.9.7.2. Aerobic Capacity Testing Methods

The use of VO2 peak testing is tempting because of its repeated usage and accepted exactness, but financial and practical restrictions preclude the uses of VO2 peak tests for talent identification in most major team sports. Endurance runs for time or distance are frequently used in adolescent populations. Tests are simply piloted and permit testing of large groups of young athletes. Endurance running tests can be recorded in time or distance and demonstrate conventional validity in the expectation of VO2 peak. However, endurance runs have limitations that comprise requirements for participants to self-pace their performance which can result in a sub-maximal effort (underestimation of VO2 peak). Limitations to environmental and motivational conditions can also preclude comparison of results within the same and other populations. Furthermore, enhancement in these tests may result from improved running economy, growth and better pacing ability, rather than an increase in aerobic capability. Problems of self-pacing during maximal field tests are decreased in the 20m shuttle run test (20 MSRT). The 20 MSRT provides results that can be converted to VO2 peak scores and is considered easy to conduct, reliable and valid for use with athletic adolescent populations. in summary, despite limitations, when aerobic testing is required for large groups who are not supported by funds for laboratory tests, field-based tests for aerobic testing appear to be acceptable. Results from longitudinal field-based tests for aerobic capacity in young populations are likely to be confounded by factors such as growth, and skill and cognitive improvement.

2.9.7.3. Anaerobic Power Testing Methods

Most team sports require participants to accomplish times of play at high velocity. Sprint performance is consequently an integral element and should be involved in talent identification testing. Speed tests should be conducted over a sports-specific distance (for example 10—40m) recording both acceleration and total sprint time. Jumping is a secondary skill often needed in team sports. Explosive leg power can be accurately extensive availability of databases on field and laboratory based jump tests permit comparison within and between age groups and young sporting populations.

2.9.7.4. Anaerobic Capacity Testing Methods

The Wingate test is usually used research instrument for anaerobic power and fatigue, and has a strong reproducibility in adolescent populations. However, the use of Wingate tests in large talent identification programs is incomplete because of practical restrictions of equipment and staff, and questionable specificity for most team sports. For sports events demanding running-specific anaerobic power, limited research is presented for 400-m performances of adolescent in all team sport participants. However, the use of a 400-m trial might be comfortable for talent identification in team sports because it could replicate a most extreme sporting demand in a team sport, is easily conducted and high performance comparisons can be ascertained through track and field results from the same age group.

2.9.7.5. Strength Testing Methods

Strength requirements for team sports are complex and varied in playing situations. Instinctively, it is required to develop a battery of strength tests replicating sports particular movement patterns. Isotonic strength measurement can be used to measure significant ranges of movement in team sports.

2.9.7.6. Agility and Skill Testing Methods

A lot of agility tests are available for the purpose talent identification. Again, the specificity of the test should be take into consideration and tests are essential to replicate movement in team sports. Most agility tests have acceptable and replicable results in adolescent populations. Sport specific skills are increasingly included as strong correlates of talent identification in team sports such as basketball, rugby, handball and football. In contrast to physiological parameters, physical size and maturity appear to contribute minimally to motor skill performance. However, it is possible for adolescents with no sports specific skills to be effectively identified through anthropometric and physiological attributes for recruitment to new sports. Subsequently, an argument might be presented by sports officials that motor skills are more vital in talent development once talent identification has occurred.

2.9.7.7. Repeated Sprint Tests

Single performances be responsible for a broad index of the suitability for sports performance but the ability of a young athlete to repetitively perform highly loaded intermittent activity under

progressively fatiguing conditions in team sports may not be initially evident. Repeated sprint tests are more specific than traditional physiological variable testing and are designed to replicate specific movement pat- terns in team sports that involve high-intensity work periods interspersed with rest periods. Results are interpreted in two ways: first the performance score relating to the time taken to complete the test, and second, a measure of the amount of fatigue or recovery that can be demonstrated. A number of diverse protocols exist for repetitive sprint ability. However, extensive time demands decrease wide spread use. Repeated sprint tests are more frequently emerging in talent identification programs. Once again some of these examples include results from studies on girls, but the general trend is not expected to be different between sexes. The results of sprint provide access to insightful information about the suitability of young athletes for a team sport and could also set salient benchmarks for enhancement in development programs.

2.10. The Scientific Basis of Talent Identification Models

The researcher Angela Abbott & Collins, (2002) states that traditionally, TI models have measured children on physical and performance variables that are perceived to be a requisite for success within a given sport. A typical sample of a traditional TI model is the Australian Talent identification program. The Australian Talent Search program, which has been in operation since 1994, evaluates children on four physical and six performance tasks to identify youngsters who have the characteristics associated with success within a specific sport. Accordingly, the program associates height and weight negatively and upper body strength, leg power, and agility positively with performance in gymnastics. In contrast, hand-eye coordination, upper body strength, leg power and agility are all positively associated with performance in volleyball. However, even if the physical variables being assessed are advantageous to performance in a specific sport, and some concerns are apparent here.

2.10.1. Developing a Scientific Approach

According to Angela Abbott & Collins (2002) the key features of developing a scientific approach to the identification of talented adolescents are:

1. Primary emphasis is placed on the capacity of an individual to develop as opposed to performance levels at the time of testing, 2. Given appropriate support, the key determinants of the capacity that an individual has to develop are suggested to be psycho-behavioral, 3. However, adolescents will not develop in sport if key but fundamental movement skills are absent from their

vocabulary (psychomotor), 4. Therefore, due to the dynamic conception of talent, the approach emphasizes the importance of TI and TD processes being combined. The need to ensure that all children are provided with opportunities to develop the psychomotor and psycho-behavioral factors that are proposed as precursors to successful development in sport is highlighted. These development opportunities should be provided, and children's progress monitored, prior to any selection into, and elimination from, TD programs.

2.11. Challenges in Ethiopian Youth Sport Academy

According to Aemero Asmamaw et al,(2016) the major challenges in the Ethiopian youth sport are:

2.11.1. Institution-related Challenges

There are some institutional challenges in terms of availing materials, equipment, and facilities for coaching purposes. The challenges are both quantitative and qualitative in nature as most of the study participants commonly agree. The interviewed coaches and their students share in common that the gymnasium did not seem suitable for coaching. In terms of institutional condition, it was found out that sports suits arrive to students lately. Sometimes, the sports equipment and materials, for example gymnasium for fitness training with machines and outdoor fields were inadequate compared with the standard gym and the number of students practicing in those facilities. For example, one of the interview coaches said that the floor and the roof high were not suitable for proper coaching, especially when you did work with too many students. Also, the academy did not have a firm guide how the learning and development of the students should be managed. Even there are inconsistencies of program components across the different events of sports.

2.11.2. Coaches-related Challenges

The task of quality coaches is one of the most significant variables affecting the value of sports academy programs. In relation to this, the two sports academies had quality coaches, but these were not readily available across the different sporting events and gender. In terms of the assignment of coaches for the two sports academies, there were 13 male coaches assigned at Ethiopian Youth Sports Academy were hired on contractual basis, thus these coaches were par timers who usually found within the academy for limited time of the day as these coaches quite often spend time within the academy only for the purpose of conducting their regular classes.

Regardless of this, only two female coaches (7%) were assigned at Tirunesh Dibaba sports academy as a permeate staff member. The rest of the coaches were all males. Thus, the assigned coaches were predominantly males with small proportion of the female coaches. Particularly, the absence of female coaches in Ethiopian Youth Sports Academy needs a serious attention. Sometimes, coaches and students faced difficulty to organize field training off academy. This was mainly due to the shortage of budget and transportation services for such activities. As one of the interviewed coaches pointed, he used to conduct performance assessment at three phases: at the beginning, in the middle and then in the very end of the coaching season. However, the same coach expressed his dissatisfaction with the limited theoretical instruction he gave and the limited psychological instruction offered by a part time instructor. In the view of the interviewed coach, lack stability and they used to spending few ours in the academy were some of the reasons for not providing instructions as expected.

2.11.3. Student-related Challenges

Students enrolled in the studied academies of sports were not problem free either. The students enrolled in the academy with a higher age than expected. Also, they had fear of failing performance tests, thus they disliked to take performance tests regularly. Issues related to performance assessment (sport-skills and fitness) resulted in anxiety and pressure on the part of the students in the academy of sport. More over age reduction during enrolment was a serious and continual problem in our sports academies. The institutions disciplinary punishment needs to be more meaningful because simply staying for a year does not necessarily mean students have come back with positive experiences. The sport academies need to improve the scientific nature of the selection instruments, particularly including psychological measures is most important.

2.12. Conclusion

The researcher Gray & Plucker, (2010) suggests that talent selection methods are often sporadic, lack criterion, and those selecting are uneducated regarding identification of athletic talent. An average citizen participated in sports can identify a coach who honestly believes that he can spot athletic talent simply by watching young players briefly. Coaches, educators, and parents ought ways to cultivate athletic interests of children, particularly given the multiple potential contributors to athletic talent, some of which might not emerge at a young age, and the variation in children's physical development.

If the athlete does not have the necessary facilities, or simply financially unable to participate in sports. Result in a sport that‘s becoming less likely to select and pose. Having high-level coaching, facilities and appropriate equipment material and spiritual sup- port, and being experts in sports science and sports medicine, along with those that can, and enduring talents known to bring great success. Better training, family support, professional coach and other appropriate sources of support, have an important role in achieving superior performance (M. Boostani et al., 2011).

The researcher Howe et al. (1998) conclude that: (1) A talent has its origin in genetically transmitted structures; (2) there are early indicators of talent; (3) talent provides a basis for assessing the chance of excelling; (4) only a minority of participants have special talents; and (5) the effects of a talent will be relatively specific.

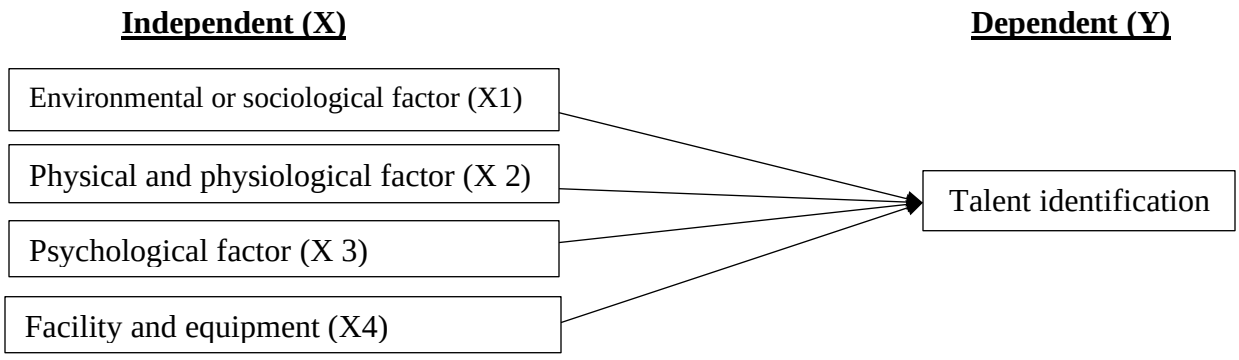
As a result of the study by Bonal et al., (2019) on the key factors on talent identification of expertise basketball players in China, the following conclusions can be drawn:

The “family tradition” (highly valued and strongly rooted in Chinese culture) is a very influential element for the player, when making the decision to play basket-ted in Chinese culture) is a very influential element for the player, when making the decision to play basketball and when overcoming difficulties along the way to the elite, is considered by the subjects as one of the main motivations. 2) The Chinese elite players negatively value the abandonment of the studies for the exclusive dedication to professional basketball. 3) Regarding the sporting context, participants describe their coaches as an important positive figure in their development, but also their perception of poor training structure, mainly due to an excessively high volume of training hours. 4) The Chinese elite players considered that playing international competitions and competing against foreign players entailed an enrichment of their tactical capacity, positively influencing the development of their talent. 5) Cultural factors and their transversal influence must be considered in all the dimensions of talent development, since in the case of basketball in China they have an important specific weight. Also the researcher mentioned that the application of advanced statistical method is vital in identifying essential performance parameters in the talent identification program which can save time, energy and cost. Coaches or other experts in the field could, in the future, find it useful to follow and improve performance, through the training process which could be most appropriate for specific sport.

Werkiani et al. (2012) recommended that anthropometric index which are height, body fat percentage, and size of palm was the most important factor of talent identification of badminton. Motor ability index like static and dynamic balance and hand strength was in the next level of importance. Furthermore, psychological capacity was in the third level of status. From this study researcher's view, educated and professional coaches can play significant role in the process of talent identification.

2.13. Researcher Conceptual Framework

Figure 2.1: Conceptual Framework between talent identification factors and talent identification



Source: developed by the researcher

The conceptual framework shown in figure 2.1 illustrates a summarized causal model for the effect of independent variables in the process of talent identification. The model indicates that how the independent variables (environmental or sociological factor, physical and physiological factor, psychological factor, facility and equipment factors) are related to the dependent variable (Talent identification). More specifically, this framework indicates independent variables that have impacts on the outcome variable namely talent identification.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1. Research Design

Descriptive survey research design method was employed to identify the predominant factors for talent identification, to examine the relationship between the practice and challenges faced and talent identification in the academy, to access the effect of (environmental, physical, psychological and facility and equipment) on talent identification and to identify the criteria's while selecting talented athletes.

Salaria, (2003) states that the distributive survey method is more appropriate to gather a variety of data related to the study and to analyze, Interpretation, comparison, identification of trends and relationships, and triangulate the data in the mixed type of quantitative and qualitative. Moreover, it was economical and rapidly turned round in data collection and identified the attribute of a large population from a small group of individuals.

3.2. Research Method

Both qualitative and quantitative methods (approaches) were employed in this study. It is a triangulation of different related research techniques, which refers to a combination of mainly qualitative and quantitative methods of data collection and analysis.

3.3. Source of Data

The study used both primary and secondary data as a source of data. Primary sources refer to academy athletics coaches, athletes, and academy directors. The secondary data sources were different athlete's talent identification-related statistical records and documents, reports, and various research literatures written on talent identification.

In order to attain the objectives of the study, valuable information would gather from different sources. Besides, triangulation of various data gathering tools used to obtain relevant information. An Intensive review of related literature would make to support the study with empirical knowledge in the area.

3.4. Method of Sampling

For the purpose of gathering the data for this study, stratified sampling technique was used to select participants for the questionnaire of the study and purposive sampling technics were applied to select coaches and academy directors.

3.4.1. Population of the Study

The total population of the study was: 9 academy athletics coaches, 91 athletes and 4 academy directors.

3.4.2. Sample of the Study

The researcher selected only **75** athletes from out of 91 athletes with a minimum sample size required by using Yemane (1967) formula $n = N/(1+N(e)^2)$. Where, n= sample size, N= Population size, and e= the margin of error. Then at 5% significance level, the total sample size $n = (91 / (1+ 91 (0.05)^2)$ is approximately equal to 75 units. The source indicated that most survey researches use a 95% confidence level and a±5% precision level.

Five athletics coaches and two relevant persons from academy directors are selected from Ethiopian youth sport academy by the use of purposeful sampling technique.

3.5. Data Collection Instrument

The researcher used three main kinds of data collection instruments, which are five point Likert scale model questioners for athletes, Semi-structured interview for academy directors and coaches and document analysis.

3.6. Procedures of Data Collection

First, designed the research instruments (questionnaire and Semi-structured interview), the research sites and sample size of participants would be identified. Secondly, set the date and time of contact to determine questionnaires and distribute to respondents. Finally conduct interviews, complete the data collection and document analysis, then processing the raw data or analysis would follow accordingly.

3.7. Method of Data Analysis

The organized data gathered were analyzed and interpreted by descriptive and inferential statistical methods using SPSS (Statistical Package for the Social Science) version 20.

3.8. Validity and Reliability

3.8.1. Validity

Validity is defined as the extent to which a concept is correctly in a quantitative research (Heale & Twycross, 2015). It's important to consider validity and reliability of the data collection tools (instruments) when either conducting or critiquing research (Heale & Twycross, 2015).

3.8.2. Reliability

Reliability tells about the consistency of a measure (Heale & Twycross, 2015). According to (George, 2016) Chronbach's alpha is designed as a measure of internal consistency; alpha is measured on the same scale as a Pearson r (correlation coefficient) and typically varies between 0 and 1. Despite the fact a negative value is acceptable, such a result shows a scale in which some items measure the opposed of what other items measure. The closer the alpha value is to 1.00, the greater the internal consistency of items in the instrument being assessed. A rule of thumb that applies to most situations is:

Table 3.1: Chronbach's alpha value

a > 0.9 — Excellent	a > 0.8 — Good
a > 0.7 — Acceptable	a > 0.6 — Questionable
a > 0.5 — Poor	a < 0.5 — Unacceptable

Source: (George, 2016)

Table 3.2: Reliability Test of the Study

Item (Variable)	Cronbach's Alpha	N of Items
Environmental factor (Sociological factor)	.968	21
Physical and Physiological characteristics	.883	16
Psychological factors	.925	11
Facility and equipment	.895	6
Talent identification	.836	10

Source: Survey Data, 2020

As you see from the above tables 3.2 results of all Cronbach's Alpha is greater than 0.8. According to (George, 2016) if the value of Cronbach's alpha is > 0.8, it means that the internal consistency of all questionaries' is good and excellent. Therefore the questioner is reliable.

3.9. Variables

3.9.1. Dependent Variable

Dependent Variables are type of variables that are measured using independent variables. It's the result of the participants' actions and can be altered as the outcome of the participants' actions (Townsend & Townsend, 2006).

The purpose of this research was to examine the practice and challenges of identifying talented athletes, as a result, the dependent (outcome) variable evaluated by talent identification.

3.9.2. Independent Variable

Independent Variables are ones who are conducting the experiment or manipulate to identify a particular factor. Independent variables are also known as factor or prediction variable (Townsend & Townsend, 2006).

Based on specific objectives set at the beginning, the independent variable was practice and challenges, such as (facility and equipment, psychological factor, physical and physiological factor, environmental or sociological factor).

3.10. Model Specification

The study applied linear regression model. This model has two parts. The first part of the model contains the independent variable practice and challenges (facility and equipment factors, psychological factor, physical and physiological factor, environmental or sociological factor) and the second part of the model was the dependent (talent identification) variable. The equation used in the study was:

$$Y=\beta o+\beta 1X1+\beta 2X2+\beta 3X3+\beta 4X4+\varepsilon$$

Where:

- Y- dependent variable
- βo –Constant (intercept)
- β1,β2,β3, and β4 are parameters to be estimated or slope
- X1, X2, X3, and X4, are independent variables (X1= Environmental or sociological factor, X2= Physical and physiological factor, X3= Physical and physiological factor and X4= Facility and equipment)
- Ɛ- error term (standard error)

3.11. Ethical Consideration

Measures have been taken to ensure the respect, dignity and freedom of each participant of the study. Complete confidentiality of the study subjects has also been emphasized. Before the data collection, the purposes of the study were explained to the participants and they have been asked their consent to participate in the research. The participants were also informed that the information they have provided would only be used for the study purpose and that it could not be given to a third party. Furthermore, the researchers guaranteed confidentiality by making the participants anonymous. The researcher was also committed to report the research findings in a complete and honest fashion, without misleading others about the nature of the findings. Finally, the researcher has taken appropriate measures to ensure the research would cause no physical or psychological harm to research participants.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.1. Introduction

This chapter deals with data analysis, discussions and interpretation of the results of the data collected from Ethiopian youth sport academy athletes, athletics coaches and academy directors through questionnaire and semi-structured interview.

4.2. Demographic Characteristics of Respondent

The demographic characteristics of the respondents (i.e. gender, age and educational level) were presented**.**

Table 4.1: Demographic characteristics of respondent

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Gender				
Man	44	58.7	58.7	58.7
Female	31	41.3	41.3	100
Total	75	100	100	
Age				
15-17	47	62.7	62.7	62.7
17+	28	37.3	37.3	100
Total	75	100	100	
Educational level				
High school	59	78.7	78.7	78.7
Preparatory	16	21.3	21.3	100
Total	75	100	100	

Source: Survey data 2020

The demographic characteristics of the respondents (i.e. gender, age, educational level) were presented. Table 4.1 shows that, the gender, age and educational distribution of sample respondents. From the total of 75 samples of respondents 44 (58.7%) were male respondents and 31 (41.3%) were female respondents. Generally, it means that regarding respondents of gender, the majority of respondents were male. Moreover, regarding age, from the total sample respondents 47 (62.7%) of the respondents age were between fifteen up to seventeen years old and 28 (37.3%) were greater than seventeen years old. Thus, from total sample respondents the majority of respondent's age was between fifteen and seventeen years old. Finally, regarding the educational level of respondents, 59 (78.7%) of the respondents' educational level were at the high school level and 16 (21.3%) were at preparatory level. Thus, it means that from total sample respondents the majority of respondents in this study were at the high school level.

4.3. The Dominant Factors on Talent Identification

The researchers asked the respondents to rate 65 items of the questionnaire divided into sections pertaining to, talent influencing factors targeted to assess their perception. The items were subdivided in terms of questions related to Environmental or sociological, physical and physiological, facility and equipment, and psychological factor.

Table 4. 2: The dominant factor on talent identification

Factors	Mean	Std. Deviation	N
Environmental or sociological factor	1.7416	.52796	75
Physical and physiological factor	1.5208	.17387	75
Psychological factor	1.4715	.30251	75
Facility and equipment	1.7533	.38199	75

Source: Survey Data, 2020

As shown in Table 4.2, the mean average of the respondents' perception as related to their Environmental or sociological factor is 1.7416 with a standard deviation of 0.52796. On the other hand, the second item shows the mean average of the items has found to be 1.5208 with a standard deviation of 0.17387 implying their expression of physical and physiological factor. In the same vein, the third item shows the perception of employees towards Psychological factor, it found to be 1.4715 with a standard deviation of 0.30251. The fourth item in Table 4.2 shows the Facility

and equipment. The mean of the items related to Facility and equipment was 1.7533 with a standard deviation of 0.38199.

4.4. The Effects of (Facility and Equipment, Psychological, Physical and Physiological, Environmental or Sociological Factor) on Talent Identification

This sub-section presents to what extent the overall factors affected the talent identification because of (facility and equipment, psychological, physical and physiological, environmental or sociological factor) to the independent variable. The results of linear regression models summarized and presented in table 4.3 as follows:

Table 4.3: Regression Coefficients of factors that affect talent identification.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.961	.099		9.679	.000
	Environmental or sociological factor	.155	.055	.322	2.828	.006
	Physical and physiological factor	.401	.091	.275	4.428	.000
	Psychological factor	.218	.069	.260	3.160	.002
	Facility and equipment	.118	.037	.178	3.166	.002
a. Dependent Variable: talent identification						

Source: Survey Data, 2020

From the above table 4.3 regression coefficient interpreted unstandardized coefficients (β) as follow: talent identification had a positive index of 0.961. Environmental or sociological factor (X1), Physical and physiological factor (X 2), Psychological factor (X 3), Facility and equipment (X4), and ε has held constant. This implies that as Environmental or sociological factor improves by one-unit, the talent identification increases by 0.155 units, when Physical and physiological factor improves by one-unit, the talent identification increases by 0.401, if Psychological factor improves by one-unit, and the talent identification increases by 0.218. When the facility and equipment improves by one- unit, the talent identification also increases by 0.118. The relationship is significant when P-value is less than the significance level ($P < 0.01$). The value of t shows that the significance or insignificance of the effects of independent variable upon dependent variable. If the value of t is greater than 2, the results will be significant (George, 2016). Here, the value of t for the four factors was greater than 2 (two), this shows that the influence of four factors was significant. Additionally, standardized coefficient beta values interpreted as follow Environmental or sociological, Physical and physiological, Psychological factor, and Facility and equipment Beta values are, 0.055, 0.091, 0.069, and 0.037 respectively. The most influential predictor factors was Environmental or sociological factor (Beta = 0.322) with a relative importance of 2.828 (T-test). Physical and physiological factor (Beta=0.275) is the significant influential predictor of talent identification with a relative importance of 4.428 (T-test). Psychological factor (0.260) is the significant influential predictor of talent identification with a relative importance of 3.160 (T-test) and Facility and equipment (0.178) is the significant influential predictor of talent identification with a relative importance of 3.166 (T-test).

According to the above interpretation, each type of factors has effect on talent identification in the academy. All factors have positive significant effect on talent identification. Based on the result shown on Table 4.3 the regression equation described as follows:

$$Y= 0.961+0.155X1+0.401X2+0.218X3+0.118X4+ 9.679$$

4.4.1. Correlation Analysis

Correlation is a degree of association among two variables. According to George, (2016) positive values of r indicate positive correlation between the two variables (i.e., changes in both variables take place in the stated direction), whereas negative values of ‘r’ indicate negative correlation i.e., alterations in the two variables taking place in the reverse directions. A zero value of ‘r’ indicates

that there is no association among the two variables. When r = (+) 1 (one), it indicates perfect positive correlation and when it is (–) 1, it point to perfect negative correlation. Also the coefficient of correlation between 0 and 1 interpreted as: The correlation coefficient (r) ranging from 0.10 to 0.29 it shows as indicating a low degree of correlation, r ranging from 0.30 to 0.49 it considered as a moderate degree of correlation, and if r ranging from 0.50 to 1.00 it indicated as strong or high degree of correlation. In this study determines the strengths of relationship between (the factors and talent identification).

Table 4.4: Correlation between the factors and talent identification

Factors		Talent identification
Environmental or sociologic factor	Pearson Correlation	.965**
	Sig. (2-tailed)	.000
	N	75
Physical and physiological factor	Pearson Correlation	.928**
	Sig. (2-tailed)	.000
	N	75
Psychological factor	Pearson Correlation	.915**
	Sig. (2-tailed)	.000
	N	75
Facility and equipment	Pearson Correlation	.886**
	Sig. (2-tailed)	.000
	N	75
**.Significant correlation at the 0.01 level (2-tailed).		

Source; Survey Data, 2020

Table 4.4 illustrates that, the relationship between dependent (talent identification) variable and independent (Environmental or sociologic, Facility and equipment, Physical and physiological, and Psychological) variable. As it tested in a two-tailed Pearson's correlation analysis, the relationship of each dependent and independent variable described below.

The data shows related to the environmental or sociologic factor with talent identification correlate, (r = .965 with 0.00 significance) shows that there was a high degree of correlation, there was statistically significant relationship between environmental or sociologic factor and talent

identification. Because the Pearson correlation coefficient (r) was 0.965, which found between 0.50 and 1.00, therefore the strength was high and significant at 0.01 confidential levels.

In the same vein, the correlation between Physical and physiological factor and talent identification was a Pearson correlation coefficient (r) (0.928 with 0.00 significance value) this implies that Pearson correlation coefficient (r) ranging from 0.50 to 1.00, it indicating a high degree of correlation, having positive and significant relationship between Physical and physiological factor and talent identification. Similarly, the correlation between psychological factor and talent identification was a Pearson correlation coefficient (r) (0.915 and with 0.00 significant). Therefore, it was associated a high degree of correlation and statistically significant.

Finally, the association between facility and equipment with talent identification, the result shows that Pearson correlation coefficient (r) is .886 and 0.000 significant it indicating a high degree of correlation and relationship between significant.

4.4.2. Test of Model Fit

Before considering the model, test of model fit has made based on the key assumptions of Linear regressions proposed by George, (2016).

4.4.2.1. Collinearity Test

One of the key assumptions is that the independent variables are not highly correlated with each other or there should be no multi-collinearity problem. This assumption has tested using Variance Inflation Factor (VIF) values George, (2016). Accordingly if the VIF is equal to 1 there is no multicollinearity among factors (i.e.) we are in a good shape, but if the VIF is greater than 1, the protectors implies moderately correlated, a VIF between 5 and 10 indicates high correlation that may be problematic.

Table 4. 5: Collinearity Analysis

		Co-llinearity Statistics	
1	Variable	Tolerance	VIF
	(Constant)		
	Environmental or sociological factor	.743	1.346
	Physical and physiological factor	.624	1.603
	Psychological factor	.689	1.451
	Facility and equipment	.590	1.695
Dependent Variable: Talent identification			

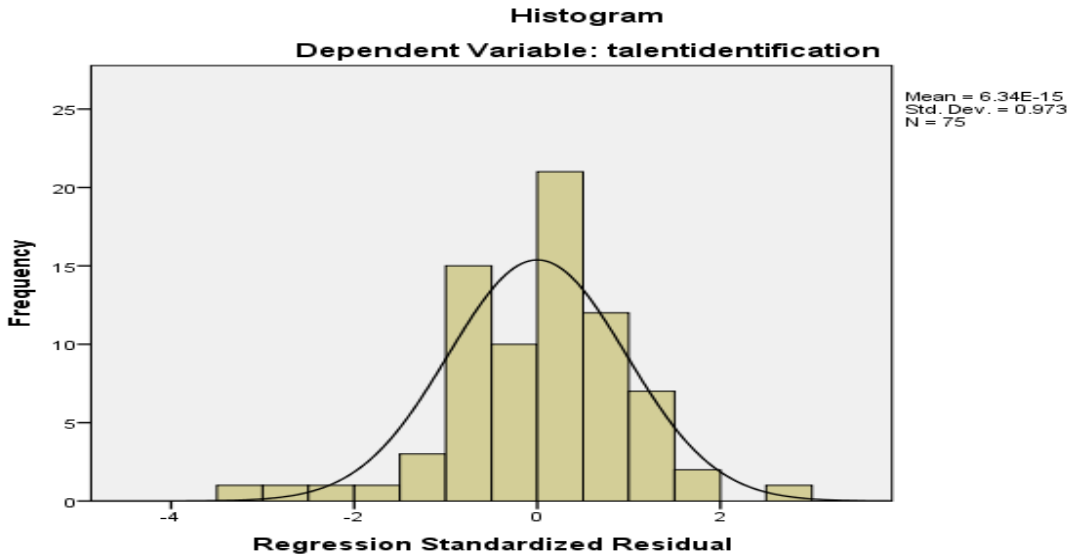
Source: Survey data, 2020

As shown in Table 4.5 the independent variables are not highly correlated with each other as VIF (variance inflation factor) values for all items is below 2 implying no multi-collinearity problem among the independent variables.

4.4.2.2. Normality Test

The normality of the distribution of the independent variables was shown in histogram shown in Figure 4.1. The test of multivariate normality as shown in histogram clearly shows the residuals are normally distributed. Hence, the data met the assumption of multivariate normality of the independent variables.

Figure 4.1: Histogram of Regression Standardized Residual

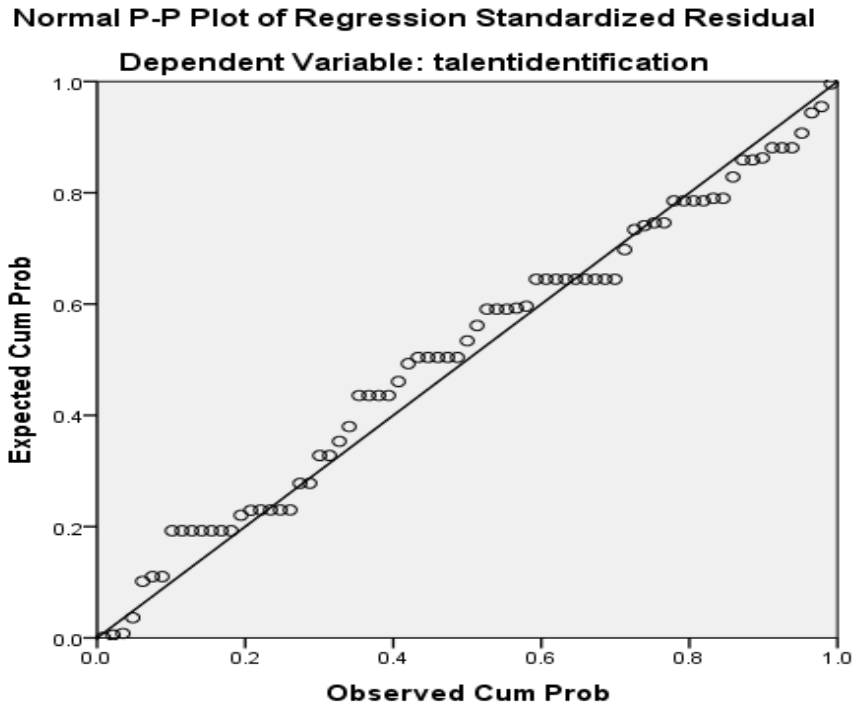


Source: Survey data, 2020

4.4.2.3 Homoscedasticity Test

This assumption refers to equal variance of errors across all levels of the independent variables. A plot of standardized residuals versus predicted (independent) values can show points equally distributed across all values of the independent variables. A plot of standardized residuals versus predicted values be able to demonstrate whether points are equally distributed across all values of the independent variables (George, 2016).

Figure 4. 2: Plot of Standard Residual



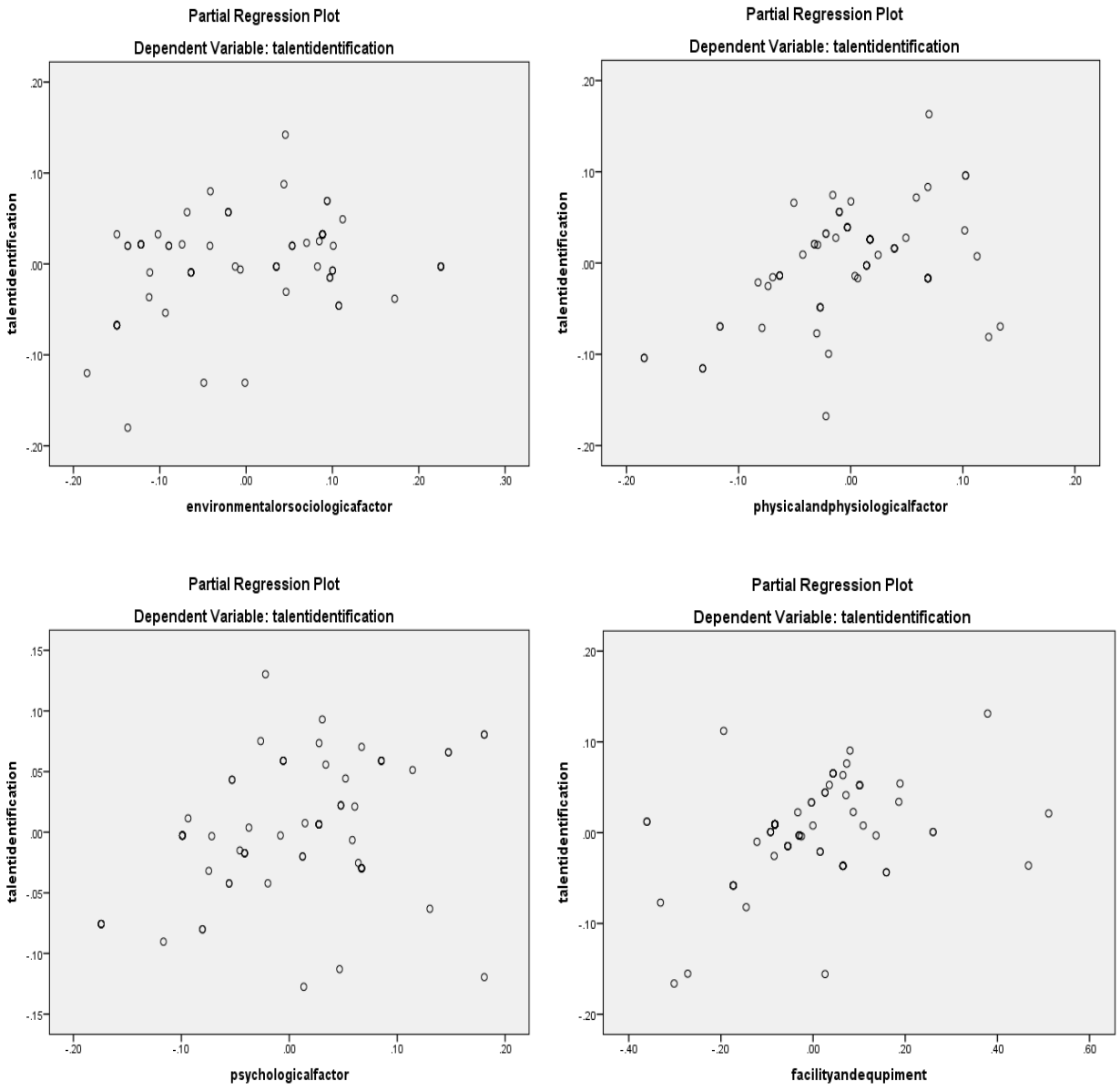
Source: Survey data

As displayed in the above figure 4.2. The spread of the residuals were moderately constant at each point of the predictor variables (or across the linear model), all the plots are equally distributed hence there is no homoscedasticity problem.

4.4.2.4 Linearity Test

The bivariate plot of the predicted value against residuals can help us conclude whether the relationship of the predictors (independent variables) to the outcome (dependent variable) is linear. Hence; using visual inspection of the scatter plot, it can be suggested about the linearity. Looking at the scatter plot of each independent variables, it appears that the relationship of standardized predicted to residuals is concentrated around specific point. Hence, we can conclude that the relationship between the response (outcome) variable and predictors (independent) is linear (George, 2016).

Figure 4.3: Scatter plot of Partial Rogation



Source: Survey data, 2020

Scatter plots made the test of linear relationship as displayed figure 4.3. It shows the existence of linear relationship between each outcome variables and the independent variables.

4.4.3. Regression Coefficient Analysis

The study sought to investigate the effects of each independent variable (environmental or sociologic factor, physical and physiological, facility and equipment and psychological factor) on talent identification have been regressed using linear regression model ($Y= \beta0 + \beta1X1 + \beta2X2+ \beta3X3 + \beta4X4 + \varepsilon$). Then, the effects of each variable (independent variables) have been regressed by using the weighted values of aggregate on talent identification as dependent variable. This provided regression coefficient (beta value) which indicated the effects, direction and degree of contribution made by each independent variables to the dependent variable. R- square (coefficient of determination tells that how much variation is taking place in the dependent variable (Talent identification) due to the variation in the independent variable (environmental or sociologic factor, physical and physiological, facility and equipment and psychological factor).The p-value indicates the statistical significance of the relationship between the dependent and independent variables. The model adequacy and fitness checked before running the regression analysis based on the statistical requirements as indicated in the summary tables. Before the analysis was made, normality and multi co-linearity tests have been performed to check whether the assumptions required to run regression analysis was satisfied or not.

Table 4.6: Model Summary of Regression Analysis

Model Summary[b]									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.981[a]	.962	.960	.05100	.962	439.987	4	70	.000
a. Predictors: (Constant), facility and equipment, psychological factor, physical and physiological factor, environmental or sociological factor									
b. Dependent Variable: talent identification									

Source; Survey Data, 2020

Table 4.6 describes the relationship between the model (facility and equipment, psychological factor, physical and physiological factor, environmental or sociological factor) and the dependent variable (talent identification). R shows that the multiple correlation coefficients, and its correlation between all the predictor variables and dependent variables which was 98.1%. R square describes that the goodness-of-fit or the amount of variance explained by a given set of predictor.

Hence, the result of the regression analysis based on facility and equipment, psychological r, physical and physiological, environmental or sociological factor, 96.2 % of the variance in the talent identification was explained by the four factors (facility and equipment, psychological, physical and physiological, environmental or sociological).The remaining 3.8 % was due to unexplained variability. The R squared value for combination of the four factors found to be 0.960. Therefore, the four independent variables were important factors to identify the talented players.

4.5. Response from Interview

An interview was one of the researcher data gathering tools. These interviews were preparing only that of the executive or appointed five academy athletics coach and two academy directors. The interviewers respond the following:

All appointed coaches had an MSc degree by athletics coaching and they were experienced in athletics coaching so they had full awareness towards scientific talent identification process, also academic directors were highly experienced on their position.

First of all after checking the receiving capacity of the academy the number of talented athletes that join the academy would be set. Then the academy prepares an organized team member to select talented athletes from all over the country specially focused on potential areas, Ethiopian sport federation and Ethiopian athletics federations also included in the process of talent identification. Most athletes are selected from project athletics competition, inter school athletics competition and from the competition prepared by the academy to select talented athletes. The final screening of all talented athletes was taking place in the academy.

The problems that the academy face in the process of talent identification are: lacks of professionals even after training some professionals were not even devoted or not committed, shortage of time and budget, lack of support by regional sport federations, lack of sports training centers, lack of support from community or parents, lack of facility and equipment which were used for talent identification process, lack of technologies, challenges to know the exact age of an athlete and lack of awareness of athletes about talent identification.

On the process of selecting talented athletes the academy tries to considers all kinds of factors that affect the talent of an athlete specially social or environmental factors, anthropometric, psychological factors and facility and equipment take into consideration because all the academy

coaches and directors believes that all the major factors mentioned on the above highly affect talent of an athletes, but it needs further work on it.

Almost all talented athletes were selected based on the tentative standard criteria of the academy, but the application of those criteria's needs some modification and modernization. Age and health status of an athlete were the first criteria of the academy for the process of selecting talented athletes then competition result of athletes, anthropometric measurements (height, calf circumference, thigh circumference), Physical fitness test (standing broad jumping test, vertical jump test, sit and reach test) and psychological tests are other criteria's of the academy to select talented athletes. All the above mentioned criteria's has their own grade, finally an athletes which had higher cumulative result would join the academy.

The athletes had luck of awareness and knowledge about talent identification procedure, luck of guidelines manuals that should be followed by coaches for talent identification, luck of strategic plan, lack of motivation or commitment, lack of test instruments and lack of support from stake holder.

4.6. Discussion

The study revealed that facility and equipment were relatively the dominant variables used by the academy in talent identification, followed by environmental or sociological, Physical and physiological, Psychological factors. The results of findings show that the mean score of the four independent factors (environmental or sociological, physical and physiological, psychological factor, facility and equipment) were 1.7416, 1.5208, and 1.4715 and 1.7533 respectively. Moreover, the information obtained from the interviewed the academy coaches and the academy directors' supports the above-mentioned result, facility and equipment factor was dominantly practiced by the academy because facility and equipment highly affect the result of the athletes. So, the academy fulfills major sports facility and equipment for athletes, the academy considers all environmental or social factors in the process of selecting talented athletes because social of environmental factors affect the talent of an athlete, all the athlete's physical fitness was tasted by the academy to know the physical fitness level of the athletes and also different psychological variables were taken into consideration.

To show the effects of an independent variable on talent identification the study conducted correlation analysis, normality and multi co-linearity test and regression analysis. Regarding

correlation analysis, the findings shows that all factors (environmental or sociological, physical and physiological, psychological factor, facility and equipment) that there was positive, means that talent identification has a direct relationship with all independent factors (environmental or sociological, physical and physiological, psychological factor, facility and equipment), a high degree of correlation, and statistically significant relationship between each factor and talent identification with continuance commitment at 0.01 confidence level because each independent variables, Pearson correlation coefficient (r) was found between 0.50 and 1.00.

Regarding regression analysis, the standardized coefficient (Beta= 0.401) shows that the physical and physiological factors more to the model or highly affecting talent identification. In other words, 40% of change the effects explained by the variation in talent identification, it means that physical and physiological factors are very important in the process of selecting talented athletes, because it highly affects the talent of an athletes. Next to physical and physiological factor, a psychological factor that affects talent identification positively indicated by the standardized coefficient (Beta= 0.218). In other words, 21.8 % of change the effects explained by the variation in talent identification. The researchers M. A. Boostani et al. (2011) and Helsen et al. (2000) support this findings by concluding that each athletic field demands special physiological and psychological needs. Besides, Environmental or sociological factor that affects talent identification positively indicated by the standardized coefficient (Beta= 0.155). In other words 15.5% of change the effects explained by the variation in talent identification Finally Facility and equipment affect talent identification positively indicated by the standardized coefficient (Beta= 0.118), or it means that, 11.8 % of change the effects explained by the variation in talent identification.

The findings regarding criteria of talent identification age and health status of an athlete were the first criteria of the academy for the process of selecting talented athletes then anthropometric measurements (height, calf circumference, thigh circumference), Competition result of athletes, Physical fitness test (standing broad jumping test, vertical jump test, sit and reach test) and psychological tests are the major criteria's of the academy to select talented athletes. All the above-mentioned criteria's has their own grade, finally, an athlete who had higher cumulative result would join the academy. The researchers (Helsen et al., 2000; Gonçalves et al., 2012) also support these findings.

CHAPTER FIVE

SUMMERY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summery

In the particular Academy, facility and equipment were relatively the dominant variables considered by the academy in talent identification, followed by environmental or sociological, Physical and physiological, Psychological factors.

The Correlation analysis proved that there is a strong positive significant relationship between each variable (environmental or sociological, Physical and physiological, Psychological factor, Facility and equipment) and talent identification.

To identify the effect on talent identification the study conducted Adjusted R-square regression analysis. The result illustrates that 96.2 % of the independent variable (environmental or sociological, Physical and physiological, Psychological factor, Facility and equipment) affected the talent identification. This clearly shows that each independent variable has a significant effect on talent identification process in the academy.

Athletes age, health status, anthropometric measurements, athlete's competition result, athletes physical fitness tests result (speed, strength, endurance, flexibility, power) and athlete's psychological variables (discipline, self-confidence, motivation, commitment) are the major criteria to select talented athletes.

5.2. Conclusions

Basically, talent identification is the backbone for getting elite athletes or it's a key to success for all sports at the regional or national level. Without modern and scientific talent identification, it is impossible to get the future change on an athlete. Establishing sports academy by itself is not a success, but should have to be responsible bodies and professionals in the field that can regularly manage the talent identification process and by identifying the challenges that hang the screening of talented athletes. Application of the progressive statistical method is important in identifying essential performance parameters in the process of selecting talented athletes, which can save Cost, time and energy.

Therefore, this research paper has investigated some of the issues related to the practice and challenges to identify talented athletes in athletics events at the Ethiopian youth sports academy. So based on the major findings of the study summarized below the following conclusions are forwarded.

Facility and equipment were relatively the dominant variables considered by the academy in the talent identification process, followed by environmental or sociological, Physical and physiological, Psychological factors.

The independent variable (environmental or sociological, Physical and physiological, Psychological factor, Facility and equipment) highly affected the talent identification. This is clearly shown that, each independent variable has a significant effect on talent identification in the academy. Since the following are the major weakness in the talent identification process. The players lack awareness and knowledge about talent identification procedure, lack of professionals in the field, the lack of guideline manuals that should be followed by coaches for talent identification, lack of strategic plan, lack of motivation or commitment, lack of manuals and test instruments and lack of support from stakeholders.

Age, Athletes health status, Anthropometric measurements, competition result, physical fitness (speed, strength, endurance, flexibility, power), skills and techniques while performing, psychological readiness and athletes discipline are the major criteria to identify the athlete that he/she is talented or not.

Scientific training method, Social support (family, coach, and friend), professional coaching style, building more training centers for athletics, and other appropriate sources of support, have a significant effect to get more talented athletes.

5.3. Recommendation

- Prepare and apply standardized modern scientific criteria or talent identification manual which is supported by technologies to reduce complexity and subjectivity of the talent identification process,
- Work on coaching expertise at the grassroots level from the project up to national level,
- Build more training centers, especially in rural areas,

- All the factors (physical, physiological, psychological, environmental or social factors and others) must take into considerations on the process of selecting talented athletes,
- Fulfill basic athletics facility and equipment's for the process of talent identification,
- Give full attention or follow-up and support from all concerned bodies,
- Prepare frequent and continuous strategic competition opportunities within the region and gives a chance for athletes to participate in it,
- Motivate athletes by giving a good moral and support who participates in the competition,
- Produce a healthy and strong bond between regional and national athletics federations, regions, and academy,
- Build talent identification center at a regional and national level.

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APPENDIX - A

QUESTIONNAIRE

Addis Ababa University School of Graduate studies

Department of Sport Science

Questionnaire to be filled by the Ethiopian youth sport academy athletes

Objective of the Questionnaire:

The main objective of this questionnaire is to collect data from the concerned bodies to assess practice and challenges in identifying talented athletes in some selected running events at Ethiopian youth sport academy, Addis Ababa.

Dear all respondents'! This is kindly to inform you that the Information which is obtained from you with this questionnaire is essential for the success of the study. Therefore; please read and answer each of the items carefully and honestly.

Thank you in advance for all your cooperation!

Note

- No need of writing your name.

Part 1. General Information

1. Sex: Male ☐ Female ☐
2. Age:_____
3. Educational Status(Grade): Elementary ☐ High School ☐ Preparatory ☐ Collage ☐

Part 2. Questionnaire Items (Main part)

Please indicate your response by placing tick (√) mark in the corresponding box of your choice.

Rating: Strongly agree=1, Agree=2, Neither agree nor disagree=3, Disagree=4, Strongly disagree=5

Practice and Challenge							
No	**Items**	**Questions**	**Alternatives**				
			1	**2**	**3**	**4**	**5**
1	**Environmental factor (Sociological factor)**						
		1.01. Athletics is attractive (lovely) sport in your region.					
		1.02. Athletics sport mostly practiced in your area.					
		1.03. Families are the main factor for your talent.					
		1.04. Your families were very happy and supportive when you join the academy.					
		1.05. Coach is the main factor for your talent.					
		1.06. Your coach were very happy and supportive when you join the academy.					
		1.07. Friends are the main factor for your talent.					
		1.08. Your friends were very happy and supportive when you join the academy.					
		1.09. School teachers are the main factor for your talent.					
		1.10. School teachers highly support you to involve in athletics sport.					
		1.11. Demographic characteristics of your living area is the major factor to your talent.					
		1.12. A lot of model elite athletes around your living area is the major factor to your talent.					
		1.13. Weather condition highly affect your talent					
		1.14. Weather condition in your area is suitable for athletics sport.					
		1.15. The first time you perform athletics at school.					
		1.16. The academy recruit you from inter school athletics competition.					
		1.17. The academy recruit you from the project.					
		1.18. There are a lot of sport training centers in your area.					
		1.19. Sport federation on your region gives a good attention for athletics sport.					
		1.20. Sport federation were very supportive when you join the academy.					
		1.21. The academy consider all kind of environmental (Sociological) factors in the process of selecting talented athletes.					

Practice and Challenge							
No	**Items**	**Questions**	**Alternatives**				
			1	**2**	**3**	**4**	**5**
	Physical and Physiological characteristics	2.01. Anthropometric measurements (High, weight, BMI, body composition, somatotype, muscle girth …) is the best criteria to identify your talent.					
		2.02. The academy check your anthropometric measurement (Height, weight, BMI, muscle girth, body fat composition …) as talent identification criteria.					
		2.03. Your somatotype is very suitable for athletics.					
		2.04 Your physical strength is an indicator for your talent.					
		2.05. The academy test your physical strength using different types of tests.					
		2.06. Your physical power is an indicator for your talent.					
		2.07. The academy test your physical power using different types of tests.					
		2.08. Your aerobic endurance is an indicator for your talent.					
		2.09. The academy test your aerobic endurance using different types of tests.					
		2.10. Your anaerobic power is an indicator for your talent.					
		2.11. The academy test your anaerobic power using different types of tests.					
		2.12. The academy check your health status on the process of selecting talented athletes.					
		2.13. You are free from chronic disease (Blood pressure, heart case, diabetes …).					
		2.14. Doping highly affect your talent.					
		2.15. The academy apply doping test on the process of selecting talented athletes.					
		2.16. The academy consider all kind of Physical and physiological factors in the process of selecting talented athletes.					
3	**Psychological factors**	3.01. Your psychological readiness is the main factor for your talent in the process of selecting talented athletes in the academy.					
		3.02. Your Intrinsic motivation is the main factor to your talent.					
		3.03. Your extrinsic motivation is the main factor to your talent.					
		3.04. Your personality is the main factor on the process of selecting talented athletes.					
		3.05. Your commitment is one of the criteria on the process of selecting talented athletes.					
		3.06. Your Self-confidence is one of the major factor that affect your talent on the process of talent identification.					
		3.07. Anxiety highly affect your talent on the process of selecting talented athletes.					
		3.08. Stress highly affect your talent on the process of selecting talented athletes.					
		3.09. Arousal highly affect your talent on the process of selecting talented athletes.					

Practice and Challenge							
No	**Items**	**Questions**	**Alternatives**				
			1	**2**	**3**	**4**	**5**
		3.10. Your concentration is the main factor on the process of selecting talented athletes.					
		3.11. The academy consider all psychological factors In the process of selecting talented athletes.					
4	**Facility and equipment**	4.1. All the necessary sport facilities and equipment's (Fitness testing materials and others) are fulfilled by the academy in the process of selecting talented athletes.					
		4.2. There were enough sport facilities and equipment's (Fitness testing materials and others) in the academy to test fitness level of talented athletes.					
		4.3. Good infrastructure is a good opportunity to show your talent on the process of selecting talented athletes.					
		4.4. The quality of facility and equipment for athletics affect the talent of an athletes in the process of talent identification.					
		4.5. The complexity of machineries (like Treadmill and other fitness testing machineries) in the academy highly affect your talent on the process of selecting talented athletes.					
		4.6. The academy consider all the factors of facility and equipment on talent of athletes in the process of Selecting talented athletes.					
Talent identification							
5		5.1. The criteria and the process of talent identification in the academy is simple and clearly understandable.					
		5.2. Winning the competition is one of the major criteria of the academy to select talented athlete.					
		5.3. Familiarity of coach and athletes are the major criteria of the academy to select talented athletes.					
		5.4. Athletes class grade (Rank) is one of the major criteria to select talented athletes.					
		5.5 Sport training centers in our country is the main factor to get more talented athletes.					
		5.6. The academy has its own standard to select talented athletes in the process of talent identification.					
		5.7. The academy applies scientific method of talent identification to select talented athletes.					
		5.8. Athletes age difference has an effect on the process of talent identification.					
		5.9. Athletes family back ground is the major factor on the process of selecting talented athletes.					
		5.10. There was a brief orientation about talent identification criteria by academy coaches or by the academy officers to all athletes before talented athletes are selected.					

APPENDIX - B

INTERVIEW QUESTIONS

Semi-Structured Interview Question for Ethiopian Youth Sport Academy Directors:

1. How the talented athletes join in to the academy?
2. Is there a standard criteria to select athletes in the academy in the process of talent identification?
3. What kind of challenge or constraints the academy face while selecting talented athletes? And what kind of measure do you apply to solve those problems?
4. What are the key determinants of talent identification?
5. From the key factors of talent identifications like Psychological, physiological, environmental, on which one the academy gives priority?
6. What are the effect of those key determinant on the talent of athletes on the process of talent identification?
7. What kind of criteria is more effective to select talented athletes?
8. How the academy support and supervise at the process of talent identification?
9. What do you recommend about the practice of talent identification process?

APPENDIX - C

INTERVIEW QUESTIONS

Semi-Structured Interview Questions for Ethiopian Youth Sport Academy Athletics Coaches:

1. How the talented athletes join in to the academy?
2. Is there a standard criteria to select athletes in the academy in the process of talent identification?
3. What kind of challenge you face while selecting talented athletes?
4. What are the key determinants of talent identification?
5. From those key determinants or factors which one is highly affect the talent of an athlete?
6. What are the effect of those key determinant on the talent of athletes on the process of talent identification?
7. What kind of criteria is more effective to select talented athletes?
8. What do you recommend about the practice of talent identification process?