PERFORMANCE PROFILE AMONG ARCHERS IN RELATION TO PERFORMANCE PRIDICTION

A dissertation Submitted to the

Lovely Professional University

In partial fulfillment of the requirements for the

Award of degree of

MASTER OF PHILOSOPHY

By

AMRINDERPAL SINGH DHILLON

Regd.no. 11412735

LOVELY PROFESSIONAL UNIVERSITY

PHAGWARA, PUNJAB (INDIA)

2015

CERTIFICATE

This is to certify that Amrinderpal Singh Dillon has completed her Dissertation titled *"**PERFORMANCE PROFILE AMONG ARCHERS IN RELATION TO PERFORMANCE PRIDICTION"** under my guidance and supervision. To the best of my knowledge, the present work is result of her original investigation and study. Not any part of the dissertation has even been submitted for any other degree or diploma.

DATE ………………

                                              Supervisor

                                              Dr. Vijay Prakash

                                              Assistant Professor of Physical Education

                                              Lovely School of Education and Humanities

                                              Lovely Professional University Phagwara

                                              (Punjab)

DECLARATION

  I hereby declare that the dissertation titled "**PERFORMANCE PROFILE AMONG ARCHERS IN RELATION TO PERFORMANCE PRIDICTION**" Submitted for M.Phil. Degree is my original work and all ideas and references have been duly acknowledged. It does not contain any work for the award of any other degree or diploma form any education institution or University.

Date _____

           Investigator

           AMRINDERPAL SINGH DHILLON

           M.Phil. (Physical Education)

           Registration No. 11412735

Abstract

Aim of the present study is to examine the Performance Profile among Archers in relation to Performance prediction**.** The subjects for the study were 14 athletes (7 each) from the game of archery, the age group of 18-28 years, having the playing experience of 4/12 years and have had the experience of participating in tournament of State; International level competition was single group design. In order to understand the rate of progression in all the dependent variables descriptive statistics t test was applied. Results of the study shows that it was find out the significance difference between the variable t-test was applied and each variable was tested on 0.05 level of confidence. Significant difference was found between Elite and Non-Elite Archers in Anthropometric variables. Significant difference was found between Elite and Non-Elite Archers in physical performance. Significant difference was found between Elite and Non-Elite Archers in psychological variables. Significant difference was found between Elite and Non-Elite Archers in Actual performance.

Keywords- selected anthropometric measurements on archers, profiling anthropometric, physical performance and psychological

ACKNOWLEDGEMENTS

LIST OF TABLES

LIST OF FIGURES

13.	Mean Score of Elite(International) and Non Elite(National) Athletes on the Variable Toe – Balance	44
14.	Mean Score of Elite(International) and Non Elite(National) Athletes on the Variable Ankle – Balance	45
15.	Mean Score of Elite(International) and Non Elite(National) Athletes on the Variable Shoulder – Balance	46
16.	Mean Score of Elite(International) and Non-Elite(National) Archers on the Variable (Goal setting)	47

TABLE OF CONTENTS

CHAPTER I

INTRODUCTION

Modern technologies have eliminated the utilitarian reasons for developing proficiency with the bow and arrow. The bow originally used as a weapon for defense or conquest or as a means of recreational sport activity. To be sure, basic needs still exist in some primitive cultures that are fulfilled through use of the bow.
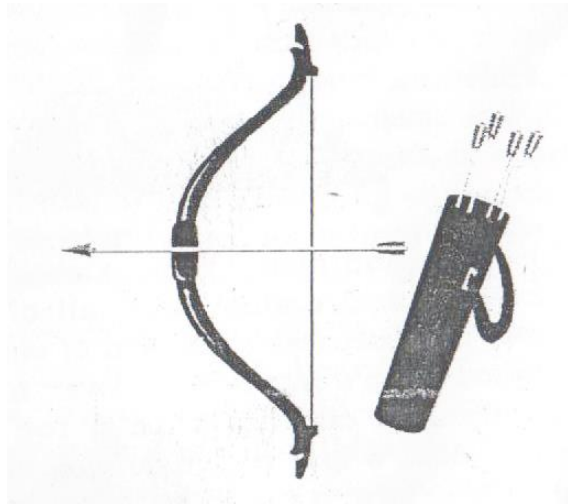
Fig 1

Growth as a Sport Precisely how and when the bow originated is not known, but it certainly was one of the earliest weapons of man. The bow has been a part of recorded history for more than 50,000 years, but its existence was established well before that time. Archeologists estimate from cave drawings depicting archers that the bow was in use at least 100,000 years ago. For thousands of years, human beings used propelled arrows to protect themselves from wild animals. At the same time, archery skill was used to obtain food. The bow became a symbol of strength and power; it gave man a certain status and advantage in his environment. Over the centuries archery gained significance in man's life.

The bow and arrow became associated with all of his activities and endeavors, all of his moods and emotions. The bow was a weapon of survival, a tool that established man's

superiority over animals. With it direct physical contact with a foe was no longer necessary. Man's love of music was stimulated by the twang of the bow string. The harp was developed by adding strings to the bow and archery became further entwined with the culture. In Greek legend, Amazons demonstrated the ability of women to us the use the bow as a weapon; they made the bow a weapon of conquest. On the mainland of Greece, the beautifully designed Greek bow became a different symbol, associated with Diana and the hunt and Cupid and love. The Greeks and Turks are given credit for the development of the first composite bows, made of wood, bone, and leather strips. It is interesting to note that it wasn't until 1959 that modern flight shooter broke the distance record credited to an ancient bow. The remarkable Turks were able to cast arrows eight hundred yards with a complex reflex bow that assumed a "C" shape when unstrung.

This was quite an accomplishment for the ancients, when you consider they lacked the technical and material advantages of our modern bowers. When gunpowder was developed, the value of the bow as a weapon for war or survival began steadily to decline. Firearms eliminated the need to spend many hours becoming proficient in accurately discharging an arrow. Henry VIII, an avid English archer who also enjoyed wagering, is credited with the development of archery as a competitive sport. Archery societies or clubs were established in England over 350 years ago. The Toxophilite Society, The Richmond Archers, The Royal Edinburgh Archers, and Tin' Fines bury Archers are some of the earliest clubs devoted to shooting. The American Indians' skill and daring with the bow is part of our own national history.

The earliest known archery club in the United States was the United Bowman of Philadelphia. Founded in 1828, this organization is still active today. The National Archery Association was formed in 1879, but it was not until 1940 that an association for field archery was organized. At first, field archery tournament were restricted to instinctive or bare-bow shooters and attracted many people who enjoyed shooting under conditions that closely represent those of hunting. Today field competition is conducted in two divisions, instinctive and freestyle. During the first quarter of the twentieth century, interest in bow hunting was stimulated when Dr. S. Pope shot seventeen African lions with a long bow. Today, hunters try for all types of game from birds to the grizzly bear. Popularity of bow hunting has caused many states to enact special laws and provide bow seasons in addition to the regular gun hunting seasons. Archery is scheduled to become a gold medal sport in the 1972 Olympic Games. The XIX Olympiad held in Mexico City in the fall of 1968 allowed archery to be listed as an unofficial or demonstration

sport for the first time. It seems paradoxical that one of the world's oldest sport forms has only recently been accepted as Olympic sports.

There has been much controversy over what constitutes amateur standing in archery. Many present competitions are of the open variety, where amateurs and professionals shoot at the same time. In addition, some prizes in strictly amateur meets have exceeded the value limit acceptable to the Olympic Committee. Our potential Olympic archers are today's young people. Unlike many sports skills, it is quite possible to develop a high degree of archery proficiency in a relatively short time. Proper practice, great desire and interest, as well as ability are the ingredients needed to turn a fair performer into a champion.

Something of Value

The Puritan ethic, so influential in the development of early American culture, remains with us to some extent today. In our early history, work was considered sacred; play was the reward that could be enjoyed only as a result of much productive effort. The idea of engaging in activity just for pleasure is still a little hard for some people to swallow. To think of sport and play as truly educational and enlarging experiences that help us to understand man as human entity seems to be beyond the comprehension of many individuals.

Today's college student is more than preoccupied with the task of finding meaning in life: he is vitally concerned with who he is and with what he does. He is concerned with individual freedom and individual integrity. He thoughtfully and sometimes forcefully, questions the significance of existing values. In short, the student is engaged in a vigorous and dedicated Search for basic meanings in life. It is sometimes difficult to see how participation in skilled activity, such as archery, relates to the goals of education or to the individual search for meaning in life. Perhaps clues to the potential for human development and individual growth can be found in the discussion which follows.

Archery is for everyone. Archery is a pleasurable activity! The various forms of the sport hold appeal for a wide variety of people. Participants are not limited by age or need be severely restricted because of physical handicaps. Boys, girls, men and women have opportunities to participate on equal bases. Archery is an individual sport. No one else need be present to enjoy the activity. Archery is a family recreational pastime. It is relatively inexpensive and can be enjoyed year around, indoors and outdoors. Archery is a club sport. Clubs provide occasions to

meet people, to engage in competition on a formal or informal basis, to work for common gals, and to share interests and experiences. But most of all—archery is a fun activity!

Archery first appeared in the Olympic Games in 1900, was contested again in 1904, 1908 and 1920, then again, after an absence of 52 years, from 1972 to the present. The most decorated archer in Olympic history in Hubert Van Innis of Belgium who competed in 1900 and 1920, winning six gold and three silver medals. The Games of the XX Olympiad in Munich in 1972 saw the re-introduction of archery on the Olympic programme. Women were able to compete in archery events at the 1904 and 1908 Games, then again, like the men, in 1972.

Physical Benefits

The ordinary physiological effects of exercise can be realized to a certain degree through archery. There is a good deal of walking and bending of a type that differs from ordinary work activity. Drawing the bow and holding the anchor position helps to build strength and endurance in shoulder and upper back muscles. Contraction of the abdominals adds strength necessary for maintenance of erect posture. Expansion or stretching of the chest muscles helps to offset fatigue that builds up after sitting for long periods of time-an occupational hazard for college students. Archery helps establish muscular balance and serves to counteract some of the effects of a sedentary way of life.

Emotional Values

Man is a complex creature with many needs and desires. The technological revolution, producing constant changes in man's way of life, adds to the stress and anxiety. Man's in a sense, is a victim, of his own intellectual ingenuity. Automation, computers, and assembly lines eliminate many of the former opportunities for personal satisfaction. Pressures and tensions seem to mount to almost unbearable proportions. Man' image of himself as a useful human being is daily being chipped away.

Man used to take pride in his work. His ability to start something and see it through to completion gave him a sense of achievement. Work was personally satisfying; it built his self-confidence and gave a feeling of control over destiny. Considering our Puritan heritage, it is almost paradoxical that, today, these basic human needs are more readily met through participation in sport and recreational activities. The ability to handle a bow and arrow

competently is personally gratifying; it gives one a sense of pride in one's own abilities and serves to build self-esteem and self-confidence. There is a great deal of satisfaction in sending an arrow exactly where it is aimed. This feeling of accomplishment is enhanced by the knowledge that the work involve in disciplining the mind and body helps one gain control physically and over one's will. All people need socially acceptable outlets for aggressive drives and creative impulses.

Feelings of anger and hate are usually denied open expression in a civilized society. Acceptable ways of "letting off steam" must be found. Sport activity provides one such avenue. Anger and frustration seem to dissipate as arrows are sent winging toward an objective. Concentration, so necessary for skilled performance in archery, serves to melt anxiety into meaninglessness. Involvement provides a means of escape, a chance to "get away from it all". Cares and concerns of the day-to-day world are seen in clearer perspective and better objectivity once some of the tension is released. The rules of sport serve to free the individual. They provide the performer with a less complex, well-defined world where all energies can be directed towards the accomplishment of a goal of one's own choosing. In the context of sport, man has a chance to experience himself as a human being.

On Sport and Play

Spontaneous activity of a joyful nature, which has no particular goal as its end, is characteristic of play activity. Play, as opposed to sport, can be broadly defined as carefree, joyful activity, pursued purely in a non-serious manner. The length of time, size, or extent of the play area, number of participants and the like, are subject to change by whim or convenience. Sport, on the other hand, is governed by an elaborate set of rules that define that equipment to be used, the number of performers, the area for conducting the activity, the time period, the method of scoring, and, often, the expected conduct of the participant himself. Sport operates upon a basis of law and order; it could not survive on a basis of expediency. There are many forms of archery and each can be pursued as a recreational activity or, in the truest meaning of that word, as sport. The degree of personal involvement, circumstances of participation, and purpose of the activity are factors determining the character of the experience. The potential for understanding one's own nature and the nature of others is present when one becomes involved in archery.

There are following kinds of archery:

- ➢ Target Archery: Target archery is the most popular in Great Britain, and in most parts of the country a club can be found within a reasonable distance.
- ➢ Field Archery: This form or archery is practiced over rough ground, usually woodland, and preferably undulating. These conditions affect the shooting technique, through basic principles remain the same and degree of application and dedication are great. You should have to make sure that arrows to be used are long enough.
- ➢ Archery for the disabled: Most countries, Great Britain and the United States included, changed their shooting regulations to permit the disabled archer to participate in archery events.

EQUIPEMENT

Arrows

These should be of the type made from aluminum tube and of a length which will be safe to use. A simple and effective way of checking this is to place. The nock an against the chest. In line with the shoulders, with the shaft extending forward between the palms of outstretched hands.

Bracer

The bracer is the device worn on the inside of the bow arm between the wrist and the elbow. Its purpose is to keep the loose material in the sleeves of the clothing out of the path of the bow string.

The Bow

Any form of bow is allowed except the crossbow. Most advanced archers use composite bows made of laminated glass; or carbon fiber limbs attached to a cast metal or laminated wooden handle. There is no specified length for a bow. Longer bows are steadier in the hand; shorter bows shoot a faster arrow, less affected by wind. All bows may be fitted with foresights or bow marks for range and to compensate for lateral drift. One lip or nose mark is allowed on the string. Certain attachments including lenses, prisms, rear sights, mechanical releases, are forbidden for reserve bows. The draw-weight is the weight of pull at full draw (when the bowstring is pulled back). This is usually between 35-45lb (15.8-20.4kg) for men and 23-28lb (10.9-12.7kg) for women.

Dress

Normal clothing is worn, but is must be closefitting above the waist to prevent catching the bowstring. The competitor must wear his target number on his back. Glasses may be worn and binoculars used to spot arrows between shoots.

An archer's equipment may include the following:

1. Quiver;

2. Arm guard to protect the arm from the bowstring;

3. Leather glove or tab to protect the drawing hand;

4. Draw-check;

5. Plunger button to gain optimum arrow performance.

Foot Markers

Target archers need to maintain a precise standing position which they have to leave and return to during the course of shooting, so means of marking the position of the feet is essential. The best kind of foot markers are those made in the form of a flat disc of plastic or aluminum with a spike a couple of inches long which can be pressed into the ground to go down flush with the surface.

Quivers

When not actually shooting, such as when collection arrows, some form of storage device upon which to place the bow is desirable and a good bow stand or ground quiver is useful.

Tab

The most personal item of equipment in the archer's tackle is the shooting tab. The purpose of the shooting table is to cover the string fingers so that the surface of the table is between the bow string and the finger tips. This produces a consistent surface from which the string will be released and helps to produce a consistent result also.

BREATHING AND SHOOTING

Breathing and breath control are important in all aspects of physical activity and archery is no exception. In the low preparation, position breathing should be relaxed and regular, that is,

normal breathing, no special control or rhythm applied to it. Breathe in as the arms are raised to the high preparation position attempting to inflate the stomach first, but stop before you experience the feeling of the chest beginning to fill.

Breathe steadily out, begin the action of drawing and breathe in at the same time, using the breathing technique as before. When at full draw, hold the breath, adjust to the aim form the waist and hold until ready to loose. Keep holding the breath as the pressure of the loose begins and when the arrow shoots, let the breath out in a good steady gush during the follow-through period. Resume normal light breathing. This method ensures a breath before the drawing of the bow to give a charge of oxygen to the blood. This is followed by a breath again when drawing, giving a further charge of oxygen.

The chest cage is not inflated and remains still during aiming and loosing which is, as a result, consistent. Remember you are controlling the breathing and it may take a little getting used to at the beginning. The length of time the breath is held will vary depending on how long the hold lasts, but in any case should not be long enough to cause distress. The control of the breath is a good thing to do and is perfectly safe in fully fit people; however, some may not be so fit or may feel this kind of control is not for them.

In that case, proceed as before but do not hold the breath, even at full draw, if it is uncomfortable but do breathe slowly to inflate and deflate the chest cage progressively when at full draw otherwise, the shoulders may be caused to move, which could have adverse effects on the accuracy of shooting.

SCORING

1. At 90, 70, and 60 meters, scoring may take place after every end of 3 arrows or every second end. At 50 and 30 meters, scoring shall always take place after each end of 3 arrows. For rounds other than F.I.T.A., scoring shall take place after either 5 or 6 arrows have been shot.

2. Two archers on each target shall act as scorekeepers and shall verify that scores agree after each end.

3. Scorers shall enter the value of each arrow on the score sheets as called out by the archer to whom the arrows belong. Other archers on that target shall check the value of each arrow called out.

4. An arrow shall be scored according to the position of the shaft in the target face.

5. Neither the arrows nor the face shall be touched until all the arrows on that target have been recorded.

6. If more than 3 arrows, belonging to the same archer, should be found in the target or on the ground in the shooting lanes, only the 3 lowest, in value shall be scored. Should an archer be found to repeat this, he/ she may be disqualified.

7. Should the shaft of an arrow touch 2 colours, or touch any dividing line between scoring zones, that arrow shall score the value of the zones affected.

8. Should a fragment of a target face be missing, then an imaginary line shall be used for judging the value on any arrow that may hit such a part.

Arrows

These should be of the type made form aluminum tube and of a length which will be safe to use. A simple and effective way of checking this is to place the nock end against the chest, in line with the shoulders, with the shaft extending forward between the palms of outstretched hands.

For target Archers, there must be at least one inch projecting beyond the tips of the fingers, and for the field archers at least 3 inches projection. This allows for the occasional variation of draw length in the early stages of learning to shoot. Some parts of the arrow has been

Pile: the correct name for the point of arrow which is shaped to penetrate the target. The pile of the arrow is usually made of still, sometimes with a bullet shaped point and sometimes with a conical point. It is generally considered that the bullet shaped point is best.

Fletching: the feathers or vanes fitted to the shaft to assist in stabilizing the arrow in flight. One of these is arranged at a right angle to the slot in the nock and may be a different colour to the other two. This is called the cock feather. The fletching or feathers on an arrow are most important and their relative position to the nock is significant.

Three fletching are usually equally distributed on the shaft with the cock feather position at an angle of 90 degree, to the bow string, the other two are flight feathers, not hen feathers, as is often mistakenly believed.

Shaft: simply refer to the tube from which the arrow is made.

Crestings: the colored bands around the arrows, just under the fletching's which assist in identifying your arrows in the target.

Nock: the end of the arrow opposite the pile, with a groove arranged to fit onto the nocking point of the bow string. The other end of the arrow shaft fitted with the nock may be formed into a conical point over which the nock is fixed with adhesive.

The Target

Targets are made of straw ropes stitched together. Target faces are made of paper or other suitable material. There are two standard circular FITA target faces of 122cm. and 80cm. diameters. They are divided into ten concentric scoring zones of equal width: 6.1 cm on the

122cm. target face, and 4cm. on the 80cm target face. The targets are also divided into five concentric colour zones. The 80 cm. target face is used at 50m and at 30m.
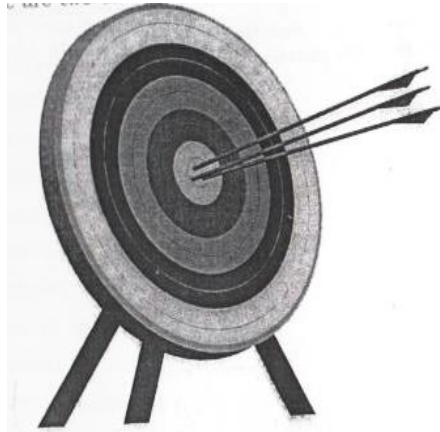
Fig 2

Competitors are drawn for targets. There is a maximum of four (preferably three) archers to each targets.

Eligibility and Classification

(i) Archers shall be classes in the following groups:

Men = 18 years old or over

Ladies = 18 years old or over

Intermediate Body = 15 to 18 years old

Intermediate Girls = 15 to 18 years old

Junior Boys = 12 to 15 years old

Junior Girls = 12 to 15 years old

Cadet Boys and Girls = Less than 12 years old

(ii) An archer must shoot in the highest class if the official start of the tournament shall be on or after the birthday which places him in the higher class.

(iii) An archer may by choice compete in a higher class provided the choice is made before scoring begins. However, an archer may not shoot in a lower class.

(iv) No archer shall be barred from a tournament because of a physical handicap unless his or her shooting requires mechanical aids which, in the judgment of the Field Officials, would give him undue advantage over other archers, or if his or her participation makes it impossible for archers sharing the target to operate under the time sequence.

FITA International 122 cm. target face:

1) White (outer) 1 point
2) White (inner) 2 points
3) Black (outer) 3 points
4) Black (inner) 4 points
5) Blue (outer) 5 points
6) Blue (inner) 6 points
7) Red (outer) 7 points
8) Red (inner) 8 points
9) Gold (outer) 9 points
10) Gold (inner) 10 points

Tournaments

A single FITA round may be shot over one or two days, and consists of 144 arrows, 36 arrows at each distance. Distances shot are:

Men: 90m, 70m, 50m, 30m

Women: 70m, 60m, 50m, 30m

The longest distance is shot first. If shot over two days, the two longest distances are shot on the first day. A complete tournament is either one or two FITA rounds. At world championships, a single FITA is shot as a qualifier, followed by a Grand FITA knock-out tournament.

(D.Jain (2008))

(Rachna Jain (2010))

Evolution in the number of events in Olympic

- ➢ 1900: 7 events (men's)

- ➢ 1904: 5 events (3 men's and 2 women's)
- ➢ 1908: 3events (2 men's and 1 women's)
- ➢ 1920: 10 (men's)
- ➢ 1972-1984: 2 events (1 men's and 1 women's)
- ➢ 1988-2016: 4 events (2 men's and 2 women's)

Overview of Anthropometry

Purpose of Anthropometrics

Actual stature, weight, and body measurements including skinfolds, girths, and breadths will be collected in the MEC for purpose of assessing growth, body fat distribution, and for provision of reference data. Measurements of stature and weigh will allow for a revision of the child growth charts which are based in part on data collected in NHES cycles II and III and data from the Feels Longitudinal Study. Anthropometric measurements such as skinfolds and circumferences and bioelectrical impedance (a method used to estimate the amount of lean tissue) will allow cross-sectional analysis of the relationship between obesity and risk of disease. Therefore, many of the measurements included in NHANES III will repeat ones made in previous NHANES and NHANES so that trend analyses can be conducted. Some measures have been added to provide further information on body frame size and fat distribution, while others have been dropped because new data have determined that other measures are more informative. ANTHROPOMETRIC MEASUREMENT

"The biological oneness of mankind is far more significant than the relatively superficial differences".

INTRODUCTION

The two Greek words 'Anthropos' and 'Metrein' have given birth to a new term "Anthropometry". "Anthropos" means man, and "Metrein" means 'to measure'. Therefore when we speak literally Anthropometry is the measurement of human body to discover its exact dimensions and the proportions of its parts.

Anthropometry, measurements of body structure is the oldest type of body measurement known, dating back to the beginning of recorded history. Though the study of anthropometry and

the significance of the relative proportions of the human body have undergone some recent changes in invention, the early beginnings reach back to the remote civilization of India, where treatise called Silpi Sastra investigated the outline of the body by dividing it into 480 parts. The ancient Egyptians also used a rough sort of anthropometry during the period from the thirty-fifth to twenty-second century, B.C.

In an attempt to find some one's anatomic proportion of the body that would be a common measure of all the other structures, the body was divided into nineteen equal segments, each of which was the length of the high priest's middle finger.

Anthropometry constitutes the earliest form of measurement in physical education, as one might surmise. Study of the human physique and its proportions began many centuries ago. Measurement (Anthropometry) is nothing new but has been serving man since his origin. Artists comprised the chief workers in anthropometry until 1935 when a Mathematician in Brussels, Baron, Quetlet, applied purely mathematical methods to discover the physical constants of the body and proved that the binomial law (law of chance) applies to human proportions. The finding was confirmed about 50 years later by Sir. Francis Galton, who systematically analyzed measurements of certain physical constant of English men and women. The seventeenth century saw the emergence of the field of anthropometry in the science of human biology. Anthropometric measurement was the first type of testing used in physical education in the world. Fifty separate measurements were recommended by the American Association for the advancement of physical education. Sergeant, Chart contained 44 Anthropometric measurements as well as a number of strength tests.

Anthropometric measurements consist of objective measurement of structures and of functions of the body. The measurement of structures include such items as weight, total height, the width, the breadth the depth and the circumference of the chest. The measurement of function includes such items as pulse rate arterial and venous blood pressures, muscular strength, basal metabolic rate estimated from cardiovascular variables, posture and breathing capacity.

The anthropometric examination is a supplement to, and not a substitute for, the medical examination. It may, however, and frequently does, indicate incipient physical disorders that are not sufficiently advanced to be detected as specific pathologies by the physician. The arthropometric examination can be administered by trained person who are not physicians, and it

24

can aid the health administrator in outlining appropriate medical follow-ups. Considerable attention has been given in recent years to the classification of boys and girls according to the factors of age, height and weight for purposes of homogeneous grouping. These factors play a rather prominent part in determining physical performance.

In addition to classifying students for instruction on the basis of skills, ability or practice devices, other bases warrant attention for the total physical education programme. The health examination is prerequisite to other classification methods. Health needs of selected students may supersede ability or skill as the method of classification for an activity. In the recreational programme interest alone offers a valid means of grouping. The objectives of the course of instruction determine the factors by which students should be classified for the activity.

The earliest research was in the area of anthropometry with the emphasis on changes in muscle size brought about through exercise. The modern physical educator is often assigned the task of measuring height and weight of students. The physical educator has always been interested in body physique and body types. One's body type is no doubt influenced primarily by heredity. Both psychologists and physical educators have been concerned with the classification of individuals into types of body builds. The psychologist is perhaps primarily interested in the relationship between body types and personality traits and secondarily in physiological aspects.

(Web wiki)

Objectives

- To find out selector anthropometric measurements of international (elite) and national (non-elite) archers in relation to their actual performance.
- To find out the psycho physical performance of international and national archers.
- To describe actual performance of international and national archers.
- To find out training schedule of international and national archers.

Hypothesis

- On the basis of the literature available it is hypothesized that the profile of elite archer may not be different significantly from the profile of non-elite archers.
- Performance of an upcoming archer can be predicted on the basis of his/her profile.

Significance of the Study

- To finding of the study will add to existing knowledge in this area and will be beneficial for coaches and research for getting a feedback.
- Findings of this study would help the physical education teacher and coaches to identify the archery players.
- It will enable us to know the athletes perception towards their own behavior and thus helping to analyze own self in relation to other athletes.
- The finding of this study might held the coaches to modify/ alter the exiting training method, if need be for their archery players.
- The goal profile will provide a problem for quick analysis of the performance.
- The finding of the study will provide a platform for prediction of actual performance.
- It will provide a background to develop specific training modules in relation to need of the athlete.

Statement of the Problem

The present problem is stated as "Performance profile among Archers in relation to performance predication"

Delimitation

- The study was delimited to 14 athletes (7elite) (7non-elite)
- The study was based on national and international archer's players.
- All the athletes from the age group of eighteen above considered.

Limitations

- The researcher cannot include all the parameter of performance to the study due to restriction of time.
- The number of athlete taken for the study may reflect another limitation for the study.

- The training schedule followed the athlete can be considered as another limitation for the stud

- The socio-economical back ground of the athletes can also be considered as the limitation of the study.

CHAPTER II

REVIEW OF RELATED LITRATURE

Vogel, E et al (2014) studied to related crossbow injuries to the thumb. Archery injuries resulting in significant digital impairment are uncommon. The purpose of this study is to review seven patients treated at our institution for injuries of the left thumb sustained during recreational use of a crossbow. These injuries were treated with standard techniques. Injuries sustained during recreational crossbow use result from trauma to the left thumb which is placed in a forward position on the crossbow stock. Increasing popularity of crossbow usage has made these injuries more prevalent. Standard techniques of treating hand trauma are sufficient to manage these injuries. With proper education and safety mechanisms, these injuries are preventable.

Shinohara, H et al (2014) studied to related does shoulder impingement syndrome affect the shoulder kinematics and associated muscle activity in archers? Archery related injuries, such as shoulder impingement syndrome are caused by repeated motion of the shoulder. The aim of this study was to analyze differences in the shoulder kinematics and the associated muscle activity between archers with shoulder impingement and uninjured archery play. Thirty male archers, who were divided into an impingement group and an uninjured group, were included in this study. The angle of scapular elevation, shoulder joint abduction, horizontal extension, and elbow joint flexion as well as the electromyography activity of the upper trapezius, lower trapezius, deltoid middle, deltoid posterior, biceps brachia, and triceps brachia muscle at the point of stabilization during shooting were measured. Variables differing between impingement and uninjured groups were identified, and a stepwise regression analysis was performed to identify a combination of variables that effectively impingement syndra. The results indicated that the angle of scapular elevation was significantly greater than that uninjured group (P<0.05). The angle of horizontal extension in the impingement group was significantly smaller than that in the uninjured group (P<0.05). The angle of elbow flexion in the impingement group was significantly smaller than that in the uninjured group (P<0.05). The levels of upper trapezius and deltoid middle muscle activity were significantly higher in the impingement group, while the level of lower trapezius muscle activity was significantly lower (P<0.05) when compared to the uninjured group. The impingement group had a greater angle of scapular elevation, smaller angle of horizontal extension, smaller angle of elbow flexion, higher the levels of upper trapezius,

lower the levels of lower trapezius, higher deltoid middle muscle activity and higher UT/LT ratio (all differences were significant). A logistics model for predicting impingement syndrome showed that UT/LT ratio was significantly related impingement syndrome (P<0.05). The authors concluded that archers with shoulder impingement syndrome exhibit different kinematics and muscle activity compared to uninjured archers. Therefore, in order to prevent shoulder joint impingement during archery, training is necessary what can make lower trapezius muscle activity increased to decrease the UT/LT ratio.

Kim, H, B et al (2014) the studied was related to the relative importance of performance factors in Korean archery. This study explored the factors affecting archery performance, by calculating their relative importance in Korean archery The result indicate performance factors identified in this study and their relative importance in determining successful performance can be used in training for optimal archery performance worldwide.

Zemkova, E et al (2014) the studied was related to sport-specific balance. This review includes the latest findings based on experimental studies addressing sport-specific balance, an area of research that has grown dramatically in recent years.. Though this may be true for shooting or archery, findings have shown that in many other sports, highly skilled athletes are able to perform successfully in spite of increased postural sway. These findings may contribute to better understanding of the postural control system under various performance requirements. It may provide useful knowledge for designing training programs for specific sports.

Chang, Y et al (2010) the studied was related to the neural correlates of motor imagery for elite archers. Motor imagery is a mental rehearsal of simple or complex motor acts without overt body movement Therefore, the difference in cerebellar activation between archers and non-archers provides evidence of the expertise effect in the mental rehearsal of archery. In conclusion, the relative economy in the cortical processes of elite archers could contribute to greater consistency in performing the specific challenge in which they are highly practiced.

SE. palsbo et al (2012) the studied was related to the epidemiology of recreational archery injuries; implications for archery ranges and injury prevention. The aim of this paper was to assess the incidence of injuries in the general population caused by participation in the sport of target archery or bow hunting. Descriptive analysis of a national probability sample of hospital based treatments for archery-related injuries, over a 10-year per the leading injuries were

lacerations (62+-2%), which most often occurred through mishandling hunting arrows. Puncture wounds accounted for 8+_1%and foreign bodies' 6+_1%, arising from feathers or vanes embedding in the hand, falling onto an arrow, or a rupturing arrow shaft. Contusions and abrasions, often caused by the bowstring hitting the arm, accounted for 6+_1% of injuries. Nearly all (99+_0.4%) of cases were treated and released. The overall injury rate is 4.4/10000 participants age 6 and over. Contrary to the prevailing perception that archery is inherently dangerous, the evidence shows that recreational archery is a very safe sport safer than popular field sports where people risk collisions or falls, such as soccer, basketball or baseball. The injury rate from lacerations could be significantly reduced if bow hunter education courses emphasized safe handling of broad head arrows. The result shown that nearly all acute injuries in target archery can be prevented through participation in an accredited training program and the use of basic protective gear (arm guards and shooting gloves). All archery education programs should focus on proper archery stance and joint strengthening to minimize chronic shoulder and back injuries.

Park, j, k et al (2010) the studies was related to the case report; Thoracic outlet syndrome in an elite archer in full-draw position. One possible path mechanism of thoracic outlet syndrome (TOS) is shoulder abduction and extension inducing backward motion of the clavicle which causes compression on the brachial plexus. This position occurs during the full-draw stage of archery, by drawing and holding the bowtie 28-year-old elite archer presented with a feeling of weakness and dull shoulder pain, and experienced decreased grip power and hypoesthesia in the ulnar nerve dermatome in the full-draw position. On CT angiography, the cross-sectional area of the subclavian artery in the costoclavicular space decreased to 40% compared with that of the subclavian artery in a noncom pressed state. This patient had first rib resection through the supraclavicular approach with a clavicle osteotomy. At 3.5 year postoperatively, the patient maintained his job as a professional coach and did not have any specific complaints when teaching and demonstrating archery say literature review revealed numerous causes of TOS, ranging from congenital abnormalities to repetitive postures related to sports activities. The abduction and external rotation (ABER) position (shoulder at 90^0 abduction and external rotation) has been suggested for detecting TOS and is a documented cause of compression of the brachial plexus and subclavian vessels. We present the case of an archer with TOS association

with repeated use of the ABER posits should be suspected when athletes repeatedly use shoulder extension and abduction for their sports it other pathologic conditions can be ruled out.

Carrillo, A, C et al (2011) the studies was related to the autonomic nervous system modulation during an archery competition in novice and experience archers. We assessed autonomic nervous system modulation through changes in heart rate variability during an archery competition as well as archery performance by comparing novice and experience adolescent archers. The result shown that these characteristics of experienced archers are appropriate for optimal performance during competition.

Roy, J et al (2011) the studied was related to the temporal patterns of subjective experiences and self-regulation during Ramadan fasting among elite archers; a qualitative analysis. The result showed changes in the patterns of experiences among the major domains across the temporal dimension. Athletes reported increased subjective experiences in mental factors toward the latter half of the fasting period. Practitioners should emphasize on mental aspects of training, as these appear to be salient in archery perform.

Boudhina(2009)Conducted a study on anthropometric, physiological, and performance characteristics of an elite international handball team. In conclusion, performance abilities between positions in elite team-handball players appear to be very similar. Single leg horizontal jumping distance could be a specific standardized test for predicting sprinting ability in elite handball players.

Perciavalle(2014)investigated on 21 elite male swimmers was to assess whether the Ape Index (the ratio between the individual's arm span and height) and/or the second-to-fourth digit length ratio (2D:4D), i.e., the ratio between the length of the second and the fourth fingers of the right hand, are associated with the performance of high-level swimmers, when mood and/or executive function are covered. The results showed no statistically significant correlation between the Ape Index and 2D:4D ratio, performance, executive function, or mood. In contrast, statistically significant correlations were found between 2D:4D ratio and performance, executive function, and mood. Regressions indicated that 2D:4D ratio and not Ape Index is related to the performances of a sample of male swimmers.

Ostjit (2006) Studiedto describe structural and functional characteristics of elite Serbian basketball players and to evaluate whether players in different positional roles have different

physical and physiological profiles The results of the present study demonstrate that a strong relationship exists between body composition, aerobic fitness, anaerobic power, and positional roles in elite basketball.

Landers (2013) examined the physical, psychological and perceptual/visual variables related to elite archers' shooting performance. This analysis indicated that relative leg strength, reaction time, depth perception, endomorphic, imagery usage, confidence, and focus on past mistakes were variables associated with archery performance. Finally, the total sample was classified into two groups on the basis of the shooting scores. Discriminant function analysis indicated that 81% of the archers were classified correctly on the basis of these significant predictors.

Gabbett (2009Investigate Physiological and anthropometric characteristics of junior elite and sub-elite rugby league players, with special reference to starters and non-starters. The result indicated that sub-elite starters were taller and had greater change of direction speed than non-starters. A high estimated maximal aerobic power was a common discriminator between starters and non-starters for both elite and sub-elite competitors. These findings demonstrate that some physical qualities can discriminate starters and non-starters in elite and sub-elite junior rugby league teams

Andrew (2006) Studied to identify physical and performance variables that discriminate elite American junior-aged men weightlifters from non-elite performers. The resulting regression equations correctly classified 84.35% of the weightlifters as elite or non-elite . Five variables significantly contributed to the discriminant analysis (Walks [LAMBDA]= 0.6637392, [chi]2= 44.880, df = 5, $p < 0.0001$, adjusted R2 = 0.67). Body mass index accounted for 23.13% of the total variance, followed by vertical jump (22.78%), relative fat (18.09%), grip strength (14.43%), and torso angle during an overhead squat (0.92%). The use of these 5 easily administered field tests is potentially useful as a screening tool for elite American junior men weightlifters.

Reilly (2000) conducted a study on anthropometric and physiological characteristics of soccer players with a view to establishing their roles within talent detection, identification and development programmers. Thus the result indicated that midfield players and full-backs have the highest maximal oxygen intakes (> 60 ml·kg -1 ·min -1) and perform best in intermittent exercise tests. On the other hand, midfield players tend to have the lowest muscle strength. Although these distinctions are evident in adult and elite youth players, conclude that

anthropometric and physiological criteria do have a role as part of a holistic monitoring of talented young players.

CHAPTER III

METHOD AND PROCEDURE

In this chapter the procedure that was adopted for the selection of the subjects, procedure for administering the test item and the method employed for statistical analysis of data are described.

SELECTION OF SUBJECTS

The subjects for the study were 14 athletes (7 each) from the game of archery, the age group of 18-28 years, having the playing experience of 4/12 years and have had the experience of participating in tournament of State, International level competition was single group design. The player's goal was set with the help of the coach.

Sample Design

The Research Scholar will use randomized sampling technique for the study. The present study will be conducted on six (14) archery players. (7) Elite and (7) non elite players. Elite players will be those players who have participated in international level one or more than one time in international level and still in practice. The elite and non-elite sample with be taken from all over India. Non elite player will be those players who has participated in state and national level competition but not selected for higher competition.

Distributions of sample are as follows:-
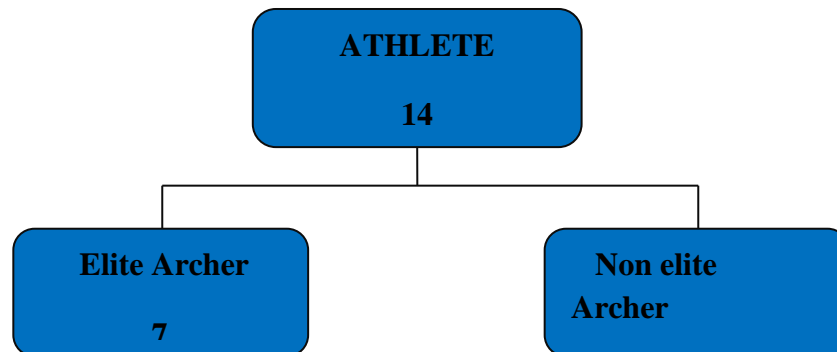
Procedure for selection and administration of test item for the collection of authentic data

The first section was demographic information sheet consisting of several questions describing the sample's age, height, weight and number of years they had participated in their sport.

Demographic Profile

Anthropometric Variables

1. **Measurement of height**, standing height(statute) measuring

- **Purpose: To** measure the Standing Height.

- **Recorded :** Height was recorded in nearest centimeter

- **Equipment:** Anthropometric Rod.

- **Procedure: The** subject was asked to stand erect on a horizontal surface starching the body as much as possible. Heels of the subject must be touching each other and the head must be on eye ear plane. Anthropometric rod was placed on the mid sagittal plane of the subject lightly. Results were recorded from the reading scale of the vertically placed anthropometric rod in centimeter.

2. **Measurement of Weight:** measurement of body mass, measuring with the help of weight machine

- **Purpose :** To measure the total body weight of the subject

- **Recorded :** Weight was recorded in nearest kilogram

- **Equipment :** Weighing machine

- **Procedure: Body** weight was the weight of the body when the bowl was empty. The subject was asked to stand erect on the weighing machine with bare foot and in minimum clothes. Results were produced from the reading scale of the weighing machine in kilograms.

3. **Measuring of chest circumference**

- **Purpose :** To measure the circumference of chest

- **Equipment :** Steel Tape

- **Recorded: The** chest circumference measurement was recorded into cms.

- **Procedure: Subject** stands erect. Her arms are raised and the tape is placed across the back at the level of nipples, but is brought across the front above the fullness of the breast. Record the measurement at the maximum dimension during the normal breathing.

4. **Measuring of for arm circumference**
   - **Purpose :** To measure the maximal circumference of the four arm
   - **Equipment :** Steel tape
   - **Recorded:** The four arm circumference measurement was recorded into cms.
   - **Procedure:** The subject asked to stand at ease with equal weight on both the feet. The steel tape was wrapped around the four arm the circumference was measured by keeping the steel tape in a horizontal direction and touching gently four arm surface all around. It was observe that the skin was not disturbed by pressure.

5. **Measuring of upper arm circumference**
   - **Purpose :** To measure the maximum circumference of the upper arm
   - **Equipment :** Steel Tape
   - **Recorded:** The upper arm circumference measurement was recorded into cms.
   - **Procedure:** The subject was asked to stand with arms hanging in a normal standing position. It was the circumference of the upper arm at the level of helf way between the tip of acromiable and radial. The steel tape was wrapped around the upper arm and touching tightly to the skin all around. It was observed that the skin contours were not disturbed by pressure.

6. **Measuring of Palm length**
   - **Purpose :** To measure the maximum palm length
   - **Equipment :** Steel Tape
   - **Recorded:** The Palm length measurement was recorded into cms.
   - **Procedure:** The subject was asked to stand with arms fold in a normal standing position. Then measure the Palm length with the steel tape was wrapped the Palm length and touching tightly to the skin all around. It was observed that the skin contours were not disturbed by pressure.

7. **Measuring of Palm breath**

- **Purpose :** To measure the maximum Palm breath

- **Equipment :** Steel Tape

- **Recorded:** The Palm Breath measurement was recorded into cms.

- **Procedure:** The subject was asked to stand with elbow fold in a normal standing position. Then measure the Palm Breath with the steel tape was wrapped the Palm Breath and touching tightly to the skin all around. It was observed that the skin contours were not disturbed by pressure

8. **Measuring of Arm length**

- **Purpose** : To measure the maximum Arm length

- **Equipment** : Steel Tape

- **Recorded**: The Arm length measurement was recorded into cms.

- **Procedure**: : The subject was asked to stand with arms hanging in a normal standing position. It was measure the arm length with. The steel tape was wrapped the arm and touching tightly to the skin all around. It was observed that the skin contours were not disturbed by pressure

Reliability of the Instrument

As the nature of the study following instrument were used

1. Steel tape

2. Stadirometeres

All the instruments were purchased from standardized and the procedure of measurement followed from a book by (Nath 2005) on Anthropometry.

Physical Performance

1. Measuring of Ankle balancing in sec with the help of (stopwatch.)

2. Measuring of Toe balancing in sec.

3 Measuring of shoulder balancing in sec.

Actual performance

Actual performance was measure through the compound event. One round has six chances. According to that score were measured.

Selection and Descriptions of the Tools/Questionnaires

The under described tools/questionnaires used in this study for the collection of the data were selected because they were found to be most valid and reliable and have been widely used in the profession of physical education and sports throughout the world. The detailed descriptions of the tools/questionnaires are as follow:

Goal setting - Goal Setting (Mark Spargo, AIS 2000) was used for initial assesment of goal setting ability of athlètes, even though the goal setting process is straight forward, there are however rules which must be followed for goal setting to be successful.

Take the number that the Subject has filled in for each question and put it next to the correct question number below. After doing so for all 42 items, add each of the seven columns separately. Use that total for marking the profile of mental strengths and weaknesses. Any of the total scores with fall below 20 will need your special attention. When that happens, thoroughly review all training procedures which relate to that area of weakness.

SC- self-confidence Questions- 1,8,15,22,29,36

NEC- negative energy control Questions- 2,9,16,23,30,37

AC- attention control Questions- 3,10,17,24,31,38

V/I C- visualisation and imagery control Questions- 4,11,18,25,32,39

ML- motivation level Questions- 5,12,19,26,33,40

PEC- positive energy control Questions- 6,13,20,27,34,41

AC- attitude control Questions- 7,14,21,28,35,42

Statistical Technique

In order to understand the rate of progression in all the dependent variables descriptive statistics like mean and standard deviation has been applied. Further to predict the performance of the athlete in the selected event, performance profile has to be prepared separately for each athlete and discussion will be more on the basis of the profile and further the profile of the elite athlete can be compared separately with each of the beginner's profile to predict their performance.

CHAPTER-IV

ANALYSIS OF DATA AND DISCUSSION OF FINDINGS

This chapter contains statistically treated data results, findings and discussions with regards to the performance profile among archers in relation to performance prediction.

ANALYSIS OF DATA

The data thus collected were put to statistical computerization for analysis, which have been presented in this chapter. The descriptive statistics have been used to summarize the data so that they are easy to understand. Further profile of each category (Elite and Non-elite athlete) has been prepared graphically and discussed by means of their obtained scores in each anthropometric, physical performance, psychological and actual performance parameters separately.

Further the data pertaining to anthropometric, physical performance, psychological, actual performance variables of archers of different level treated with t-test to determine the statistical significance of the study.

The test items selected for anthropometric, physical performance, psychological, actual performance parameter for assessing for this study were as under:

Anthropometric measurement

Hand length. (Hand spam and length measurement)

Arm length

Hand breath

Chest circumference

Upper arm circumference

Fore arm circumference

Physical performance

Toe balance

Ankle balance

Shoulder balance

Actual performance

One round or 6 chances has been given and scores was notes.

Psychological variable

SC- self-confidence,

NEC- negative energy control,

 AC- attention control,

V/I C- visualisation and imagery control,

ML- motivation level,

PEC- positive energy control and

 AC- attitude control.)

  Goal Setting (Mark Spargo, AIS 2000) was used for initial assesment of goal setting ability of athlètes, even though the goal setting process is straight forward, there are however rules which must be followed for goal setting to be successful.

Discussions of Findings

To start with the discussion, it is the demographic information of the Athletes that have been presented below. The variables that are taken into consideration are age, height, body weight, playing experience and time devoted for training.

The total sample that was opted for the study, their descriptive statistics on various demographic aspects have been presented in table 1.

Table No. 4.1

Descriptive Statistics of Demographic Information

	N	Minimum	Maximum	Mean	Std. Deviation
AGE (years)	14	19	28	23.28	2.43
Height (foot)	14	5.4	6.1	5.59	0.218
Weight (in KG)	14	58	87	70.42	10.87
Playing Exp (in Years)	14	4	12	7.14	2.41

Above table indicates that the mean and SD of 14 athletes in their age is $23.28 \pm$ 2.43; height 5.59 ± 0.218; weight 70.42 ± 10.87 ; playing experience 7.14 ± 2.41 respectively. Further narrated in Fig: 4.1

Figure No.4.1

Demographic Profile of Archers

Demographic profile of archers

	N	Minimum	Maximum	Mean	Std. Deviation
■ AGE (years)	14	19	28	23.28	2.43
■ Height (foot)	14	5.4	6.1	5.59	0.218
■ Weight (in KG)	14	58	87	70.42	10.87
■ Playing Exp (in Years)	14	4	12	7.14	2.41
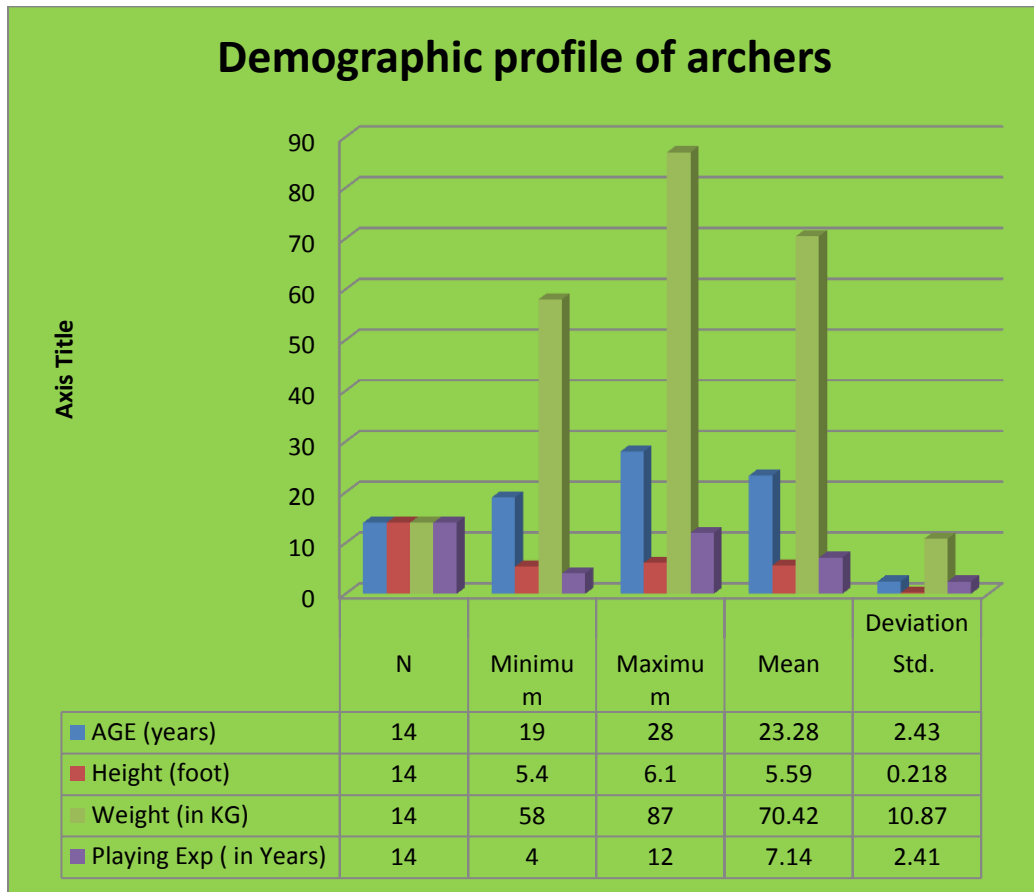
The Performance profile of each elite athlete on the basis of the data pertaining to different performance Parameters, has been described below in Fig-2

Elite (International) Archers Raw Data

Elite (International) Archers

	P.L	P.B	A.l	C.C	U.A	F.A	H	W	T.B	A.B	S.B	S.C	N.E.C	A.C	V.I.C	M.L	P.E.C	A.C	PER
	ANTHROPOMETRIC-V								PHYSICAL-V			PSYCHOLOGICAL-V (G-S)							A-P
kawalpreet	7.7	4	32.7	40.1	12.1	11	5.11	85	7	12	10	21	22	18	22	24	19	22	57
Vignas	6.7	3.5	30	35.1	11.1	9.06	5.4	58	8	9	9	23	21	21	19	23	22	24	58
Sudhakar	7.6	3.5	31.6	37.1	12	10.1	5.7	69	6.5	7	11	21	21	23	21	23	19	21	57
Abisekh.V	7.7	3.6	30.5	42	12.1	11	5.8	85	7.5	8	11	27	28	26	25	22	24	26	59
Anil kumar	7.6	4	31.1	41.1	12.1	11.1	5.11	87	4	4	8	23	22	21	23	21	23	22	56
K.B.chhtery	7.1	3.6	29.1	37.1	11	10.1	5.6	75	5.5	5	7	22	23	22	24	21	24	21	57
Sandeep kumar	7.6	3.9	30.1	39	12.1	11	5.9	80	7	8	9	23	24	23	22	22	20	23	58
MEAN	7.43	3.73	30.73	38.8	11.8	10.55	5.52	77	6.5	7.5	9.29	22.9	23	22	22.3	22.3	21.6	22.7	57.4

Fig:4.2 : Indicated In this graphical four variables were taken, in Anthropometric variables measurement of P.L, P.B, A.L, C.C, U.A, F.A, Height in cm, but weight checked with the help of weight machine. In Physical variables only TOE-B Checked in minutes and ankle-b, shoulder-b were checked in sec. In psychological variables were checked with the help of (Goal setting) Questioner, Actual performance checked with one round of archery, in round six chance each were 10 marks and out of 60 marks.

PERFORMANCE PROFILE OF ELITE ARCHRS

The athletes were tested on various selected important parameters of performance like anthropometric variables, physical variables, psychological variables and actual performance. Further the mean values of all 7 players was also calculated to obtain actual image of the profile where in selected Anthropometric variables were taken- palm length, palm breath, arm length, chest circumference, upper arm circumference, fore-arm circumference, In physical performance- toe balance, ankle balance, shoulder balance, In psychological variables- SC- self-confidence, NEC- negative energy control, AC- attention control, V/I C- visualisation and imagery control, ML- motivation level, PEC- positive energy control and AC- attitude control.

The Performance profile of each Non-elite archers on the basis of the data pertaining to different performance Parameters, has been described below in Fig-3

Non-Elite (National) Archers

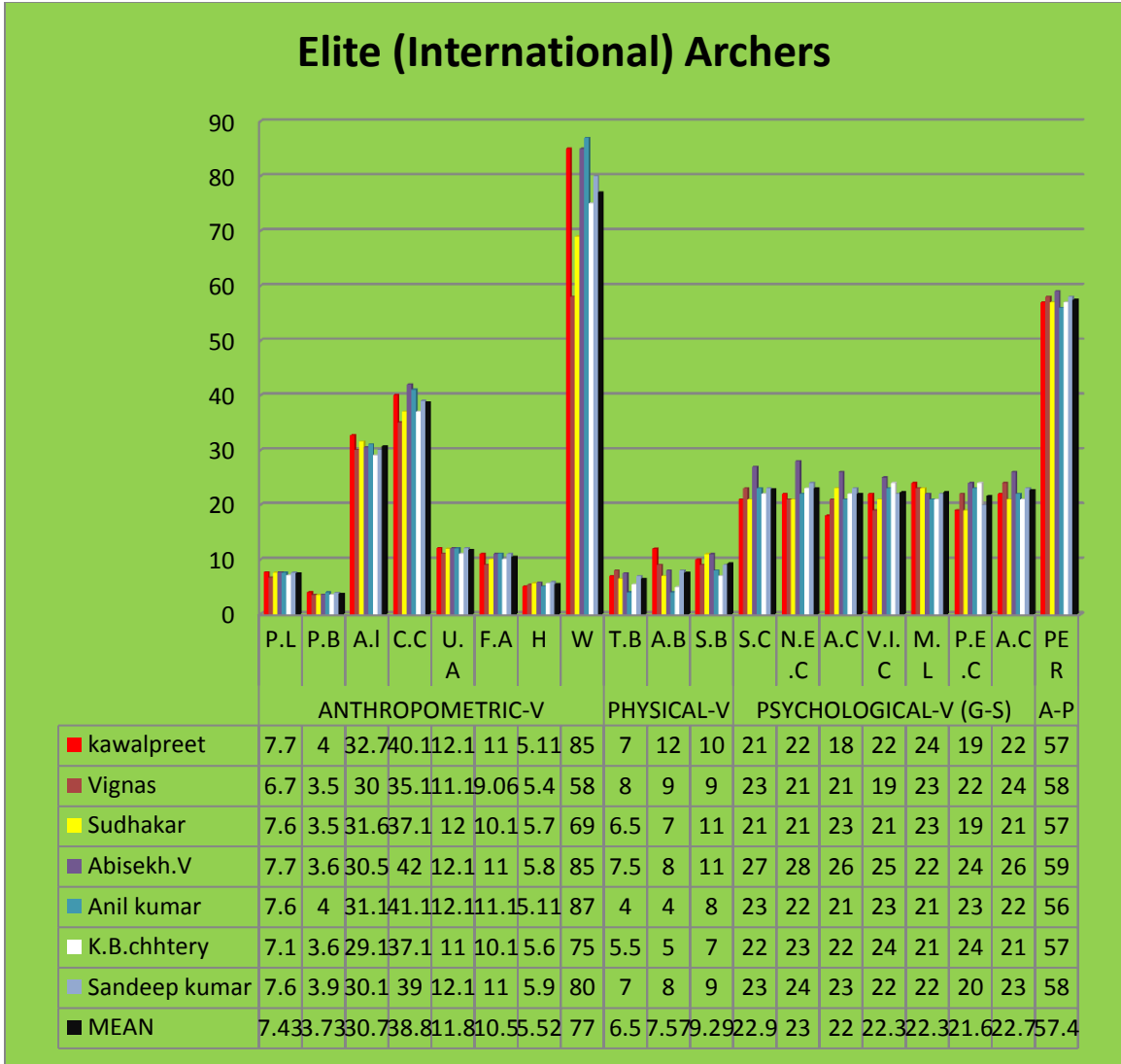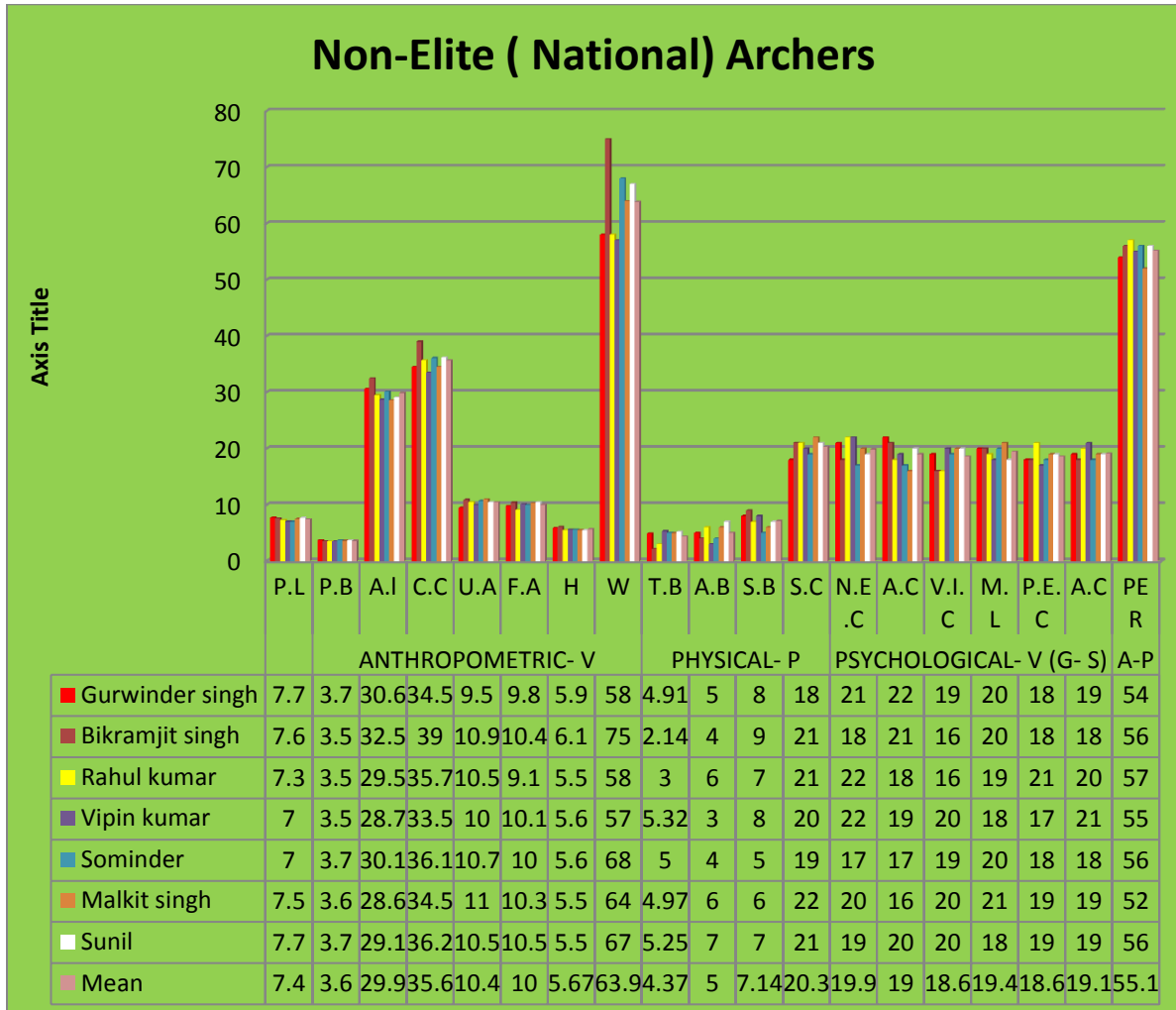|	P.L	P.B	A.l	C.C	U.A	F.A	H	W	T.B	A.B	S.B	S.C	N.E.C	A.C	V.I.C	M.L	P.E.C	A.C	PER
			ANTHROPOMETRIC- V						PHYSICAL- P				PSYCHOLOGICAL- V (G- S)						A-P
■ Gurwinder singh	7.7	3.7	30.6	34.5	9.5	9.8	5.9	58	4.91	5	8	18	21	22	19	20	18	19	54
■ Bikramjit singh	7.6	3.5	32.5	39	10.9	10.4	6.1	75	2.14	4	9	21	18	21	16	20	18	18	56
■ Rahul kumar	7.3	3.5	29.5	35.7	10.5	9.1	5.5	58	3	6	7	21	22	18	16	19	21	20	57
■ Vipin kumar	7	3.5	28.7	33.5	10	10.1	5.6	57	5.32	3	8	20	22	19	20	18	17	21	55
■ Sominder	7	3.7	30.1	36.1	10.7	10	5.6	68	5	4	5	19	17	17	19	20	18	18	56
■ Malkit singh	7.5	3.6	28.6	34.5	11	10.3	5.5	64	4.97	6	6	22	20	16	20	21	19	19	52
■ Sunil	7.7	3.7	29.1	36.2	10.5	10.5	5.5	67	5.25	7	7	21	19	20	20	18	19	19	56
■ Mean	7.4	3.6	29.9	35.6	10.4	10	5.67	63.9	4.37	5	7.14	20.3	19.9	19	18.6	19.4	18.6	19.1	55.1

Fig: 4.3- Shows that Graphical presntation of obtained raw data of non-elite archers on selected performance parmeters such as Anthropometric variables, Physical variables, Psychological variables, Actual performance.

PERFORMANCE PROFILE OF NON-ELITE ARCHRS

The athletes were tended on various selected import parameters or performance line anthropometric variables, physical variables, psychological variables, actual performance. Further the mean values of all 7 players was also calculate to obtain actual image of the profile where in selected Anthropometric variables were taken- palm length , palm breath, arm length, chest circumference, upper arm circumference, for arm circumference, In physical performance-

toe balance, ankle balance, shoulder balance, In psychological variables- SC- self-confidence, NEC- negative energy control, AC- attention control, V/I C- visualisation and imagery control, ML- motivation level, PEC- positive energy control and AC- attitude control.

Table No. 4.2

Man score of Elite and Non-Elite

	LEVEL	NATIONAL (Non-elite)	INTERNATIONAL (Elite)
ANTHROPOMETRIC VARRIABLES	P.L	7.40	7.43
	P.B	3.60	3.73
	A.L	29.87	30.72
	C.C	35.64	38.76
	U.A	10.44	11.76
	F.A	10.03	10.48
	H	5.67	5.52
	W	63.86	77.00
PHYSICAL PERFORMANCE	T.B	4.37	6.50
	A.B	5.00	7.57
	S.B	7.14	9.29
PSYCHOLOGICAL VARRIABLES	S.C	21.3	22.9
	N.E.C	19.9	23
	AC	19	22
	VI	18.6	22.3
	M.L	19.4	22.3
	P.E.C	18.6	21.6

	A.C	19.6	22.7
ACTUAL PERFORMANCE	**PER**	55.14	57.43

Table 4.2 Shows that mean score of elite and non-elite archers on the different variables of Anthropometric, Physical Performance, Psychological and Actual Performance.

Figure No. 4.4

Mean of Elite and Non-Elite Archers

Mean of Elite and Non-Elite Archers

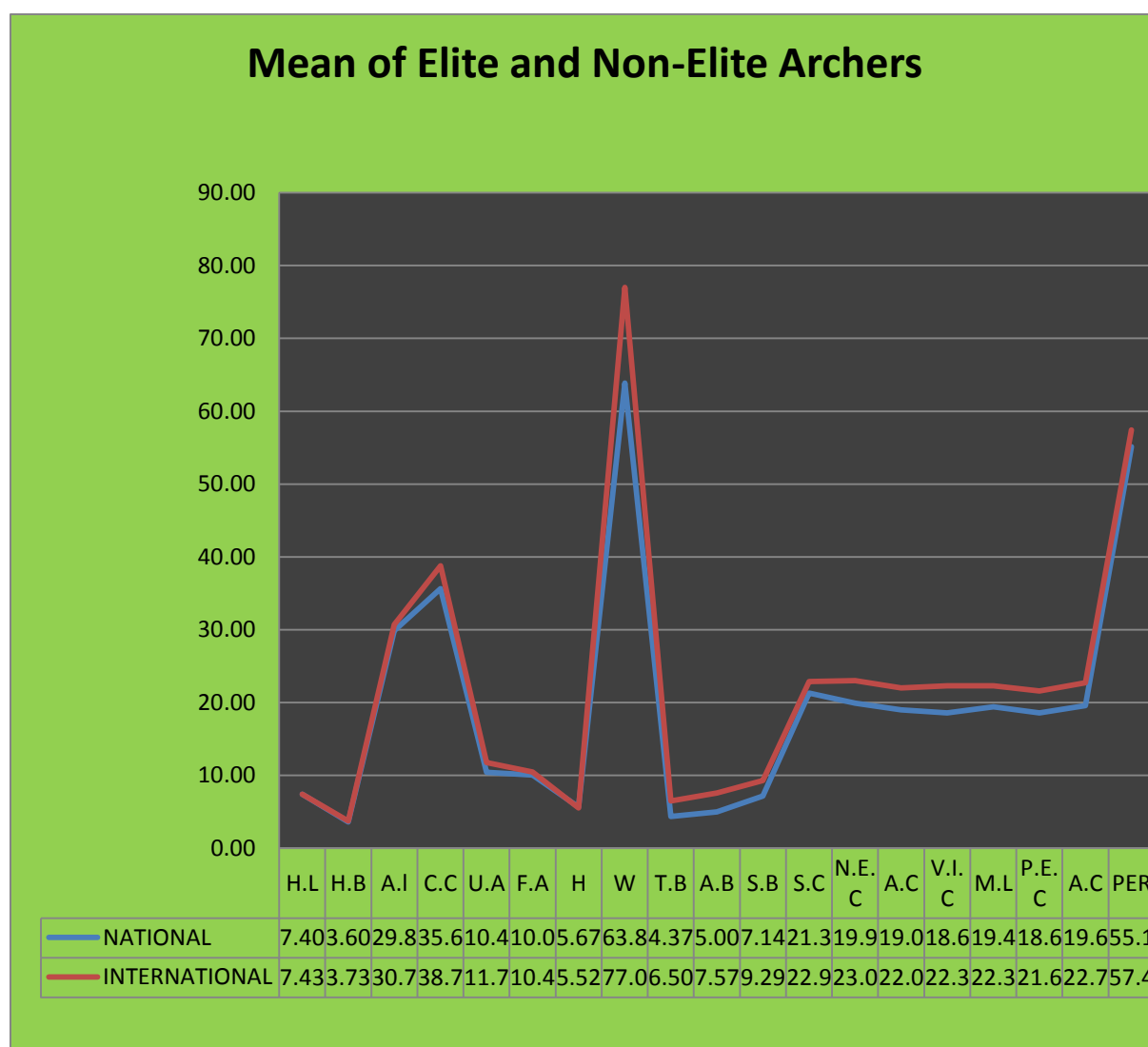|	H.L	H.B	A.l	C.C	U.A	F.A	H	W	T.B	A.B	S.B	S.C	N.E.C	A.C	V.I.C	M.L	P.E.C	A.C	PER
NATIONAL	7.40	3.60	29.8	35.6	10.4	10.0	5.67	63.8	4.37	5.00	7.14	21.3	19.9	19.0	18.6	19.4	18.6	19.6	55.1
INTERNATIONAL	7.43	3.73	30.7	38.7	11.7	10.4	5.52	77.0	6.50	7.57	9.29	22.9	23.0	22.0	22.3	22.3	21.6	22.7	57.4

48

Fig 4.4 Indicated that Graphical presntation of obtained Mean score of elite and non - elite archers on selected variables such as Anthropometric variables, Physical Performance, Psychological variables and Actual performance.

For example – if we can compare his level to national and international archery player we can put our data into this graph- fake data of Harinder Singh.

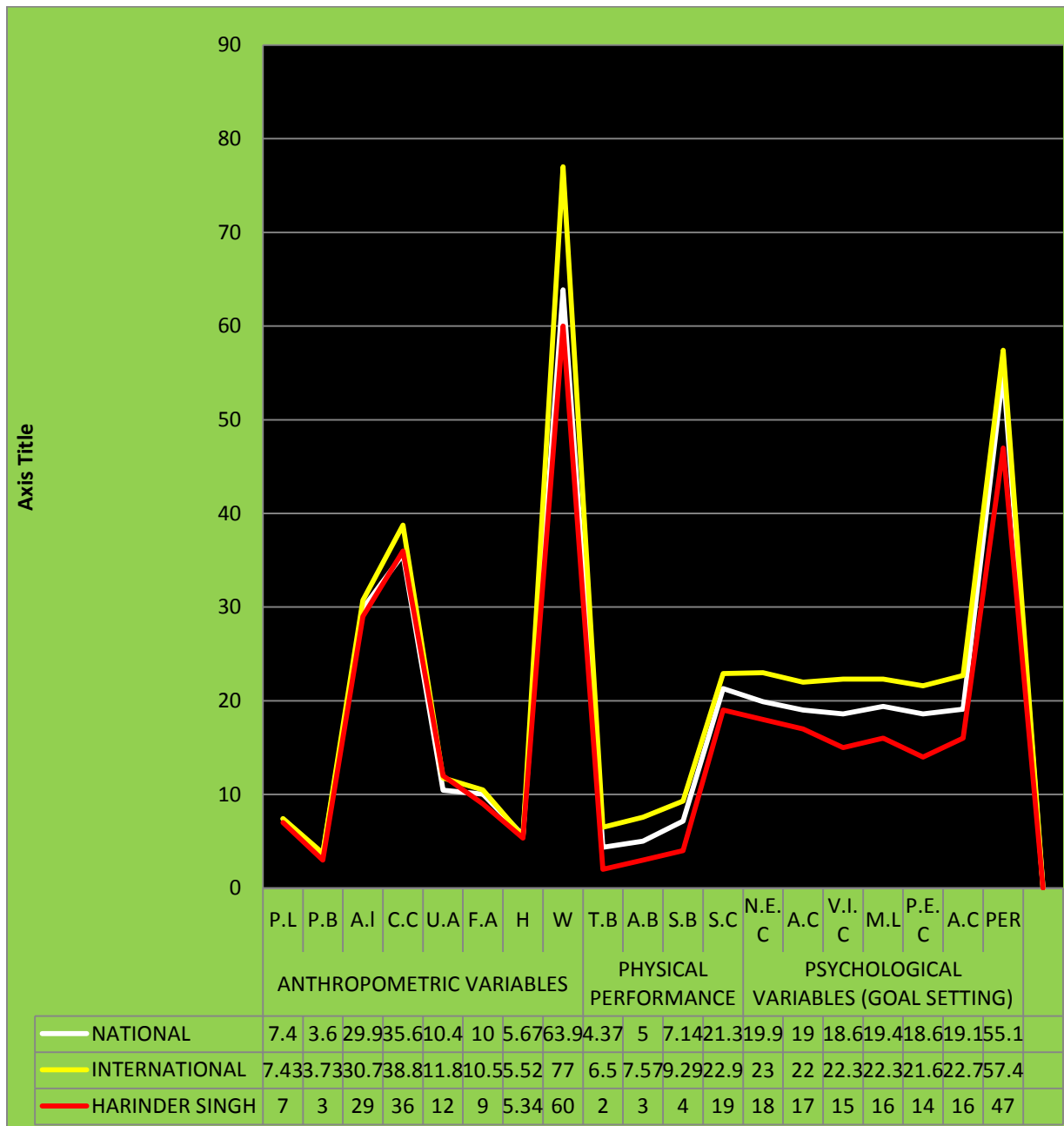|	P.L	P.B	A.l	C.C	U.A	F.A	H	W	T.B	A.B	S.B	S.C	N.E.C	A.C	V.I.C	M.L	P.E.C	A.C	PER		
			ANTHROPOMETRIC VARIABLES						PHYSICAL PERFORMANCE				PSYCHOLOGICAL VARIABLES (GOAL SETTING)								
NATIONAL	7.4	3.6	29.9	35.6	10.4	10	5.67	63.9	4.37	5	7.14	21.3	19.9	19	18.6	19.4	18.6	19.1	55.1		
INTERNATIONAL	7.43	3.73	30.7	38.8	11.8	10.5	5.52	77	6.5	7.57	9.29	22.9	23	22	22.3	22.3	21.6	22.7	57.4		
HARINDER SINGH	7	3	29	36	12	9	5.34	60	2	3	4	19	18	17	15	16	14	16	47		

Fig 4.5 Indicated that Graphical presntation of obtained mean score of national and international archers. After obtained mean score of elite and non-elite archers. It was pridict by new (intercolligate) archers Harinder Singh. It was found that his performance profile strongly suggests that his actual performance is better than both national and international archers and he can be trained further to perform at the elite level.

Table No. 4.3

Comparison between Elite and Non-Elite archers on

Palm length

Group	N	Mean	SD	Df	t-value	*Significant at 0.05 Level
Elite	7	7.40	0.304	12	0.154	
Non Elite	7	7.42	0.380			

Tab t (1,12),05=2.17

Table 4.4 prevails that mean score of elite archers was found to be 7.40 were as score of non-elite   Archers is 7.42 and standers deviation of Elite Archers was 0.304 and Non-Elite Archers were 0.380. The t-value was 0.154 which was found statically insignificant at 0.05 level of confidence. A result of the study indicates there is in significant difference between elite and non-elite archers on Palm Length.

Figure No. 4.6

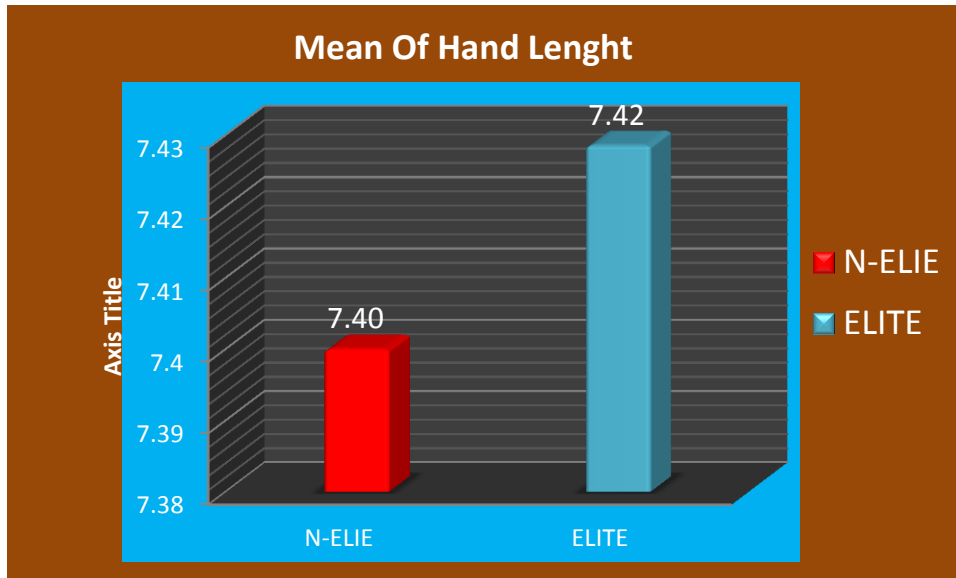**Mean Score of Elite and Non-Elite Archers on the variable Palm length**

Mean Of Hand Lenght

Table No. 4.4

Comparison between Elite and Non-Elite archers on

Palm Breath

Group	N	Mean	SD	Df	t-value
Elite	7	3.60	0.01		
Non Elite	7	3.72	0.22	12	1.36

*Significant at 0.05 Level   Tab t (1,12),05=2.17

Table 4.5 prevails that mean score of elite archers was found to be 3.60 were as score of non-elite Archers is 3.72 and standard deviation of Elite Archers was 0.01 and Non-Elite Archers were 0.22 The t-value was 1.36 which was found statically at 0.05 level of confidence. A result of the study indicates there is no significant difference between elite and non-elite archers.

Figure No 4.7

Mean comparison between Elite and Non-Elite archers on
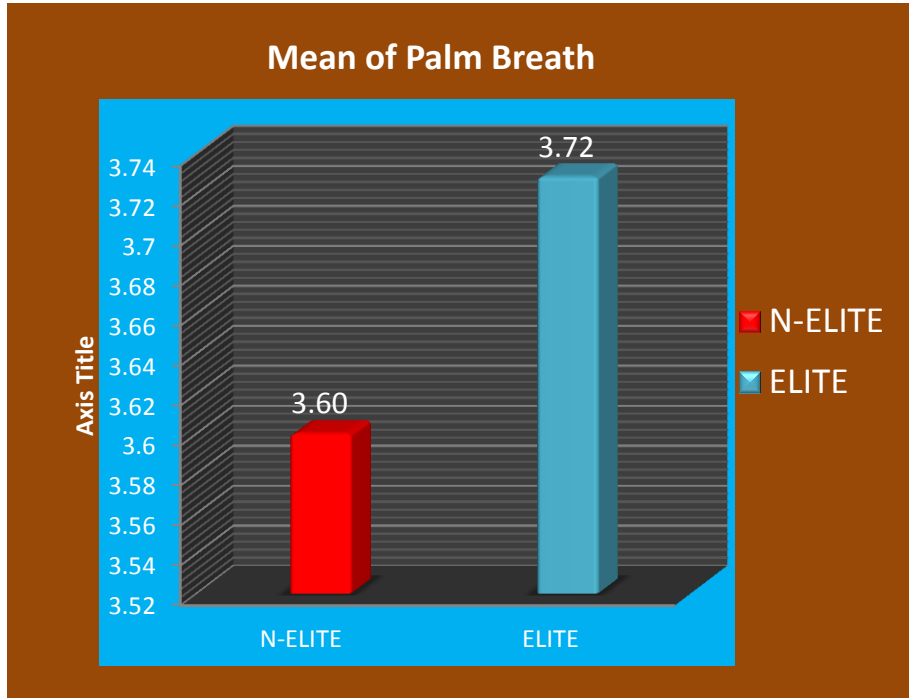
Palm Breath

Mean of Palm Breath

Table No. 4.5

Comparison between Elite and Non-Elite archers on

Arm Length

Group	N	Mean	SD	Df	t-value	*Significant at 0.05 Level Tab t (1,12),05=2.17
Elite	7	30.71	1.86	12	1.23	
Non Elite	7	29.87	1.19			

Table 4.6 prevails that mean score of elite archers was found to be 30.71 were as score of non-elite Archers is 29.87 and standard deviation of Elite Archers was 1.86 and Non-Elite Archers were 1.19 The t-value was 1.23 which was found statically insignificant at 0.05 level of confidence. A result of the study indicates there is no significant difference between elite and non-elite archers on Arm Length.

Figure No. 4.8

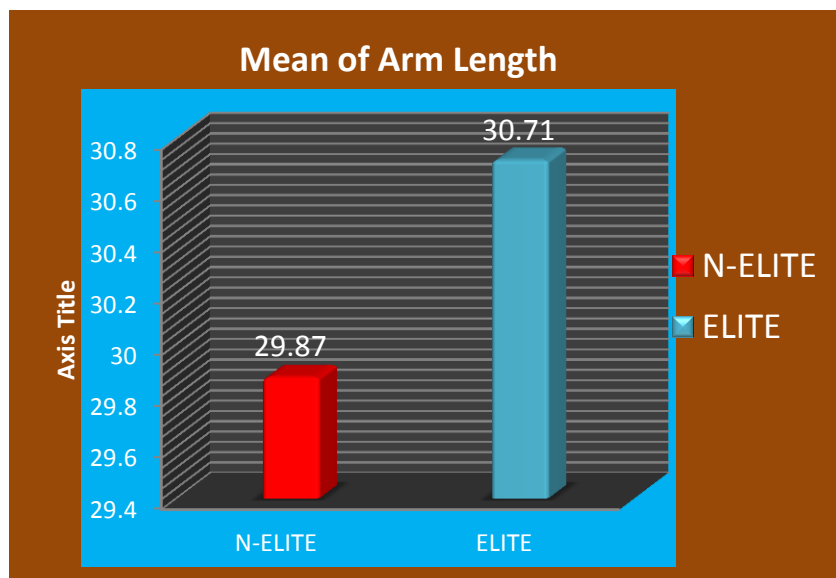## Mean Score of Elite and Non Elite Archers on the Variable of Arm Length

53

Table No. 4.6

Comparison between Elite and Non-Elite archers on

Chest Circumferences

Group	N	Mean	SD	Df	t-value	*Significant at 0.05 Level
Elite	7	38.76	1.77			
Non Elite	7	35.64	2.48	12	2.69*	

Tab t (1,12),05=2.17

Table 4.7 prevails that mean score of elite archers was found to be 38.76 were as score of non-elite Archers is 35.64 and standers deviation of Elite Archers was 1.77 and Non-Elite Archers were 2.48 The t-value was 2.69 which was found statistically significant at 0.05 level of confidence. A result of the study indicates there is significant difference between elite and non-elite archers on Chest Circumferences.

Figure No. 4.9

Mean Score of Elite and Non Elite Archers on the Variable of Chest Circumferences
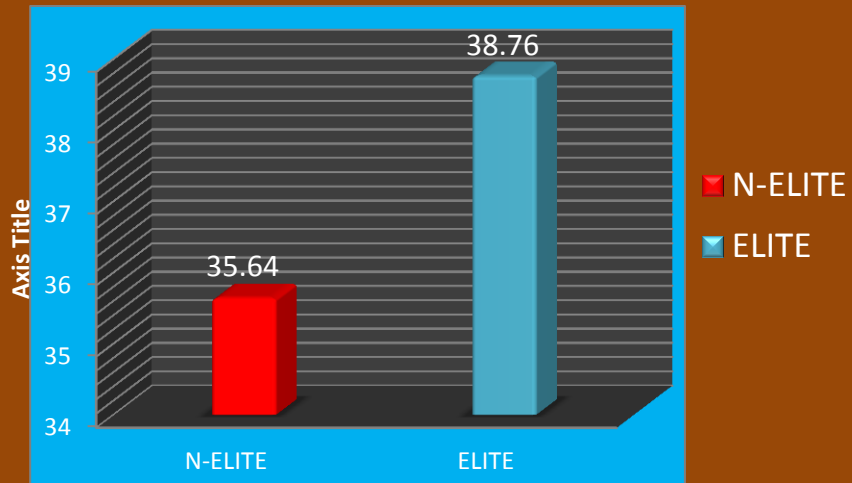
Mean of Chest Circumferences

Table No. 4.7

Comparison between Elite and Non-Elite archers on

Upper Arm Circumferences

Group	N	Mean	SD	Df	t-value	*Significant at 0.05 Level
Elite	7	11.76	0.528			
Non Elite	7	10.44	0.490	12	4.84*	

Tab t (1,12),05=2.17

Table 4.1 prevails that mean score of elite archers was found to be 11.76 were as score of non-elite Archers is 10.44 and standers deviation of Elite Archers was 0.528 and Non-Elite Archers were 0.490 The t-value was 4.84 which was found statically significant at 0.05 level of confidence. A result of the study indicates there is no significant difference between elite and non-elite archers on upper arm circumferences.

Figure No. 4.10

Mean Score of Elite and Non Elite Athletes on the Variable

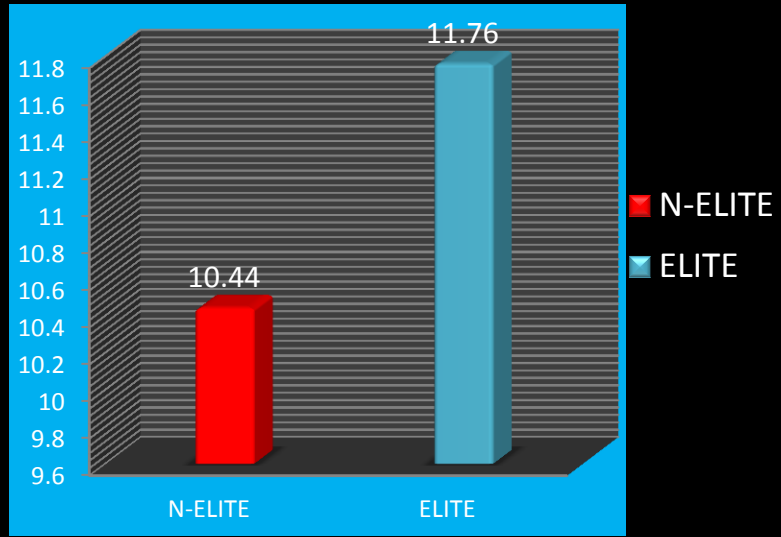**Upper Arm Circumferences**

Mean of Upper ArmCircumfrences

Table No. 4.8

Comparison between Elite and Non-Elite archers on

For Arm Circumferences

Group	N	Mean	SD	Df	t-value	*Significant at 0.05 Level Tab t
Elite	7	10.48	0.469			
Non Elite	7	10.02	0.611	12	1.30	

(1,12),05=2.17

Table 4.9 prevails that mean score of elite archers was found to be 10.48 were as score of non-elite Archers is 10.02 and standers deviation of Elite Archers was 0.469 and Non-Elite Archers were 0.611 The t-value was 1.30 which was found statically in significant at 0.05 level of confidence. Results of the study indicate there is no significant difference between elite and non-elite archers on Arm Circumferences.

Figure No. 4.11

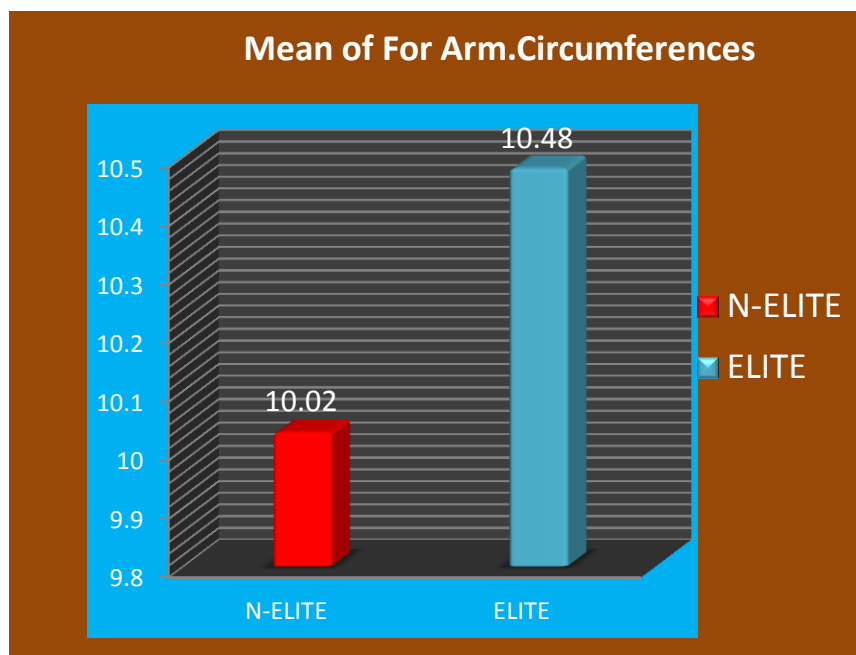**Mean Score of Elite and Non Elite Athletes on the Variable For Arm Circumferences**

Table No. 4.9

Comparison between Elite and Non-Elite archers on

Actual Performance

Group	N	Mean	SD	Df	t-value	*Significant at 0.05 Level
Elite	7	57.42	1.676			
Non Elite	7	55.14	0.975	12	3.11*	

Tab t (1,12),05=2.17

Table 4.10 prevails that mean score of elite archers was found to be 57.42 were as score of non-elite Archers is 55.14 and standers deviation of Elite Archers was 1.676 and Non-Elite Archers were 0.975 The t-value was 3.11 which was found statically significant at 0.05 level of confidence. A result of the study indicates there is significant difference between elite and non-elite archers on Actual Performance.

Figure No. 4.12

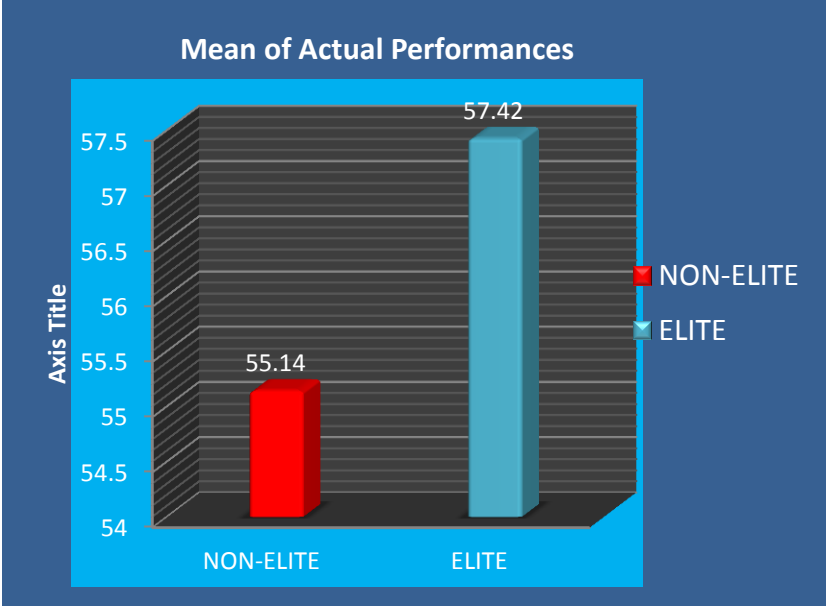**Mean Score of Elite and Non Elite Athletes on the Variable Actual Performances**

Mean of Actual Performances

NON-ELITE: 55.14
ELITE: 57.42

Table No 4.10

Comparison between Elite and Non-Elite archers on

Toe Balance

Group	N	Mean	SD	Df	t-value	*Significant at 0.05 Level
Elite	7	6.5	1.26			
Non Elite	7	4.35	1.353	12	3.04*	

Tab t (1,12),05=2.17

Table 4.11 indicated the mean score of Elite Archers is 6.5 and non-elite Archers is 4.35 and standers deviation of Elite Archers was 1.26 and Non-Elite Archers were 1.353. The t-value was 3.04 which were found statically at 0.05 level of confidence. A result of the study indicates there is significant difference between elite and non-elite on Toe Balance.

Figure No. 4.13

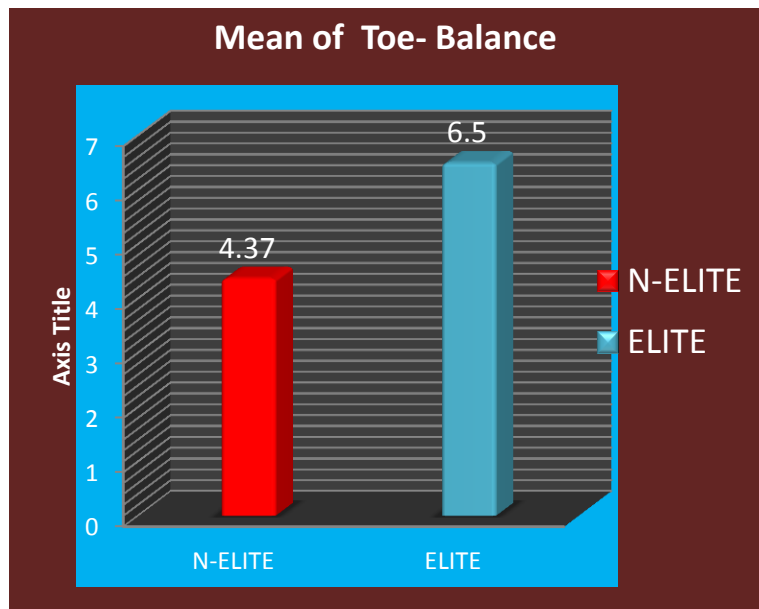**Mean Score of Elite and Non Elite Athletes on the variable Toe-Balance**

Table No. 4.11

Comparison between Elite and Non-Elite archers on

Ankle Balance

Group	N	Mean	SD	Df	t-value	
Elite	7	7.57	1.414			*Significant at 0.05 Level
Non Elite	7	5	2.63	12	2.27*	

Table value 2.17

Table 4.12 prevails that mean score of elite archers was found to be 7.57 were as score of non-elite Archers is 5 and standers deviation of Elite Archers was 1.414 and Non-Elite Archers were 2.63 The t-value was 2.27 which was found statically significant at 0.05 level of confidence. A result of the study indicates there is significant difference between elite and non-elite archers on Ankle Balance.

Figure No 4.14

Mean Score of Elite and Non Elite Athletes on the variable- Ankle-Balance
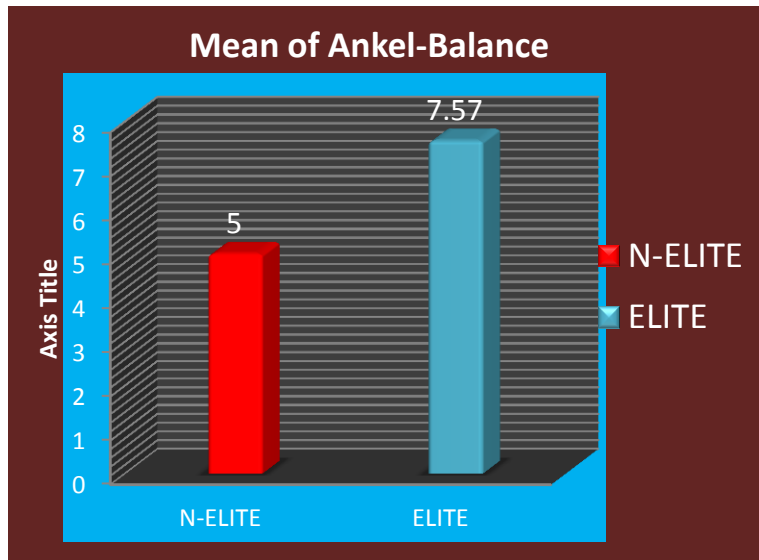
Table 4.12

Comparison between Elite and Non-Elite archers on

Shoulder Balance

Group	N	Mean	SD	Df	t-value
Elite	7	9.28	1.344		
Non Elite	7	7.14	1.495	12	2.81*

*Significant at 0.05 Level   Table value2.17

Table 4.13 prevails that mean score of elite archers was found to be 9.28 were as score of non-elite Archers is 7.14 and standers deviation of Elite Archers was 1.344and Non-Elite Archers were 1.495 The t-value was 2.81 which was found statically significant at 0.05 level of confidence. A result of the study indicates there is significant difference between elite and non-elite archers on Shoulder Balance.

Figure No. 4.15

Mean Score of Elite and Non Elite Athletes on the variable- Shoulder-Balance
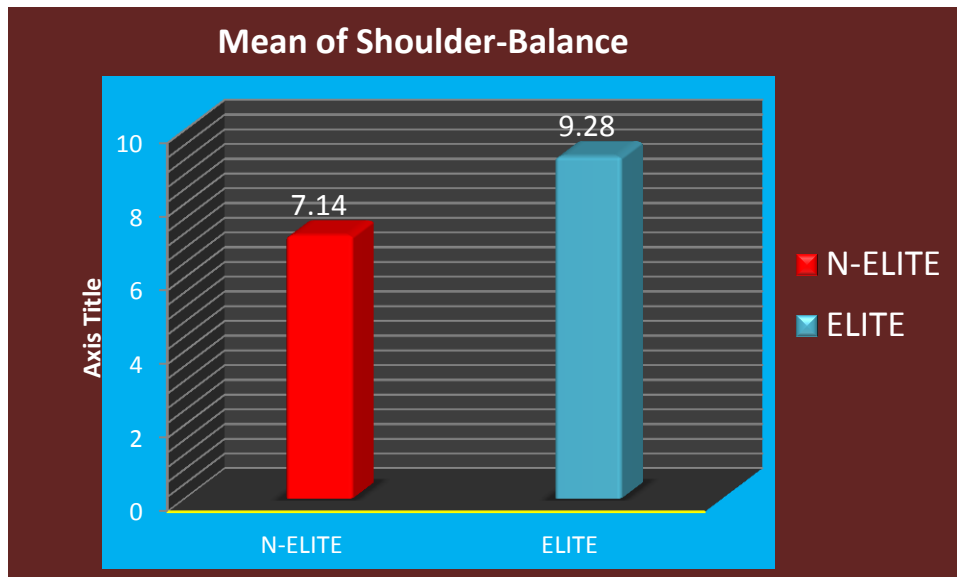
Table No. 4.13

Comparison between Elite and Non-Elite archers on

Psychological Variable (Goal setting)

| GROUP	N	Mean	SD	T-value	
Elite	7	156.71	15.45	1.62	*Significant at 0.05 Level*
Non-Elite	7	134.85			

Tab t (1,12),05=2.17

Table 4.3 prevails that mean score of elite archers was found to be 156.76 were as score of non-elite Archers is 134.85 and standers deviation of Elite Archers and Non-Elite Archers were 15.45. The t-value was 1.62 which was found statically insignificant at 0.05 level of confidence. A result of the study indicates there is in 'significant difference between elite and non-elite archers on psychological variable (G-S).

Figure No. 4.16

Mean Score of Elite and Non-Elite Archers on the Psychological Variable (Goal setting)

65
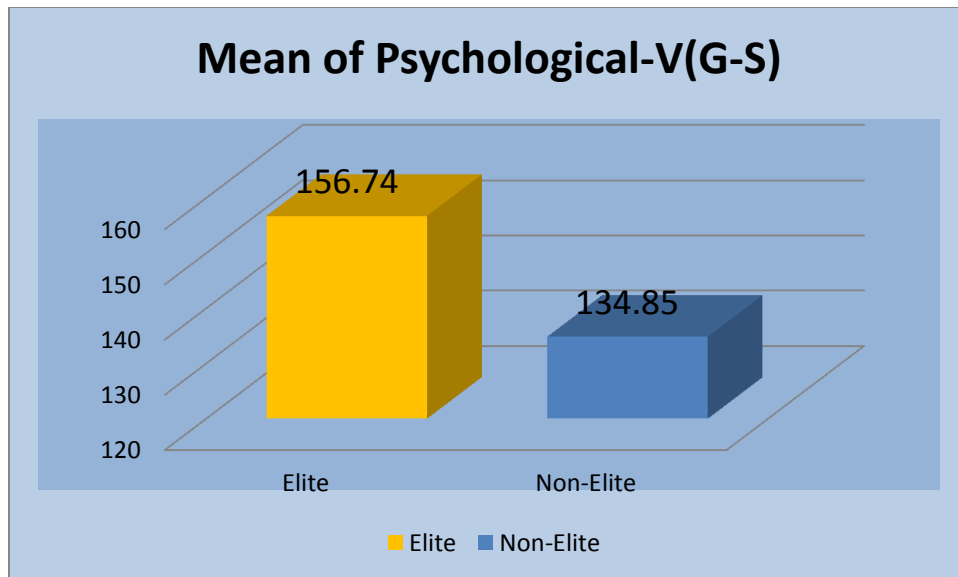
DISCUSSION OF FINDING OF HYPOTHESE

The first objective this study was to identify selected anthropometric characters' of Elite and Non-Eight archers'. In relation to their actual performance to achieve this objectives it was hypotheses that light and Non-Elite arches would not difference on the selected profile parameters the hypotheses was tested at 0.05 level of significant. On compering Elite and Non Elite archive's on palm length it was found that the obtained t-value 0.154 was statistical in significant.

The 2nd anthropometric variable under consideration was palm breath of the archers. The computed t-value was 1.36 which was also in significant because the reason could be the genetic characteristic of the archers as they belong to the northern region of India Specially to the state of Haryana and Delhi.

The 3rd anthropometric parameter was Arm length of the archers were the calculate t-value was 1.23 which was also in significant as the mean age and mean height of the player showed on In significant difference there was no difference in the Arm length of the Elite and Non Elite archers.

In contrast cc showed significant difference between Elite and Non-Elite archers were the obtained t- value was 2.69 and was statistically. The possibly reason could be difference in the training age of Elite and Non Elite archers were light archers do more systematic and regular training as campers to the Non Elite Archers.

On comparing Upper arm circumferences of the statistically significant t-value of 4.84 was obtained. This significant could be due to the exposure to duration of training. The Elite training age is 6-12 year and Non-Elite Archers training age was 4-8 years.

The 3rd objective study was to evaluate the psychological variables on goal setting of Elite and Non Elite Archers. The funding suggested there was a statically significant difference between the 2 groups. The evident reason for this could be attributed to the archers.

The 4rd objective study was to evaluate the Actual performance of Elite and Non Elite Archers. The finding suggested there was a statically significant difference between the 2 groups. The evident reason for this could be attributed to the archer's physically and psychological variables which exhibited significant difference on comparing the 2 group.

There was significant difference between the two groups on Toe balance, Ankel balance, Shoulder balance were the obtained value were significant. The possible could be difference in mean height and training schedule.

Throughout the year players are busy in some competitions/championships. Because of this they have very busy schedule. They do practice throughout the year and these practices improve their performances day by day and make them better players from others.

They first know about new equipment's before other non-elite players. Which they can use to enhance their performances level up. They lives outside from their country and result of this they comes in contact of other country's players, coaches and officials and they get good knowledge of equipment rules of their game from time to time.

Economic condition also plays an important role. The equipment of sports are quite costly and they improves due to technology from time to time. Only that player can afford these equipment who is financially well but who do not have good financial conditions are unable to purchase these equipment and therefore cannot show good results.

CHAPTER -V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Nowadays game and sport plays an important role in our life, but sports and games are not only important for success but are also important for every walks of life. Games and sports include all those activates such as indoors and outdoors games and popular among all ages of people because it helps them to keep fit and strong. Sports and games have come to stay in civilization world and its essential features of human activate and symbolize the youth of nation because the intellectual growth and development of nation depends upon the health of nation. Games and sports not only merely include health and fun but its built and instill a sense of cooperation, spirit of disciple and teamwork

Significance of the Study

1. To finding of the study will add to existing knowledge in this area and will be beneficial for coaches and research for getting a feedback.

2. Findings of this study would help the physical education teacher and coaches to identify the archery players.

3. It will enable us to know the athletes perception towards their own behavior and thus helping to analyze own self in relation to other athletes.

4. The finding of this study might held the coaches to modify/ alter the exiting training method, if need be for their archery players.

5. The goal profile will provide a problem for quick analysis of the performance.

6. The finding of the study will provide a platform for prediction of actual performance.

7. It will provide a background to develop specific training modules in relation to need of the athlete.

Statement of the Problem

The purpose of the study is to investigating the performance profile among archery in relation to performance prediction. To achieve the objectives of the study the problem has stated as under: **"PERFORMANCE PROFILE AMONG ARCHERS IN RELATION TO PERFORMANCE PRIDICTION"**

Objectives

1. To find out selector anthropometric measurements of elite and non-elite archers in relation to their actual performance.
2. To find out the psycho physical performance of elite and non-elite archers.
3. To describe actual performance of elite and non-elite archers.
4. To find out training schedule of elite and non-elite archers.

Hypothesis

1. On the basis of the literature available it is hypothesized that the profile of elite archer may not be different significantly from the profile of non-elite archers,
2. Performance of an upcoming archer can be predicted on the basis of his/her profile.

Operational Definitions of selected Variables

1. Elite athlete: - Elite athlete are those who has participated one or more than one time in international level competition.

2. Non Elite: - Non Elite athlete are those player who has participated in inter college level competition and could not be selected for higher level competition.

3. Psychological Determinants: - Psychological Determinants are the responsible psychological performance indicators of an athlete.

4. Athlete – In the study sometime the terms athlete had been used for both Athletes and Archers.

Delimitations

1. The study was delimited to 14 athletes (7elite) (7non-elite)
2. The study was based on national and international archer's players.
3. All the athletes from the age group of eighteen above considered.

Limitations

1. The researcher cannot include all the parameter of performance to the study due to restriction of time.
2. The number of athlete taken for the study may reflect another limitation for the study.

3. The training schedule followed the athlete can be considered as another limitation for the stud

4. The socio-economical back ground of the athletes can also be considered as the limitation of the study.

Sample Design

The Research Scholar will use randomized sampling technique for the study. The present study will be conducted on six (14) archery players. (7) Elite and (7) non elite players. Elite players will be those players who have participated in international level one or more than one time in international level and still in practice. The elite and non-elite sample with be taken from all over India. Non elite player will be those players who has participated in state and national level competition but not selected for higher competition.

Tools for data collection

Anthropometric Measurement Tool

1. Standing Height. Tool: - Anthropometric Rod
2. Weight Tool: - Weighing machine
3. Chest circumference   Tool: - Steel Tap
4. Arm circumference   Tool: - Steel Tape

Physical Performance Measurement Tool

1. Measuring of Ankle balancing in sec with the help of (Stopwatch.)
2. Measuring of Toe balancing in sec.
3. Measuring of Balance with balance scoring system
4. Measuring of shoulder balancing in sec

Actual performance

Actual performance was measure through the compound event. One round have six chances. According to that score were measured.

Psychological Performance Measurement Tool

  Goal Setting

Statistical Technique

  In order to understand the rate of progression in all the dependent variables descriptive statistics like mean and standard deviation has been applied. Further to predict the performance of the athlete in the selected event, performance profile has to be prepared separately for each athlete and discussion will be more on the basic of the profile and further the profile of the elite athlete can be compared separately with each of the beginner's profile to predict their performance.

Conclusions

1. Significant difference was found between Elite and Non-Elite Archers in Anthropometric variables.
2. Significant difference was found between Elite and Non-Elite Archers in physical performance.
3. Significant difference was found between Elite and Non-Elite Archers in Psychological Variables.
4. Significant difference was found between Elite and Non-Elite Archers in Actual performance.

Discussion of the hypothesis

On the basis of the findings of the study, the following conclusions are drawn:

The hypothesis stated:

Hypothesis$_1$: The first hypothesis that there might be insignificant difference. In the profile of the Elite and Non-Elite Archers is thus not accepted..

Hypothesis$_2$: The second hypothesis regarding the prediction of performance of an upcoming Archers on the basis of profiling is there for not rejected.

Recommendation

  Research is never ending process every. Investigator after completing his/her piece of research investigator become aware of area in which further research is needed and naturally

feel motivated to indicate area which may be taken up for research by other investigator. The investigator purpose following suggestion for further research. The present study carried out with the 14 sample size of elite and non-elite archer. It is further recommended that further research can be conducted on larger sample size for more appropriate generalization of finding.

1) The result of the study can be used by the coaches for talent identification of players of different level.

2) It is recommended that similar study might be repeated by selecting subject belonging to different age, sex of different category and level.

3) It is recommended that similar study can be conducted in other sports for talent identification among elite and non-elite athlete.

4) A similar study can also be undertaken using different variables such as psychology, physiological, Sociological etc.

5) It is also further recommended that the sample size can also be extend in a large number of group.

REFRANCES

Books

Journals

Brahim, Boudhina., John, Cronin & Karim, Chamari. (2009), Anthropometric, physiological and performance characteristics of elite team-handball players. *Journal of Sports Sciences.* Vol. 12 (1) page no. 49-68.

Carrillo,A.Chirsttodoulo,V.Koutedokis,Y.Flouris,A (2010).Autonomic   nervous   system modulation during an archery competition in novice and experiencentarchers.*J Sports medicine.*29(9).93-97.

Daniel M. Landers, Stephen H. Boutcher & Min Q. Wang(2013) A Psychobiological Study of Archery Performance.*Research Quarterly for Exercise and Sport* 57(3)236-244.

Fry, A et.al (2006) Anthropometric and Performance Variables Discriminating Elite American Junior Men Weightlifters. *Journal of Strength & Conditioning Research,* 15(2) 206-216.

Jain R (2010) Archery. *Teach Yourself.*sports publication.

Jain D (2008) Play and learn archery.*KhelSahitya Kendra.*

Kim,H,B. Kim, S,H (2014). The relative importance of performance factors in Korean archery.*J strength cod.res*.44(5).44-48.

Ley,J,J.Seo,J,H.Kim,J,J (2014).The neural correlates of motor imagery for elite archers.*Sports medicine*.33(4),33-38.

OSTOJIC, SERGEJ M.; MAZIC, SANJA; DIKIC(2006)NenadProfiling In Basketball: Physical And Physiological Characteristics Of Elite Players.*Journal of Strength & Conditioning Research*20(4)602-682.

Websites

Unpublished Research

Misslennious

Palsbo,SE (2012).Epidemiology of recreational archery injuries ; implications for archery ranges and injury prevention.*J Sports Medicine Physical Fitness*.52(2).293-95.

Park,J,K.Yoo,J,G (2012).Thoracic outlet syndrome in an elite archer in full-draw position.*Sports medicine*.44(5).45-49.

Reilly,T et.al.(2000) Anthropometric and Physiological Predispositions For Elite Soccer. *Journal of Sports Sciences,*18(9),669-683.

Roj,J.Hamidan,S.Singh,R (2011). The temporal patterns of subjective experiences and self-regulation during Ramadan fasting among elite archers.*Asian J Sports Medicine*.2(3).195-204.

Shinohara, H. Urade, Y, Maeda, N. Xie, D, Sasadai, J (2014). Does shoulder impingement syndrome affect the shoulder kinematics and associated muscle activity in archers.*J sports med physical fitness*.54(6).772-9.

Tim, G et.al (2009). Physiological and Anthropometric Characteristics of Junior Elite and Sub-Elite Rugby League Players, With Special Reference to Starters And Non-Starters. *Journal of Sports and Medical Science, Vo1*. 2 (1) page no. 213-222.

Valentina Perciavalle[1], Donatella Di Corrado, Claudia Scuto, Vincenzo Perciavalleand Marinella Coco(2006)Anthropometrics Related to the Performance of a Sample of Male Swimmers.*Ammon scientific*118(1)940-950.

Vogels, E. Mahajan, A. Klema, J (2014).Crossbow injuries to the thumb.*J sports med physical fitness*.v(34).44-55.

Zemkova,E (2014).Sport-specific balance. *Sports medicine*.44(5).579-90.