CHAPTER-I

INTRODUCTION

The word ‘physical’ refers to the body, and indicates bodily characteristics such as strength, speed, endurance, flexibility, health, coordination and performance.

Human being is an integration of the body and mind. Both components through their combinations make him more successful. The mental process and the physical expression are beautifully interwoven in the mechanism of the whole man and his wholeness in no case should be made to suffer by separating mental and physical aspects (Kamlesh, 1988).

Man’s life is a continuous flow of activity. Every moment he is doing something and his entire activity is the result of the joint efforts of the body and mind; more integrated efforts yield more success to the individual. Things in this world, outside ourselves, come via the body (some organs) into our mind and things in our mind reach the world outside through the body (Gupta, 1983).

Physical fitness is generally defined as the ability to carry out daily tasks with vigor and alertness, without undue fatigue, and with ample energy to enjoy leisure-time pursuits and to meet unforeseen
emergencies (A.C.S.M). Physical fitness is the basic requirement for 
most of the tasks to be undertaken by an individual in his daily life. If 
a person’s body is under-developed or grows soft or inactive and if he 
fails to develop physical prowess, he is undermining his capacity for 
work, which are of vital importance to one’s own life and society. 
Regular participation in vigorous exercise increases physical fitness. A 
high level of physical fitness is desirable for a healthful, productive 
life. Sedentary living habits and poor physical fitness have a negative 
impact on both health and daily living (Uppal, 1996).

Coordinative motor abilities are particularly important at the 
initial stages of the sports development of a competitor (Zimmermann, 
Nicklisch, 1981, Raczek, 1989, Ljach1995, Raczek, Mynarski and 
Ljach 2002). A high level of coordination in early age enables an 
indivisual to learn techno- tactical skills more promptly and execute 
them with desired efficicy and perfection in due course of time during 
competition (Szczepanik,1993, Ljach,1995, Sadovski, 2003, Starosta, 
2003, Gierczuk, 2004). A well-formed basis of coordinative abilities 
in young sportsmen is maintained at a later age and seemed an 
important reason for faster and more accurate learning of rather more 
difficult and complex movement tasks (Raczek, Mynarski and Ljach 
2002)
Especially in sports, in addition to motor abilities, the coordinative abilities are the prerequisites for developing high athletic performance. With high level of coordinative abilities, athletes can learn and improve athletic motor abilities and techniques that are required for the specific sport more promptly and with a higher degree of quality. (Hartmann, Minow and Senf 2002)

Co-ordination means working of a specific muscles group of the body in union for a particular movement. It is of utmost importance in executing any movement with a predetermined objective. Between the muscles groups, co-ordination is divided into inter-muscular co-ordination and intra-muscular co-ordination that refers to coordination between different muscle groups as well as between muscle fibres of the same muscle. Co-ordination is necessary to execute movements requiring speed and strength more efficiently, with less expenditure of energy, showing a better performance over a longer time. A person starts losing coordination once he gets tired and vice-versa. Athlete under fatigue cannot learn movements with a high degree of co-ordination having rhythm, accuracy and perfection etc.

Although, there have been numerous coordinative abilities but the consensus among the sports scientist lies only on seven which
have been considered instrumental in the development of technotactical aspect of the sports as well as the performance of the athletes.

Coordination is the ability to integrate separate motor systems with varying sensory modalities into efficient movements. The harmonious working together of the synchrony, rhythm, and sequencing aspects of one’s movements is crucial to coordinated movement. Various parts of the body may be involved, such as eyefoot coordination, as in kicking a ball or walking upstairs. Eye-hand coordination is evident in fine motor activities such as bead stringing, tracing and clay modeling or in gross motor activities such as catching, striking or volleying a ball (Ali, 2005).

Eye-hand coordination is the ability of the vision system to coordinate the information received through the eyes to control, guide, and direct the hands in the accomplishment of a given task, such as punching or defending in combat sports. Eye-hand coordination uses the eyes to direct attention and the hands to execute a task. Fine motor skills are involved in the control of small muscle movements such as when an infant starts to use fingers with a purpose in coordination with the eyes.
In coordinative ability, the control and regulation processes are required to function in a particular manner, which is further automatized to a great extent during skill performance.

Coordinative abilities are understood as relatively stabilized and generalised patterns of motor control and regulation processes. These enable the sportsman to do a group of movements with better quality and effect (Harre, 1989).

In fact coordinative abilities are understood as stabilized and generalized patterns of motor control and regulation processes. These enable the sportsman to do a group of movements with better and effects. Coordinative abilities are important for almost every game and sport including Judo, Boxing and Wrestling, but, with varied weightage.

Seemingly, co-ordinative abilities have no essential significance in sports with standard structures of the movements and relatively constant permanent competitive conditioning. However, purposeful development of coordinative abilities in the given case is one of the determining aspects of sports functioning, on which above all depends the level of the sports technical and tactical mastery. If due consideration is not given to it, constant specialization in standard form of movement will lead to stagnant motor skills and will narrow
the very possibility of their restructuring and renewal (Metveyev, 1981).

The sports scientist have identified seven co-ordinative abilities namely orientation ability, differentiation ability, coupling ability, adaptation ability, rhythm ability, balance ability and reaction ability. All the co-ordinative abilities are invariably important for learning of sports techniques and for their continuous refinement and modifications during long term training process (Metveyev, 1981; Singh, 1982; Harre, 1989; Mynarski, 2000; Raczek, 2002;).

Co-ordinative abilities are primarily dependent on the motor control and regulation process of central nervous system. For each co-ordinative abilities the motor control and regulation process function in a definite pattern. When a particular aspect of these functions is improved then the sportsperson is in a better position to do a certain group of movements which for their execution depends on the functioning pattern of central nervous system (Singh, 1991).

Efficiency requires good coordination between the body and mind. Lack of coordination results in unskilled or poor movements which is dominated by cortical control that supersedes reflex and integrated mechanism (David, Johnson and Farrow, 1976).
In technical sports beautiful and graceful movements are a product of well developed technical skills and co-ordinative abilities which to a great extent determine the maximum limits to which sport performance can be improved in several sports especially the sports which depend largely on technical and tactical factors (Singh, 1991).

Emphasizing these abilities Metveyev (1981) has advocated that when executing, “coordination assignments” first of all they demand utmost concentration of attention, subtle differentiations and regulations with, considerable alertness. Naturally, it is the best of all to tackle it at the beginning of the main part of the training session. The coordinate function of the central nervous system and the one of its properties which is also called plasticity are assigned a leading role in physical treatment of the essence of coordinative abilities. The ability to coordinate movements qualitatively depends largely on the perfection of the function of the analyzers.

Such training means can also be used as ancillary means of fostering the improvement of analyzers’ function while at the same time the athlete can stay relatively passive. The analyzers as part of the whole neuromuscular system should be seen as a part of the “Physiological sub-stratum” of coordination. Their function co-determines the level of the coordinative abilities. This should be taken
into consideration and these means only applied as an additional means to develop these functions (Harre, 1982).

Insufficient training of coordinative abilities limits the performance ability especially at the higher level. On the contrary, better development of coordination abilities provide essential base for faster and effective learning, stabilization and valuation in technique and their successful execution in game situation. The quality of performance of all fundamental mechanical skills, the rhythm, flow, accuracy, amplitude etc. are improved by coordinative ability; it helps in developing very fine extra credible skills (Singh, 1991).

Coordination is important for the development of combat sports; the coordinative abilities play a vital role during practice and competitive situations. In Judo, Boxing and Wrestling, the performance is significantly based on coordinative abilities, like reaction time, balance, rhythm, orientation etc., in Judo during uchikomi (repetition practice) the rhythmic ability and coupling ability play a major role as the technique to be perfected by repeating the movement a number of times. Kuzushi (off-balancing the opponent) is one of the pre-requisites for applying a successful throw which needs the attacker to be in good balance and posture. A learned judokas uses his reaction to get advantage of the opponent’s slow and improper
attacks in applying counter throws. In the game of Judo, after each bout, a judoka fights against a new opponent of different height. Posture measurement add to some extent different weight (specially in open weight category) that enables him to adjust and transform his grips, techniques, postures and movements depending on the opponent, hence to meet such situation, he requires a top class differentiation ability. During the osaewaza (ground work) there are numerous situations when a judoka tries to hold the opponent, and the opponent lying below him is unable to see the movements and positions adopted by the inclination of weight and body parts of the opponent touching him; it is where he uses his orientation abilities to defend himself from holding, locking and chocking technique, (Sisodia, 2000).

Wrestling belongs to the group of sports disciplines with complex movement activities in which an essential role is played by coordination motor abilities. A high level of coordination improvement, starting from the earliest years, positively influences the process of learning new movements as well as enables to make a more effective use of technical and tactical skills during a sports fight. Therefore, the formation of coordinative abilities, since the earliest years, is the condition of training young wrestlers effectively.
The continuously changing life processers create different needs and emphasis for different individuals, as they grow older. There needed an optimum level of fitness for different age groups, and for better understanding of physical fitness the components of physical fitness must be known. The components of physical fitness as listed by Lason and Yocomare include resistance to disease, muscular strength, muscular power, muscular endurance, cardiovascular endurance, flexibility, speed, agility, co-ordination, balance and accuracy.

An individual with a high level of motor ability, possessing the basic motor qualities necessary for achieving excellence in a number of activities, may still be unable to perform well in a particular sport unless he has developed specific skills for that sport through long hours of practices.

In technical and combat sports, beautiful and graceful movements are a product of well developed technical skills and coordinative activities. The coordinative abilities, to a great extent, determine the maximum limits to which sport performance can be improved in several sports, especially the sports which depend largely on technical and tactical factors.
Experts in training science recently have been using the term ‘technique and coordinative abilities together as one performance factor technique/coordination, since both are interrelated and interdependent. They have in common the process of the taking in and processing information for the regulation of action which enable the sportsman to direct and control his movement according to changing situation. Both these qualities postulate coordination of the nervous and muscular systems. The learning of motor movement has positive effect on coordinative abilities necessary for the perfection of sports technique. Still these two qualities differ in the degree of their general training, methodic and the level of development. In case of motor skill, processes are largely automatized for the effective execution of a wide number of movements similar to each other.

Judo involves quick and frequent exchanging of body position during game. Judokas try to outclass their opponents both with attacking and defensive tactics. Thus, in judo also coordinative abilities play an important role.

Similar to judo coordinative abilities play a significant role in learning consolidation and mastery of skills in boxing as well. Punch and defense occur frequently in boxing and it is assumed that these skills may have strong relationship with coordinative abilities. In other
combat games like wrestling etc, the player gets very limited time to perform, and enhanced reaction ability plays a significant role. Besides reaction ability, the other abilities, namely balance, rhythm, coupling, adaptation, orientation ability, balance ability have a significant place in the performance of a skill in the combative sports.

Hence, we can say that almost all the coordinative coordinative abilities are very essential for better and effective movements for execution of effective movement in almost all the combative sports including boxing, judo and wrestling.

Motor coordination is a part and parcel of action regulation and is closely linked with the process of cognitive, psychic and movement execution aspect of an action. Coordinative abilities have also important and strong links with motor skills as motor coordination forms the basis of both. Coordination has been one of the key factors in terms of performing skills in efficient manner. It is generally seen that elite athletes possess abundance of coordination for developing skill in a variety of ways.

**COMBAT SPORT**

Combat sport is a competitive body contact sport where two combatants fight against each other using certain rules of engagement, typically with the aim of simulating parts of real hand of combat.
Judo, wrestling, boxing, mixed martial arts and fencing are examples of combat sports. The techniques used in these sports can be categorized into three domains: grappling, striking and weapon usage. Sports related to combat skills have been a part of human culture for thousands of years. The ancient Olympic Games were largely composed of sports that tested skills related to combat, such as armoured foot race, wrestling, boxing, pankration, chariot racing amongst others. This tradition of combat sports was taken even further by the Romans with gladiators who would fight with weapons, often to the death. Through the middle ages and renaissance the tournaments became more popular, amongst aristocrats, where these combative sports were practiced by the all levels of society.

In recent times combat sports have occupied a significant place among sports and games. It is a game of anticipation and masterful skill, deception and concentration. It requires mental and physical attributes to be in the top gear to tackle all eventualities in a bout. A bout is won by the perfect amalgam of physical condition, skills, experience and most importantly, the coordination.

**BOXING**

Boxing is one of the major combat sports between two combatants who use their fists to achieve supremacy over their
opponent. Like wrestling, boxing has ancient roots, as it was well known to the cultures of Mediterranean Sea and Egypt before it was first included in the Greek Olympics in 688 BC. Boxing was later known as pugilism, a derivative of the Latin term for a fighter, from which comes the slang term "pug." Boxing was first introduced in the modern Olympic Games at St. Louis in 1904. It has remained a sport where the competition is organized along weight classification lines, like other combat sports such as judo and wrestling wherein it is believed that the heavier competitor is generally the stronger one. With some variations in two categories, all professional boxing, as well as amateur competitions are determined by weight class. Boxing was introduced into the first Asian games held at New Delhi in 1951.

Boxing is mainly divided into amateur and professional categories and Amateur Boxing Association (A.B.A.) is the highest governing body of boxing. It was formed in the year 1885 in London. It controls the tournaments including the Olympic Games, amateur Boxing and Asian Games etc. In India, on May 13, 1948 the I.A.B.F. was formed at a meeting of provincial representatives who assembled at Calcutta for selecting boxing squad for Olympics.

The first post-independence All-India boxing Championship was held on March 18, 1950 at the Brabourne Stadium, Bombay. At
present the performance of Indian boxers at International level is improving day by day whether it is Asian games, Olympic games or any other championship. Vijender Singh an Indian boxer has bought laurels for the country by winning a bronze medal in Beijing Summer Olympics in 2008, the first ever olympic medal for an Indian boxers.

The only significant difference between olympic and professional boxing is the length of the rounds in each bout and the use of protective gear. In Olympic competition, all fighters must wear protective headgear and each round is two minutes in duration, with one-minute intervals, and four rounds in total. Professional bouts can last from eight to fifteen rounds, depending on the weight classification, and scoring in the sport of boxing is similarly varied between amateur, olympic, and professional bodies, but the general principles remain consistent across the sport.

Boxing matches are scored by the referee who is in the ring to maintain order and to enforce the rules of the sport, as well as by three judges stationed outside the ring who assess the fight based on a scoring system. Each punch that, in the opinion of the referee, lands on the opponent's head or body will score a point. Penalties may be imposed in the scoring system for such items as a low blow, which is a punch delivered below the belt line of the opponent; a head butt; or
any other type of contact that is not permitted by the rules. When the fight is not concluded with either a knockout or a technical knockout at the end of the last round, the fighter with the highest number of points will be deemed the winner. If the points total is equal, the fight is declared a draw. The fighting stance is similar to the traditional athletic stance common to the execution of many sports, with the knees bent and the hips flexed to permit agility and the establishment of a stable position. In the fighting stance, the boxer's hands are maintained in a defensive position in front of the head, to protect against punches aimed there.

A counterpunch is a blow delivered in an immediate response to one received from an opponent. A combination is a series of two or more different punches thrown consecutively. The boxer's footwork is of critical importance to the delivery of a strong punch from a balanced position. Footwork that permits the boxer to maintain balance as the blows are delivered and absorbed is the base on which an effective punch can be delivered; an ability to move gracefully and with agility will often permit a boxer to escape dangerous encounters with the opponent.

The tactics employed in a boxing match are a combination of a particular boxer's strengths, the opponent's perceived weaknesses, and
the status of the fight at a given time. Boxing training is a very physically demanding process. Boxing is a sport that is anaerobic, in terms of the intervals of high intensity activity contained within each round; it is also aerobic in its requirements that the boxer builds a powerful physical recovery mechanism, to assist the body in returning to its natural balance between each round. Effective boxing programmes will make ample provision for the development of both energy systems. Boxers have traditionally employed skipping and running (road-work) to enhance their cardiovascular proficiency.

Agility, lateral quickness, and hand-eye coordination are fundamental to boxing success. The mechanics of the delivery of a punch require the instant coordination of footwork with arm action. The physical risks of boxing are many; lacerations to the face, fractured noses, damage to the ear cartilage and similar injuries caused by punches to these areas are common to boxers. The most serious boxing injuries are those caused by a blow or a series of blows to the head, most commonly concussion and subdural hematoma. Concussion is a brain injury in which the brain is violently moved within the fluid that supports it within the skull.
Judo is an art and sports, founded by Jigaro Kano of Japan in 1882. He took the best of Jujitsu self-defence techniques and excluding those that were harmful. He modified others so that they could be practised safely. Judo uses skill and flexibility for attack and defence. Judo is known as “Gentle Way”. Strength is of course applied more importantly in a rational way. In emergencies, Judo can be a form of self-defence (Goldman, 1986).

Judo may be described as a science for the study of potential power of the body and mind and the way of applying them most efficiently in competitive activities. Hence, it is involved with the study of the laws of gravity, dynamics and mechanics as related to the function of human body. Efficiency in Judo is certainly a valuable asset, but the real value applied to life in the effects which the training produces on the state of the body and mind (Koizumi, 1960).

Judo was first introduced into Olympic competition in 1964 at Tokyo, and it has subsequently become accepted as a high level combat sport for both men and women. Judo has significant world wide appeal, both as a recreational club activity, with participants who seek a measure of improved physical fitness of an individual, and personal pleasure, as well as status as an elite level sport.
Judo in ‘wide sense’, can be physical culture, in the ‘narrow sense’, a sport; as physical culture, it can be an entrance into a special form of physical experience of an intrinsic need, an increase of awareness of what the body is capable of doing. As a sport, the individual can participate in violent competition, experience the conflict of one skill opposed to another. As a man-made skill it can develop the bad and the good in any personality (Geof, 1988).

Worldwide judo competitions are sanctioned through the International Judo Federation (IJF), an organization with national governing body members in most nations of the world. Judo is organized as a weight category competition, as larger athletes would possess a natural competitive advantage against smaller athletes, given the nature of judo and its physical requirements.

Apparently and understandably, the beginning of judo in India is blocked out in mystery. The first written reference to judo coaching available in kodokan refers that Gurudev Ravindra Nath Tagore who arranged demonstration and coaching of judo at Santiniketan in 1929 by Mr. Takagaki, a Japanese judo coach in India. Thus unforgettable historical union of outstanding personalities in two different fields was blessed with the formation of the special poem on judo written by none other than Gurudev Ravindra Nath Tagore himself. History also
reveals that many Indians learned judo and were graded by Kodokan before 1929. Despande was the first Indian to be awarded black belt (sho-dan) in 1932 and in 1904 five Indian judokas had participated in Kodokan. There are evidences that judo was practiced in India before 1929 also. A.P.S. Barodawala learned judo from two Japanese who stayed in Bombay for quite some time and later on got black belt in 1930. Few years later French expert started coaching in Arvindo Ashram, Pondicherry.

The Judo Federation of India was formed officially in the year 1965. J.F.I. also formed many state levels Judo associations for proper implementation to fulfill the task. These associations had encouraged the individual to learn the art of Judo skill. Since one form of judo i.e. Randori is similar to wrestling many wrestlers took interest in judo. Females also took the game equally due to its nature of self-defence.

The first National Judo Championship was held at Hyderabad in 1966, since then National Judo Championships are regularly being organized by J.F.I. Three Japanese Judo experts who contributed significantly in training the coaches for India at Netaji Subhas National Institute of sports Patiala. Since 1976 onwards regular diploma course in Judo is being conducted at SAI NS NIS Patiala, and coaches passing out are playing a major role in promoting Judo in the
country. Judo was included in All India Intervarsity Competition in the year 1985. The first International Competition for Indian team was in 1986 Asian games where they got four bronze medals. Thereafter, India is continuously dominating in South Asian Judo championship and few judo players, viz Sandeep Byala and Narendra Singh represented India in Olympic and World Championship also (Singh, 2008).

Judo has a standardized ranking system for its participants, which may range from children under 10 years of age to persons in their 70s and beyond. Athletes are judged on their ability to execute various standard throws and holds; the athlete is awarded his judo "belt" with the colour of the belt signifying their level of proficiency. Black belts are reserved for the masters of the sport, known as dans-a tenth level black belt is the highest level ever awarded in judo. The award of a belt is not necessarily related with the achievements of Olympic or other international competitive achievements.

Judo is one of the combat sports of high coordination, where strength, balance, flexibility and reaction time are employed to create tactical advantages. All judo participants wear an identical uniform, the judogi. The competitors wear no other clothing or footwear during the course of bout in competition.
The role objective of competitive judo is to defeat the opponent in one of the three ways to successfully throw the opponent onto his back; to hold the opponent on his back for a period of 25 seconds; to disable the opponent by way of a choke hold or an arm lock that prevents his further movement. Judo is the only Olympic sport where choking or the potential fractures of an opponent’s arm are legal techniques.

Throughout the course of the contest, the judokas are scored in their movements by three judges, one of whom remains on the mat, the remaining judges are positioned on the edges of the competitive surface. The judges assess not only the raw numerical values of the score, but the quality or any impressive aspect of a single manoeuvre. Points are also scored through the award of penalty; points are not deducted from the offender's score, but added to the opponent's tally.

As a general rule, a judoka may attempt to knock over the competitor by attacking their legs, by sweeping the feet of the opponent from under them, or by performing one of the many permitted throws. Much of success in judo is built upon the ability of a competitor to execute the desired throw while establishing a low centre of gravity through which to move dynamically across the mat. Many effective judo moves are also executed in mid-air, and the
understanding by the judoka of the importance of maintaining a low center of gravity is essential in landing in a stable position.

The brute strength that athletes often develop through weight training may assist in judo, but will never likely be determinative to competitive success. Training exercises that emphasize balance and coordination movement within which the judokas is able to move explosively are the foundation of success in judo. As the body of a judoka may be twisted and contorted by the application of opponent force during an event, stretching to achieve maximum flexibility and range of joint motion are essential to prevent fluid movement and to assist in the prevention of injury.

WRESTLING

Wrestling is one of the world's oldest forms of athletic competition. Many cultures had various forms of wrestling as a component of their military preparation. The ancient Olympics included wrestling, with the competition first recorded as taking place in the Games of 708 BC. Wrestling is hand combat between two competitors subject to certain rules, during which each competitor tries to control the movement of the other through the complex technical-tactical moves and by using all their physical and psychological potential (Petrov, 1987).
The recognized sport of wrestling is an athletic event, sanctioned by the International Federation of Associated Wrestling Styles (FILA), and it is included as both an international and Olympic competition.

More than 4000 years ago at the dawn of civilization, we find that wrestling was highly developed in Asia and Egypt, then introduced in Greece; wrestling was introduced in Rome in the last quarter of the second century B.C. Wrestling developed in England in an early era. China was the first in which wrestling was introduced among the Asian countries, in India history of wrestling can be traced as far back as 4000 years B.C. (Dubey, 1964).

Two ancient documents, the Ramayana and the Mahabaratha give accounts of the famous wrestlers of thousands of years ago, the art of wrestling seem to have been most popular. During this period Hanuman, Jambuvant, Bhima, Balram, brother of Lord Krishna, were very renowned wrestlers and honored as “Master-Mind” of the game. Wrestling (maladvandva) sports was mentioned in the Vedas and the epics have its origin in the military training. Competitions were held not just as a contest of the players’ prowess but also as a means of finding a bridegroom. Arjuna, Rama and Siddhartha and Gautama all won their consorts in such tournaments. It is not possible to say how
this game spread in the world and by whom. Wrestling has been in existence in India as far back as records go and before that the sport is mentioned in the mythology. Wrestling has an unbroken and bright tradition from ancient times. In those days, wrestling was considered the king of many games. Indian Wrestling can be divided into four types: Hanumanti Wrestling, Jambuwanthi Wrestling, Jarasandhi Wrestling and Bheemseni Wrestling.

Wrestling in India was mainly used as a wonderful way to stay physically fit. It was also used as a great way of military exercise without any weapons. It is also known as `dangal` which is the basic form of a wrestling tournament. Wrestling in India is most famously known as Malla-Yuddha. The famous Indian epic, Mahabharata has a huge mention about the game of Wrestling in India. During the ancient times in India wrestling used to get regular patronage from the emperors and kings. It can be divided into two main categories i.e. Malla Krida and Malla-Yuddha. While Malla Krida is the sports form of the game, Malla-Yuddha is the battle version of wrestling. In Indian wrestling there are also some other forms, out of which, the free-style varieties are more common than all the other forms, since vedic times. The free-style varieties of wrestling are known as Pushti or Kushti.
In India it has witnessed the rising of several eminent wrestlers, so far. The legendary Indian wrestler, Karim Bux became the first wrestler to defeat Tom Canon of England in 1892. Another eminent Indian wrestler, Gobar Goho became the World Champion in Wrestling in San Francisco in 1922, by defeating the hook wrestler Ad Santel. Gama defeated Zybisko and became world champion in Patiala (India) in 1928. The renowned Indian freestyle wrestler, Khashaba Dadasaheb Jadav won bronze medal in the 1952 Olympic Games. Another eminent Indian wrestler was Salwinder Singh Shinda, who won the Chandigarh Kesari Award, for four times. Some of the other legendary wrestlers in India include Kikkar Singh, Gulam, Rajeev Tomar, Arjuna Awardees like Anuj Chaudhury and Malkit Singh Kanjli. India also hosted the World Wrestling Championship in New Delhi in 1967.

Apart from them, in the recent years, Wrestling in India is watching the rising of some wrestlers, who have a high potential to revive the dominance of India in the international Wrestling arena. The famous Indian wrestler, Sushil Kumar has won Bronze medal in 2008 Beijing Olympic Games.

The wrestling Federation of India (WFI) came into existence in 1967 and it has been promoting the game in India, since then. Apart
from that, there is also several state level wrestling associations that are working in collaboration with the Wrestling Federation of India (WFI) for the management of Wrestling in India. The associations present many awards and titles to its wrestlers. Some of the most prestigious wrestling titles include the Rustam-e-Hind that means Wrestling Champion of India, the Rustam-e-Punjab, the Rustam-e-Zamana, and the Bharat-Kesri that is given to the best heavyweight wrestler of the country.

Wrestling is a sport involving two athletes engaged in a physical competition that is limited to a specified area defined on a mat. The general objective of all types of wrestling is one wrestler attempts to force the shoulders of the opponent to the floor in a prescribed manner. The contest, a bout, is generally two rounds, each one of three minutes in duration. A wrestler wins a bout by either scoring a fall against the opponent, or by accumulating points through the successful execution of various manoeuvres. In wrestling, a referee will supervise the contest, and judges positioned near the mat will score the progress of the contest. The two different types of wrestling competition are freestyle, in which men and women compete in separate divisions and Greeco-Roman.
Freestyle wrestling is the most popular form of the sport throughout the world. In freestyle, the wrestler is permitted to use his entire body in the execution of any of the permitted techniques. Holds of the opponent, including the use of the legs and the tripping of an opponent, are a part of freestyle. The Greco-Roman discipline restricts the competitors to holds applied to an opponent from the waist up, and the use of the legs to hold or throw the opponent is prohibited.

In all forms of wrestling, there are a variety of methods in which to score against an opponent. When the wrestler places the opponent in a position in which the opponent's back is pressed to the mat, points are scored. In the course of a manoeuvre that appears to have the wrestler in a position of control by the opponent, the wrestler will score if he is able to execute an escape from the disadvantageous position. A reversal is scored when a wrestler turns a scoring position for the opponent into a scoring position for himself. The best-known wrestling manoeuvre, a takedown, is when the wrestler takes the opponent from a standing position to the mat.

The Indian style, which is called ‘catch as catch if u can’. Wrestling was first time organized in 1896 at Athens Olympics where Karl Sutchman of Germany became the champion of heavy weight. Greco roman style of wrestling is fought above the belt. Hundreds of
countries take part in both styles during the Olympic Games. So whenever history of wrestling is written the name of India should not be hidden in this connection. If truthful history be written, the origin of wrestling will not be found in a country other than India or Aryavrat (the old name of India), (Singh, 1996).

Wrestling in all of its forms is a demanding and highly athletic sport. As with many sports where size of the physique and physical strength are important competitive factors, wrestling competitions are divided into specific weight categories. Wrestling training must be comprehensive to produce a successful athlete, and all of the traditional attributes of complete physical fitness are engaged in the sport: coordination, endurance, flexibility, speed, power and strength. The primal nature of wrestling, and the requirement that a single opponent be conquered, also demands the development of a very rigorous mental approach to training and competition.

The foundation of successful wrestling training is the development of a strong cardiovascular system. Like boxing, wrestling places demands on both the anaerobic energy system, due to the short, intense nature of the competition segments, as well as the aerobic system, necessary to facilitate recovery by the athletes. Traditional means of developing anaerobic fitness, such as interval
training, are of great benefit to the wrestler. Most comprehensive wrestling programs will ensure that the athlete obtains significant aerobic exercise, including running and cycling or the use of cardio machines when the athlete wishes to minimize the stress directed onto legs, since they are the subject of very pronounced stresses in other aspects of training and competition.

The development of core strength and coordinative abilities is perhaps as important to a wrestler as any other physical attribute. Successful wrestling techniques apply basic principles of physics, especially those relevant to the establishment of leverage, necessary to successfully throw an opponent, and the maintenance of a low centre of gravity, to ensure stability in all movements. Successful wrestlers seek to develop their core strength to permit the maximum utility of the muscles of the abdomen, lumbar region, groin, and gluteal area with the help of the perfect body coordination.

A characteristic of all successful wrestlers is the combined effect of coordinative abilities specially the rhythmic ability, reaction ability, flexibility, balance ability and agility. Wrestling is a dynamic sport where the athlete must be able to respond to an opponent's attacks from a variety of physical positions. The rules of wrestling permit a multitude of different applications of force in which the
greater the flexibility and resultant range of motion in the joints with coordination of the athlete, the more likely a positive response can be made and the less likely an injury will be sustained.

**STATEMENT OF THE PROBLEM**

As the present study was designed to compare the selected coordinative abilities of male combative athletes belonging to Uttar Pradesh and Uttarakhand state police, the problem therefore was stated as “comparative study of selected coordinative abilities of male combative athletes belonging to Uttar Pradesh and Uttarakhand state police”.

**DELIMITATIONS**

1. The study was delimited to the sportmen of Uttarakhand and Uttar Pradesh state police.
2. The study was delimited to the combative athletes of Judo, Boxing and Wrestling only.
3. The study was further delimited to only the following selected coordinative abilities:
   i) Reaction ability
   ii) Orientation ability
   iii) Differentiation ability
   iv) Balance ability
v) Rhythm ability

LIMITATIONS

1. Due to the non-availability of highly sophisticated and precised instruments, the quality of collected data on indigenous instruments may be considered as one of the limitations of the study.

2. Variations in climatic conditions of Uttar Pradesh and Uttarakhand states may have a bearing on the overall health and physical fitness of the subjects of two states which may also be considered as a limitation of the study.

3. Vividness in food habits, daily routine and training schedule of the subjects belonging to two states may also be a potential limitation of the present study.

4. Difference in working conditions, nature of duty and duty hours of the athletes of two state police forces may also be considered as a limitation of the study.
HYPOTHESES

From the scholars understanding of the problem, as gleaned through the available literatures and keeping in view the nature of study, following null hypotheses have been formulated:

1. There would be no significant difference among various groups of subjects i.e. Judokas, Boxers and Wrestlers on Reaction ability.

2. There would be no significant difference among various groups of subjects on Orientation ability.

3. There would be no significant difference among various groups of subjects on Differentiation ability.

4. There would be no significant difference among various groups of subjects on Balance ability.

5. There would be no significant difference among various groups of subjects on Rhythm ability.
OPERATIONAL DEFINITION AND EXPLANATION OF THE TERMS

COORDINATIVE ABILITIES

Coordinative abilities are understood as relatively stabilized and generalized pattern of motor control and regulation process. These enable the sportsman to do a series of movements with better quality and effect (Singh, 1991).

REACTION ABILITY

It is the ability to react quickly and effectively to a signal (Singh, 1991).

ORIENTATION ABILITY

According to (Singh, 1991) it is the ability to determine and change the position and movements of the body in time and space in relation to a definite field of action.

DIFFERENTIATION ABILITY

It is the ability to achieve a high level of fine tuning on harmony between various phases of the individual movement and the movement of the body parts (Singh, 1991).

BALANCE ABILITY

It is the ability to maintain balance during whole body movement and to regain the balance quickly after the balance disturbing movement (Singh, 1991).
RHYTHM ABILITY

It is the ability to perceive the externally given rhythm and to reproduce it in motor action (Singh, 1991).

SIGNIFICANCE OF THE STUDY

The study will contribute in the following ways:

1. The study may help physical education teachers and coaches to select the potential probables of various games and sports on the basis of their coordinative abilities.

2. The study may throw light and open new vistas with regard to training implications of coordinative abilities in different sports.

3. The outcome of the study on selected coordinative abilities will be helpful for the athletes and coaches of other games and sports in techno-tactical development of the chosen sport.

4. The selectors may use coordinative abilities as the criterion measures while selecting the individuals and the teams for higher competitions.

5. As the coordinative abilities play decisive role in skill acquisition, special attention and weightage may be assigned by the trainers and coaches for the improvement of coordinative abilities.
6. The results of the study may be useful in evaluating the degree of adaptive changes that are brought out by different sports.

7. The findings of the study may also help further in analysing the extent of coordinative abilities required in combat and other sports for enhancing performance.

8. Results of the study may provide knowledge and clear understanding about the specific type of coordinative abilities needed for particular sports, which can be determined as the predictors of performance at higher levels.