COMPARATIVE STUDY OF COORDINATIVE ABILITIES OF SOCCER PLAYERS IN RELATION TO AGE SEX OF RURAL AND URBAN POPULATION

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CERTIFICATE

Certified that the thesis entitled "**COMPARATIVE STUDY OF COORDINATIVE ABILITIES OF SOCCER PLAYERS IN RELATION TO AGE SEX OF RURAL AND URBAN POPULATION"** submitted by me for the award of the degree of Doctor of Philosophy in Arts at Jadavpur University is based upon my work carried out under the supervision of Dr. Gopal Chandra Saha, Professor, Department of Physical Education, Jadavpur University, Kolkata, West Bengal and that neither this thesis nor any part of it has been submitted before any degree or diploma anywhere/elsewhere.

Countersigned by the

Supervisor: Candidate:

Date: Date:

The Thesis is dedicated

To my parents

Bhadreswar Mandal

Sabita Mandal

Late Neyasha Saha

And

My wife Supriya Saha Mandal

Also

Elder brothers Pradip Mandal and Biswajit Mandal

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Sanjit Mandal

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CHAPTER I

INTRODUCTION

". . . My trainers taught me to believe in myself . . . I was inspired and learned determination and discipline. Sports allow you to get to know yourself."

Moutawakel, (2006)

Sports give out as an outstanding physical exercise. Playing sports often involves physical performance like running, jumping and stretching and also appositive expense of power. Exercise generates happiness in a person's body therefore contributing to people psychological happiness Sports create a constructive power. Sports are an important aspect of life, sports play vital role in bringing about physical, mental, and social growth of nation. In recent year Sports are becoming increasingly sophisticated and technical. We have developed new heights and popularity in sports and it is emerging as separate profession with expansion of educational facilities in the country. More young people are taking interest towards sports as a daily feature of their life. The participation in sports promotes good health and high degree of physical fitness which increases an individual's productivity in social life (Singh & Tiwari, 2015).

Sports are as old as human society and it has achieved a universal following in the modern times. Millions of fans follow different sports events all over the world with an enthusiasm and devotion. It now enjoys popularity, which out strips any other form of social educational process. Many people participate in sports activities for the fun and health. Sports have taken a shape of profession, which includes financial benefit linked with high degree of popularity (Ramier, 1967). Sports have especially famous function in current culture. Present time sports have happen to an indivisible event of our community living. Sports are very important to an individual, a group, a nation and indeed the world. As it is well understood, "Fit body fit nation". Sports have ever reflected developments in society. Sports indeed, have been a mirror of society (Kamlesh and Sangral, 1981).

Sports is an important aspect of life, sports plays vital role in bringing about physical, mental, and social growth of nation. In recent years man has developed new heights and popularity in sports. Sports are becoming increasingly sophisticated and gaining popularity as separate profession with expansion of educational facilities in the country.

More young people are taking interest towards sports as a daily feature of their life. The participation in sports and physical education activities promote good health and high degree of physical fitness which increases an Individual's productivity in social discipline (Sadri, 1993).

Nation has considered exercise and the conflicting belongings it has on the human body. Exercise has been identified to organize develop feel, weight management, cognitive processing, and motor function (Mayo Clinic, 2014).Physical fitness in leading a productive and meaningful life, the Greek philosopher Aristotle stated that the body is the temple of soul and to reach harmony among body, mind and spirit a human being must be physically fit. Many scientific students in the fields of physical education and sports have proved beyond any doubt that on exercise programmed or regular physical activity improves ones physical fitness level and ability to meet variety of physical tasks in day-to-day life physical fitness comprises of many components such as strength, endurance, agility coordination, flexibility etc. Fitness means the ability of an individual to live a happy and well balanced life. Physical Fitness is the capacity of the heart, blood vessels, lungs and muscles to function at optimal efficiency (Bucher and Williams, 1985). Basically fitness means being in good physical condition and able to function at one's best level. Total fitness for living involves spiritual, mental, emotional and social as well as physical qualities (Bucher, 1975).

Total Fitness is the watch words of today and basic to the total fitness demanded by society is the developmental and maintenance of physically fit man. Physical fitness is an essential indicator of the health of children and adolescents and also a good predictor of health in later life. It is most indispensable in the modern society due to the impact of globalization and technological advancements leading to better lifestyle (Shivakumar et al, 2014). The thought of physical fitness is as old as human race. All the way through the history of mankind, physical fitness has been regarded as an important aspect of everyday life. The people in ancient times were mostly reliant upon their personal strength and energy for survival (Gill et al, 2010). It included the mastery of a number of fundamental skills such as strength, speed, stamina, agility for running, jumping, climbing and other skills used in search for their livelihood.

Physical Fitness is a term used to refer to the functional capacity of an individual to perform certain kinds of tasks requiring muscular activity. Physical Fitness is the ability

of the body to adopt and recover from strenuous exercise. It is the relation of one's ability to work and play with vigor and pleasure without undue fatigue and with sufficient energy for unforeseen emergencies. Physical fitness is to ability to last, to bear up and to preserve under difficult circumstances where an unfit person would give up. Physical Fitness is not only the most important key to a healthy life, but also the basis for dynamic and creative life. Physical Fitness is necessary for every individual to be physically fit to perform their daily work with ease and to take part in various activities effectively (Rashid, et al., 2019).

At present situation physical fitness is a combination of daily exercise and well training. Mutually interdependent of all these components of total fitness and according to the type and nature of the activity for the sports being undertaken are required in different proportion. Best performance to obtain whole fitness of the performance is of mainly import at the better sports competitions at the national or international stage. Game and sports coordinative abilities physical exercise and skill are vast control and influence over performance. The high level international and national players at the moment need speed, power, agility, unlimited endurance and completely top physical and mental fitness to survive the strains and stress of competitions and give excellent performance (Pinto,1982).

Now a day's almost each country in the globe attaches vast significances to the progress of games in regulate to pick up the nation's health and for fitness and wellbeing of potential invention. Like other country India is also trying to attain such a level of performance in sports and to some area succeeded in achieving the best performance mainly in games Soccer. Physical exercise represents a natural and productive opportunity for both physical and cognitive development. Exercise can help people feel better about them, decreases risk of diseases and improves learning (Janssen and LeBlanc, 2010). Lowering risk of diseases occurs because a regular engagement in physical exercise produces numerous health benefits in the brain, by inducing structural and functional changes (Singh et al., 2019). The constant practice of physical activity leads to strong changes attractive brain reliability and brain functioning and, consequently, cognitive health. These effects are reflected on cognitive functioning and consequently on academic achievement (Hotting and Roder, 2013). Some studies have indicated that children and adolescent who spend more time in physical activities have better academic performance than those who are sedentary (Ayers and Sariscsany, 2010).

Researchers suggesting that young people may improve mental acuity, skills, and strategies through physical exercise (Donnelly et al., 2016) and supports the idea that cognitive performance improves with physical exercise that makes adolescents more efficient on reaction time tasks and more flexible on attention-orientation tasks (Muiños and Ballesteros, 2014, 2018; Alesi etal., 2016; Zach and Shalom, 2016; Burns et al., 2017; Kashfi et al., 2019). Furthermore, a well-managed physical exercise may facilitate various aspects of information processing in children and adolescent (Tomporowski et al., 2011).

Sports are as old as human society and it has achieved a universal following in the modern times. It now enjoys popularity, which out strips any other form of social educational process. Millions of fans follow different sports events all over the world with an enthusiasm and devotion. Many people contribute in sports activities for the fun and health. Sports have taken a shape of profession, which includes financial benefit linked with high degree of popularity (Ramier, 1967). Modern soccer is characterized by its high tempo. To play soccer successfully, players must react faster than ever when they receive the ball, as well as making frequent sudden changes of direction, sprints into free space and instant switches from defense to attack. The demands on soccer players are so great that special and systematic training of their running coordination, especially their running technique and rhythm, appears essential. Soccer definitely ranks up there in skill level required. Give each of friends Soccer and tell them to do ten kick-ups without letting the ball touch the ground. Coordination and skill are very important in this game. Something that seems so simple like dribbling Soccer around cones is extremely difficult and requires a lot of concentration on that (Hundi, 1989).

Team sports like Soccer make it even harder to determine what areas of fitness are required and will also depend upon positions and role in the team, but one key area is skill and Specificity. Soccer players should be Soccer players first and athletes second. This doesn’t mean that their athletic areas of fitness, speed, strength, stamina etc. are not important, because they are, but skill and specificity and perhaps spirit are the most important. Having said that, a very skilful player who cannot last the whole match due to lack of stamina, or cannot get to the ball due to lack of speed, is not as useful to the team as the player who has slightly less skill, but more speed and stamina. Soccer is the most popular sport globally (Witvrouw, et al., 2003). The ranking suggests that our playing standards need to be improved in line with three key areas previously reported to be

related to successful Soccer performance, namely physical, technical and tactical skills, (Hoff & Helgerud, 2004).

Soccer is the world's most popular sport, played by men and women of all ages, with millions of fans throughout the world. A chief reason for soccer's vast popularity is that it has proved to be among the most accessible and adaptable of the world's sports. Soccer is a game played by two teams on a rectangular field, with the objective the driving ball into the opponent's goal. All that is needed to play is an area of open space and a ball. Much of the world's soccer is played on patches of ground, without field marking or real goals. In many places, the game is played barefoot using rolled-up rags or newspapers as a ball. Soccer is a game that requires many different skills, often at the same time. Soccer players need to be able to adjust to different situations that change within a split second. On a given play a Soccer player might be required to fight through a defender, run to a precise place on the field, catch the Soccer, and move forward while not losing the ball. Soccer lineman must also be able to react and adapt in a split second. An offensive lineman might have to block a large defensive Tackle then slide off to pick up a streaking cornerback. Reaction and adaptation are two of the most important, yet underdeveloped skills for Soccer players (Kaka, 1991).

Soccer is the most popular sport in India and is a much applauded sport worldwide. Soccer stands ahead in the list of professionally played sports and is widely accepted amongst people of all ages. According to FIFA official website, approximately 270 million players from almost all the countries play soccer at different level. 211 member associations from all over the globe registered with the International Federation of Soccer Association (FIFA). Further, there is estimated to be an equal number of unlicensed soccer players. Soccer is performed by men, women, children and adults with different levels of expertise. One of the reasons that the soccer is so popular worldwide is that the players may not need to have an extraordinary capacity within any of the performance areas, but possess a reasonable level within all areas. As with other activities, soccer is not a science, but science may help to improve the performance of soccer. During a soccer match (90 minutes), the player's movements are characterized by high intensity, short-term actions and pauses of varying length. To be successful in such a team sport, soccer players need an optimal combination of technical, tactical, physical characteristics (e.g. somatotype), and mental motivation (Bangsbo, 1994), among other sports characteristics. Hence, for soccer coaches, managers, sports physiotherapists, and

scientists, an in-depth understanding of the determinants of success, such as the specific anthropometric characteristics of players may be important. Some studies showed evidence for position-specific anthropometric characteristics in soccer players (Rienzi, et al., 2000; Gil, et al., 2007).

Every level of Soccer player needs exercises intended for their individual qualities and level of play. Each player brings certain genetic traits and dispositions to the field. This is what makes the team dynamic. Imagine a whole field of unique players, each with their own athletic gifts ready to bring to the Soccer field. Now, the challenge is to set a foundation for development for each player as building blocks in consideration of their individual talents. Each player will perform basic movement patterns in their own way, have different levels of flexibility and mobility, varying levels of coordination, different abilities to generate strength and power, and bring to the table a different work ethic and work capacity.

The game of Soccer is full of challenges and counter-challenges between the contesting teams. As a consequence, players, the most important factor of Soccer are influence by the stress of competiveness in each conflicting situation. Performance of a team depends on the talents of the individual players and the understanding between the teammates and above all the attitude of players towards the interest of the team. Opinion on coaching and methods of play may differ; but there should be not much difference about the qualities of a successful player. Soccer is truly a mass movement going strong. In the years to come more countries are expected to adopt Soccer as their national sport. Despite the arguments of many that Soccer fuels aggression and people who take up Soccer tend to mistake boldness with aggression, Soccer is still the number one game and will be so in the many years to come (Chowdhary, 2007).

The main component of fitness for Soccer players are endurance, strength, speed, flexibility and power. The Soccer player will have to invest considerable time and effort to see a significant ‘return’ for his efforts that is an improvement in performance. A truly professional approach to physical conditioning has still to materialize at professional club level, due to a lack of facilities and coaches with suitable in-depth knowledge of fitness and the principles of training. Also, throughout the game there is a more overt concern for the development of individual ball skills or team strategies. But it has to be remembered that when fitness deteriorates in training and in match play, these individual

skills and team strategies also suffer. There is a feeling that fitness should be primarily the concern of the individual and not the coach, but all too often in team games an individual will play to get fit rather than get fit to play (Treadwell, 1991).

Good Soccer mainly depends on the quality of players (Sukumar, 2008). Modern soccer is characterized by its high tempo. To play soccer successfully, players must react faster than ever when they receive the ball, as well as making frequent sudden changes of direction, sprints into free space and instant switches from defence to attack. The demands on soccer players are so great that special and systematic training of their running coordination, especially their running technique and rhythm, appears essential. Soccer is one of the most popular sports in Europe and the America. It has interesting history in the world of sports. Early evidence of soccer being play as a sport finds occurrence in China during the 2nd and 3rd centuries BC, when during the Han dynasty people dribbled leather balls by kicking it into a small net. Recorded facts also support the fact that Romans and Greeks used to play ball for fun and frolic. (Harold, 1979).

Federation International de Football Association (FIFA) president, that reflects the rising popularity of the women's game around the world and highlights the clear objective of FIFA to continue supporting its growth.(FIFA. Women's football 2012) Currently, about 29 million women play football, which corresponds to nearly 10% of the total number of male and female footballers worldwide. (FIFA. Women's football 2012; FIFA big count 2006; 2007)

Female football players of various nationalities, competitive levels, and positional roles have reported on their age, anthropometry, physiological, and physical attributes. However, they are still not nearly as numerous as in the case of scientific reports on male football players. Furthermore, several studies have highlighted the main physical and physiological differences that exists between the genders (Shephard, 2000 ; Lewis at al., 1986) and a few considerations that are characteristics only of females, and therefore, not present in their male counterparts, such as the menstrual cycle, (Shephard, 2000; Lebrun, at al., 1995) potential pregnancy and lactation, (Shephard, 2000; Artal, 2003) injury risks, (Yu, & Garrett, 2007; Kirkendall, at al., 2001) and health concerns. (Landahl, at al., 2005; Sundgot-Borgen, 2007) These reports also emphasized how these traits could affect players' football performance, health or their return to play. Hence, coaches of female players should be well educated on these topics.

Physical differences between men and women are small and females may have a slight advantage for a short period of time because they usually experience their growth spurt and sexual maturation on average 2 years earlier than males. (Bangsbo, 2007) Once males enter into puberty and their testosterone levels start to increase, the gender physical differences lean to their favor. Thus, it is well known that in general females are lighter, shorter, have a lower muscle mass, and more essential sex-specific fat mass than their male counterparts due to inherent biological factors that result in lower absolute physical capacities (e.g., aerobic endurance, muscular strength, power, speed, and agility) for the average woman compared to the average man. (Shephard, 2000; Lewis, et al., 1986)

In terms of the menstrual cycle, there is scientific consensus that in most cases athletic performance shows little change over the different phases of the cycle, except in the small percentage of women that experience strong pre-menstrual discomfort or painful menses.(Shephard, 2000) Nevertheless, there are scarce scientific reports specific to female football players in this area. Some authors have shown that the injury risk in female football players may be perhaps higher in certain phases of the menstrual cycle than in others. (Nielsen, & Hammar, 1989)

Sports has empowered women and girls and promoted gender equality. Achievements by the Williams sisters who turned the women's tennis world upside down with their powerhouse tennis and Mia Hamm's incredible achievements in the field of Soccer has stilled the tongues of many skeptics and earned them their due respect as sports persons. Sport also provides women and girls with an alternative avenue for participation in the social and cultural life of their communities and promotes enjoyment of freedom of expression, interpersonal networks, new opportunities and increased self-esteem. Their social networks increase and horizons broaden. They learn more about their community and the world beyond, and thus see possibilities meant for themselves that they might not have imagined otherwise". It is therefore with hope and optimism that we must move forward in the path of further recognition of women in sports as worthy contenders and equal partners of their male counterparts. Soccer is also an excellent platform for leadership building as it is a sport which involves quick decision making, strength and weakness assessments and strategizing. It also enhances ability to work with others and treat them with respect. In the case of young girls, especially in a country like India, Soccer gives them an opportunity to see a future for themselves beyond the four walls of

their homes and instills in them a sense of confidence and self-worth. “Women’s Soccer effectively shatters all stereotypes associated with this supposedly ‘masculine’ game. It encourages girls to stake a collective claim for their right to play outdoor sports along with boys” (Batra, 2013).

The most common way to classify a residential area is according to urban and rural. If a place is considered as urban or rural varies depending on country and nations. However, almost all countries agree that in order for a place to classify as urban, it requires having less space between structures and population level must be high. ‘Structure decides function and function decides structure’- is an old saying, which has been formulated perhaps from the realization of the fact that there is a close relationship between body built, and the nature and the efficiency of motor functioning of an individual (Kamlesh and Sangral, 1981).

Every country has two different areas in the society, one is urban area and other is rural area. The life pattern, culture and society are not similar in urban and rural areas. It is known that rural area is brought in the open natural space and outdoor setting of dynamic life. Because of this conductive environment their physique and physical abilities to perform physical natural activities are excessively developed. In India some gross differences in physical, physiological, food habits, dress, customs and way of living and cultural areas are recognized between rural and urban people. There are body surface areas, food habit, and exercise, social, cultural and genetic components which in turn prompt the sports performance (Rampotti, 1960). Besides, urban people get the opportunity of quick life styles and every necessary thing very faster than the rural people. Without any shadow of doubt urban life is dominant on the rural life. It is usually believed that the players of urban areas are having excellent level of soccer skills and techniques because they get to chance practice under better coach with trainer. But in the rural areas, the players are facing problem to get good skills and techniques of playing soccer and lack of better coach or field infrastructure. So researcher thought to find out whether there is any difference in soccer skill mainly coordinative ability between rural and urban Soccer players. There are lot of differences between rural and urban in every aspects of life i.e. customs, rituals of living etc. Therefore, it is possible that there may be greater differences in body composition, hemoglobin content, blood pressure etc between rural and urban peoples (Rowney, 1974).

Soccer is a fast moving and exciting game requiring quick thinking as well as physical skills. Players and spectators participate in Soccer with high game spirit. The game of Soccer is an opportunity to combine, speed of judgment, speed of physical and mental reaction and expertise with body and ball. These entire combined together to help in achieving the skills, which need finesse of movement. To establish the relationship research has tried to accretion whether all these coordinative abilities have any impact on accuracy in kicking (Singh, 2014). Soccer is probably the most popular game of the world but there is still limited scientific information available concerning the coordinative abilities and physical fitness qualities of Indian female Soccer player. Soccer is a structured analytical game in which players have to deal with a complex and rapidly changing environment. In competitive sports, beautiful movements are a product of well developed technical skills and coordinative abilities. The speed of learning of skill is directly depends on the level of coordinative abilities. Coordinative abilities are needed for maximal utilization of conditional abilities, technical and tactical skills (Singh, 1991).

Recent findings also highlight a significant role for coordinative exercise in improving academic performance (Kwok et al., 2011; Hotting et al., 2012). Cognitive performance seems to be influenced by bilateral coordinative exercise that shows benefits even after short bouts of exercise (Budde et al., 2008), particularly on tasks that involve executive function (Yu-Kai et al., 2013). Coordinative exercise of both low and moderate intensities may also increase visuospatial perception, attentional resources, working memory and shorten the time needed for neurocognitive processing (Yu-Kai et al., 2013).

The increasing tendencies in international sports are famous as the increase in game tempo, tougher body game and better inconsistency in technique and tactics. In principle, an increase in performance level can only be achieved by better exploitation of all major components i.e. technique co-ordination, tactics, physical fitness and psychological qualities of the sportsman. The component technique co-ordination plays a better position in sports. Person and group reason can happen to competitively efficient only by a sure coordinative mastery of the technique (Nordmann, 1994).

While many practitioners of physical education describe coordination in terms of harmony or skill fullness but some scholars in physical education are more emphasizing coordination as a pattern of movement? For instance, “coordinated actions of the human

body are executed by the controlled application of muscular forces which produce distinctive patterns of segment motions" (Putnam, 1991).The concept of "Coordinative abilities" stands out from the general and less defined the concept of "agility", widespread in everyday life and in literature on physical education. Under the term coordinative abilities, it should be understood, that firstly, it is the ability to construct appropriate integral motor acts, and secondly, the ability to convert the form of action worked out, or switch from one to another, respectively, as the requirements of changing conditions. These features are largely the same, but have their specificity (Ashmarin, 1990). Term coordinative abilities have come into existence replacing the earlier used term agility as stated in most of the literature on physical education. The concept of coordinative abilities should be understood as the ability expediently to form, coordinate and, link into an integrated whole the motive actions on one hand and secondly the ability to transform action already worked out under dynamic situations. These abilities to a considerable degree have their own specific role to play in learning and perfecting motor actions (Matveyev, 1977).

The coordinate function of the central nervous system and the one of its properties which Ivan Pavlov called plasticity are given a leading role in physical treatment of the essence of coordinative abilities. The ability qualitatively to coordinate movements undoubtedly depends on the perfection of the function of the analyzers (Matveyev, 1981). Coordinative abilities are primarily dependent on motor control and regulation process of central nervous system. The theories of motor coordinative abilities suggest that "each coordinative ability the motor control regulation process functions in a definite manner". When a particular aspect of this function is improved then the sports person is in the better position to do certain groups of movements which of these executions depend on this type of central nervous system function pattern. This also explains the difference between coordinative abilities motor skills. For coordinative abilities the central regulation process is required to function in a particular manner. Whereas in case of skills these process are automates to great extent. Mainly coordinative abilities are needy on the motor control and regulation process of central nervous system. For each coordinative abilities the motor control and regulation process function in a definite pattern when a particular aspect of these functions is improved then the sports person is in a better position to do a certain group of movements which for their execution depends on the Central Nervous System function pattern" (Singh,1991).

Coordination has effective for all the muscle groups of the body in combination. It has significance in executing any progress with a programmed purpose. Involving the muscles groups, coordination are divided into intramuscular coordination and inter muscular coordination. It means coordination between different muscle groups as well as between muscle fibers of the same muscle. Coordination is necessary to execute movements, requiring speed and strength and therefore 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; a tired person cannot learn movements needing a high degree of coordination. 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 eye foot coordination, as in kicking a ball or walking upstairs. Eye hand coordination is evident in fine motor activities, tracing and clay modeling or in gross motor activities such as catching, striking or volleying a ball (Ali, 2005).

Coordinative abilities have necessary importance in sports amid normal structures of the actions and comparatively regular stable spirited training. But, fixed progress of coordinative abilities in the known case is one of the determining aspects of sports performance which depends on the point of mastery more the technique and skill. The Sports scientists have recognized seven coordinative abilities. These are: (1) Reaction ability (2) Orientation ability (3) Differentiation ability (4) Coupling ability (5) Adaptation ability (6) Balance ability 7) Rhythmic ability. (All the coordinative abilities are important for nonstop improvement and variation throughout lengthy training method and learning of sports' new techniques and skill. The level of coordinative abilities depends to a large extent on the motor learning ability (Mynarski, 2000; Raczek, 2002; Metvevev, 1981; Harre, 1989; Singh, 1982).

Soccer coordination is one of the most important skills to possess during a soccer game. Coordination is the base upon which many essential soccer skills are built. It is required for skills like agility, dribbling, accurate passes, heading the ball and many others. Coordination in soccer is important for performing many core soccer skills. It's like the backbone of many major soccer skills. If want to become a professional soccer player, practicing coordination should be on priorities list (Sannan, 2021).

"Reaction ability is the ability to initiate quickly and perform rapid and well directed actions following a signal" so, it is the ability to react quickly and effectively to a signal" (Singh, 1991).

A good reaction ability is the ability to gain awareness of a particular situation, and then to solve it as quickly and as appropriately as possible. In soccer this is required at virtually every action taken by the opposition, Especially cyclic sports like soccer certain movement is repeatedly done at high frequency, so that it requires the reaction ability to react effectively and quickly especially when the ball rebounds from the goalkeeper as to who will be the first on the ball. (Singh, 2014)

"Orientation ability is the ability to determine the body position and its parts in time and space in relation to gravity, playing field, other players, ball, equipment etc" (Harre,1982)

In team games they require of the orientation ability are greatly. The consciousness of his owns place in relation to teammate's opponents and the movement of ball, after turning in soccer. Particularly secondary visualization is important for orientation in soccer (Singh, 2014).

Coupling ability is the ability to coordinate body part movements (movements of hand, feet, trunk etc.) with one another and in relation to a definite goal oriented whole body movement. Coupling ability is especially important in sports in which movements with a high degree of difficulty have to be done. In team game like football the foot movements for ball control of dribbling have to be coupled with the whole body movement of running, jumping. (Singh, 1991).

"Differentiation ability is the ability to achieve a high degree of accuracy and economy of separate body movements and movement phases in a motor action. It depends upon a person's capacity to precisely differentiate between the minute differences in temporal, spatial and dynamic parameters of a movement compared to the movement concept" (Singh, 1991).

In soccer it finds appearance in agility of foot and head. Differentiation ability is expressed high level in soccer games as a sense of execute or movement e.g. sense of movement and ball sense of our team mate and also opponent (Singh, 2014).

"The ability to maintain the equilibrium order static or dynamic condition is called balance ability" (Mishra, 2007).

In game soccer balance is very essential. Players require this as they are touching and adjusting body position constantly when looking for scoring opportunities in the penalty box or trying to mark an opponent narrowly. Dribbling up the field and an opponent bumps into require to be able to transfer body weight properly so that doesn't lose control of the soccer ball. Believe of the balance players like **Maradona or Messi** or women's soccer star **Alex Morgan** possess. When they're dribbling at speed they are all strong on the ball and don't let players knock them off the ball easily. Balance ability is important in soccer game in which frequent and rapid change of body position and movement is needed and athlete have to maintain their body balance during high intensity change of movement under pressure from an opponent (Singh, 2014).

"Rhythmic ability is the ability to perceive the rhythm of movement and to do the movement with the required rhythm" (Mishra, 2007).

Soccer players should be sensitized to three elements of rhythm strike, accent and pause. Rhythm should be understood from the point of view of four factors the soccer player's body, the ball, the opponent and the teammates. By observing the best soccer players in the World, it becomes evident that they are "masters of rhythm".

Rhythm in soccer of analyzes it within three different aspects:

1) Physical Rhythm or Rhythm in Movement Patterns – the ability for players to move efficiently
2) Technical Rhythm – the ability for players to execute effectively
3) Tactical Rhythm – the ability for players to integrate smoothly

In soccer the ability to perceive the rhythm of movement of our team mates and others is the basis for sound perception of technical errors. In technical sports like soccer the athlete has to perceive an external rhythm, given in the form of instruction by coach and to express it in his movement (Singh, 2014).

Motor coordination is a part and parcel of action regulation and is hence, closely linked with the processes of cognitive, psychic and movement execution aspect of an action. Coordinative abilities have also important links with motor skill as motor coordination forms this basis of both. Coordinative motor abilities are mainly vital at the primary stages of the sports progress of a competitor (Zimmermann, Nicklisch, 1981, Raczek, 1989, Raczek, Mynarski and Ljach 2002). A high level of coordination development while the earliest year make it possible to make use of technical and tactical skills during

a sports competition, effectively (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 accurate learning of rather more difficult and complex movement task (Raczek, Mynarski and Ljach 2002).

Orientation, Differentiation, Reaction, Balance and Rhythm ability to react to both auditory and visual stimulus have all been identified as elements of coordination. Children between the age of 10 and 13 can best learn and develop motor and coordinative skills. In contrast to general body size the head and brain at this age are already very developed. Furthermore, certain factors such as motivation, conditional abilities, mobility and the central nervous system have a major impact on the training of coordination skills. One often notes that shorter players solve coordinative tasks better and with more elegance than do tall players. Nevertheless, each of the components of coordinative skills can be significantly improved through specific coordination training in soccer. Coordination is best developed between the ages of 7 – 14, with the most crucial period being between 10 – 13 years of age (Kalb, 1989).

Coordination training, for example, is introduced during the pre-adolescent ages while nervous system plasticity is high and movement habits have not yet been ingrained as permanent. At this time, refinement of movement should take precedent over learning new movement-based skills. The scope of coordination training changes during the adolescent ages, during which physical growth alters the young athlete's previously mastered movement habits. In post-adolescence, coordination training can once again be taken to new heights (Bell, 1983).

Coordinative abilities are needed for maximal utilization of conditional abilities, technical and tactical skills (Singh, 1991). The coordinative abilities to a great extent determines the maximum limits to which sport performance can be improved in several sports which depend largely on technical and tactical factors (Rahul et al., 2010). Motor learning process, continuous refinement and modification of sport skills to large extent depends on the level of coordinative abilities. Amateur players in particular still have to invest most of their training time in technical and tactical training as well as in endurance and strength training, whereas coordinative training is not encouraged so much (Baumgartner et al., 2007). A player's coordinative mastery over a sport technique can make him compete efficiently and effectively. Coordinative abilities become effective in

movements only through the motor abilities and actively determined drives and cognitive processes (Hirtz, 1985). Speed ability is the performance pre-requisite to perform motor actions under given conditions in minimum of time (Schnabel & Thiess, 1987; Raghupathi, 2010). Balance ability is thought to be of great significance as it is an integral part of all movements (Westcott et al., 1997; Raghupathi & Krishnaswamy, 2010). It can be defined as the ability to maintain or recover the body's centre of mass within the body's base of support to prevent falling and complete the required movements (Montgomery & Connolly, 1991; Raghupathi & Krishnaswamy, 2010). Freiwald emphasized the importance of coordinative balance training in science-based training programs to prevent injuries and improve performance (Freiwald et al., 2006) without the adequately developed coordinative abilities; a sportsman cannot make maximum use of his psycho-biological capacities and reserves. Better developed coordinative ability provides an essential base for faster and effective learning, stabilization and variation in technique and their successful execution in game situation (Singh, 1991).

In spite of many studies, there are many gaps in this field yet to be established. Researcher has selected this topic with a view to establishing the thesis title "comparative study of coordinative abilities of soccer players in relation to age sex of rural and urban population".

STATEMENT OF THE PROBLEM

The problem of the present study was stated as **"COMPARATIVE STUDY OF COORDINATIVE ABILITIES OF SOCCER PLAYERS IN RELATION TO AGE SEX OF RURAL AND URBAN POPULATION".**

OBJECTIVES

Researcher is a prepared and organized study of a problem where a researcher attempts to increase result to a problem and find the right solution, so undoubtedly defined objectives are very vital. Objective is significant characteristic of a good research study. Therefore the following objectives take the researcher are mention below:

1. To find out the difference in coordinative abilities of male and female soccer players respectively in the age category of 9-13 between Rural and Urban areas.

2. To find out the difference in coordinative abilities of male and female soccer players respectively in the age category of 14-18 between Rural and Urban areas.

HYPOTHESIS

Following hypotheses were formulated to conduct the present study:

- It was hypothesized that there would be no significant difference in coordinative abilities of Male and Female soccer players respectively in the age category of 9-13 between Rural and Urban.
- It was hypothesized that there would be no significant difference in coordinative abilities of Male and Female soccer players respectively in the age category of 14-18 between Rural and Urban areas.

DELIMITATIONS

The researcher defines the delimitation set as the boundaries of his own thesis. Therefore the following delimitations were considered for this study:

The study was delimited to two hundred (n=200) male and two hundred female (n=200), age ranging between 9 to 13 years (100 each) and 14 to 18 years (100 each) of both Male and Female Rural and Urban soccer players selected from different club of South 24 Parganas, North 24 Parganas, Kolkata, Hooghly, Purulia, Bankura, district in West Bengal.

Further the study was delimited only district level soccer player.

Study was restricted to the selected coordinative abilities variables –

i) Reaction Ability.
ii) Orientation Ability.
iii) Differentiation Ability.
iv) Balance Ability.
v) Rhythm Ability.
vi) Coupling Ability.
vii) Adaptation Ability.

Further the study was again restricted to the selected reaction abilities variables

i) Visual Reaction Ability,

ii) Audio Reaction Ability,

iii) Tactile Reaction Ability

LIMITATIONS

The present study was conducted under the following limitations:-

1. In this study the personal lifestyle, the diet, the daily habits, mental growth were recognized as a limitation.
2. The un- control factors like climatic condition and Environmental temperature were recognized as a limitation.
3. Sociological aspects and Life style of the subject act as limitation for the study.
4. Financial condition and time were also not considered in this study.

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

Reaction ability is determined by the function of sense organs, i.e. eyes, coordinative processes of central nervous system, selection and decision making, attention and concentration, anticipation etc. Reaction ability is the ability to initiate quickly and to perform rapidly and well directed actions following a signal (Harre, 1982).

Orientation Ability

"Orientation ability is the ability to analyze and change the position and movement of the body in space and time related to defined action" (Singh, 1979).

"It is the ability of a sportsman to analyses and change the position of the body and its parts in time and space in relation to performance area or a moving object"(Uppal, 200I).

Differentiation Ability

"This is the ability to achieve the high accuracy and economy (time adjustment) of separate body movement and mechanical phase of total movement"(Harre, 1982).

"Differentiation ability is the ability to achieve a high degree of accuracy and economy of separate body movements and movement phases in a motor action. It depends upon a person's capacity to precisely differentiate between the minute differences in temporal, spatial and dynamic parameters of a movement compared to the movement concept" (Singh, 1991)'.

Balance Ability

"It is the ability to maintain balance during whole body movements and to regain balance quickly after the balance disturbing movements" Balance ability is necessary pre-requisite for all type of movements. Static balance is required for the execution of all movements whether slow or fast, part body movement or whole body movement. Dynamic balance ability is important in sports in which frequent or rapid change of body position is required (Singh, 1991).

Rhythm Ability

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

"It is the ability of sportsmen to understand the rhythm of movement and to execute the movement with required rhythm. It depends upon the functional capacity of optic, acoustic and kinaesthetic sense organs" (Uppal, 2001).

Coupling Ability

It is the ability to co-ordinate body part movements (movements of hand, feet, turnk etc.) with one another and in relation to a definite goal oriented whole body movement. Coupling ability is especially important in sports in which movements with a high degree of difficulty have to be done. In team game like football the foot movements for ball control of dribbling have to be coupled with the whole body movement of running, jumping (Singh, 1991).

Adaptation Ability

It is the ability to adjust of a sportsperson to bring about an effective change in the movement according to anticipated changes in situation. It depends upon the functional capacity of optic and acoustic sense organs (Singh, 1991).

A player should have a good kinaesthetic perception ability, stability, speed, strength, suppleness endurance and skill (personal skill, rhythm, handling etcetera). For a player it is extremely important to have information about what the muscles are doing and their position during a movement. It is also successfully argued that the muscle sense called kinaesthetic is equally necessary for the successful execution of skills.

Reaction time

Reaction time is the interval time between the presentation of a stimulus and the initiation of the muscular response to that stimulus (Devi & Madhuri, 2017).

Auditory, Visual & Tactile Reaction time

Reaction time is the intermission time between the presentation of a stimulus and the beginning of the muscular reaction to that stimulus. Reaction time measurement helps in determining sensory motor connection and performance of an individual. It determines the alertness of a person because how quickly a person responds to a stimulus depends on his reaction time. Physical activity increases the alertness of the body and hence is an important parameter in cases of visual, audio and tactile reaction time (Debnath & Bhowmick, 2005).

Urban

The term **‘urban’** simply means the region or area that is densely populated and possess the characteristics of the human-made surroundings. The people living in such area are engaged in trade, commerce, or services. In the same way, there is high scale industrialization, which results in a much better employment scale. The Urban settlement is not limited to the cities only, but towns and suburbs (suburban areas) are also included in it. An urban area is an area with people living in a high population density and infrastructure of the built environment. Urban areas that are created through urbanization are categorized by urban morphology as cities, towns, conurbations, or suburbs.

Rural

The term **'rural'** can be defined as a region located outside the cities and towns. It also refers to a settlement area that is outside the boundaries of a city, commercial or industrial area. Therefore, it may include countryside areas, villages or hamlets, where there are natural vegetation and open spaces. Hence there is a low density of population in such area. The primary source of income of the residents is agriculture and animal

husbandry. Cottage Industries also form an important source of income here. There are fewer population densities and smaller settlements in specific rural areas. Agricultural areas are generally rural, although others like the forest are also there.

Soccer

Soccer is a football game, played between teams of eleven players on a side and using a football. The designation 'Soccer' is derived from association football. It is now played under the rules FIFA (Frank, 1955).

SIGNIFICANCE OF THE STUDY

The study will contribute in the following ways:

1. The study will help physical education teachers and coaches to scan the prospective male and female soccer players in relation to different age sex and area.
2. It will be highly important to go for the establishment of coordinative profile of young individual and team soccer players as primary steps towards their future progress in sports.
3. The results of the findings may help future researchers to find out the difference between different age, male and female, rural and urban soccer players on their coordinative ability which are the basis of success in sports.
4. . The result and finding of this study might provide criteria for selecting potential players in football of a young age.
5. This study may enable the coaches and physical education teachers to developed sound training.
6. Further, it may help the players to assess their own capabilities.
7. The findings of this study might be used as screening technique in analyzing and classifying the football players.

CHAPTER II

REVIEW AND RELATED LITERATURE

After consulting the various libraries investigator has made an attempt to present the review of the available related studies already conducted in India and abroad. It provides a basis for theoretical framework and an insight into the methods and procedures involve in the research process. It gives an idea about the work done in the particular field and helps to increase the researchers' breath of knowledge of the particular subject in hand. It also helps the researcher in making concepts clear to formulate hypothesis and provides the directions. It helps in developing the background of the study.

The review of literature is an instrument in the selection of the topic, formation of hypothesis and deductive reasoning leads to the problem. It helps to get a clear idea and supports with regard to the problem under the study. The researcher has made sincere effort to go through the relevant literature to game soccer. The researcher has collected related sources like research papers, research quarterly, periodicals and relevant books and e-resources on football and other regulation to extract the relevant studies.

Research in the field of coordinative ability is very limited because, it is a new concept replaced by the old term agility. Following is the related literature:

Lemon and Sherbon (1934) conducted a study to examine the relationships of certain measures of rhythmic ability and motor ability in girls and women. The tests of rhythm were administered with controlled technique to 100 college women who selected at random from three groups. There was definite although low correlation between rhythmic ability and motor ability in college women as measured by four tests i.e. Brace scale of motor ability, Carl Seashore Test of perception of Rhythm, Robert Seashore Test of Motor Rhythm and original Rhythm Test.

Seashore (1947) this study investigates balance ability between children. Also study on development of beam walking test and its use in measuring development of balance in children. The spring field beam walking test was used as a test to measure balance. The researcher further investigated the development of balance from age 5 to 10. The data suggested the presence of particular curve which reach relative method rather early in adolescence. The average age 5-11 was about 10 points; probably the curve would have

risen beyond 18 years. Result showed that ability should be according to the development of motor skill rather than merely by age. Males are faster than females in both reaction time as well as movement time. Peak speed is maintained longer by males in movement and longer by females in reaction. Majority of the studies indicated no relationship between speed of reaction and speed of movement.

Hammel (1953) conducted a study to assess the initial position and total body reaction time. The variation in body position involved the distribution of body weight and the position of the knees. No controls were placed upon the degree of knee bending. The result also suggested that: For each weight distribution group, no significant differences were found for starting reaction involving the position of the knees. The study indicated that most subjects consistently rocked hack on their heels in coupling reaction.

Lotter (1960) had investigated a study to determine the inter relationship among reaction time & speed of movements in different limbs. Two movement basis to sports skills a modified basketball throw and football kick were studied in 105 college athletes of various activities. Findings of the study stated that there was only a moderately high correlation between the reaction time ability of right and left legs and between right and left arm. Arms v/s legs correlation was significant put low. A similar pattern of correlation between limbs was found for movement ability but all correlation was considerably lower and movement difference was high in all the measures.

Hodgkins (1963) in this study examined the reaction time and speed of movement in males and females of various ages 930 men, women and children ranging in ages in their speed of reaction and movement time. The study revealed that males are faster than females both in reaction time and movement; speed of both functions increase up to early adulthood and then decreases, peak speed is maintained longer by males in movement and by females in reaction time, and in majority of group studies no relation existed between speed of movement and speed of reaction.

Dankart et al. (1972) examined the effect of rhythmic ability of boys and girls, he found that the rhythmic ability develops very rapidly till 13 years among boys and 17 years among girls. After this the development of 23 years old student may not be better than that of 13-year-old boys.

Haley (1972) had examined the effects of age on physical performance of elementary school boys of grade one to six. Thirty boys were randomly selected from each grade. Their ages ranged from 5 years 9 months to 12 years 2 months. Twelve motor performance tests were administered to these 180 subjects. The tests were designed to measure sprint speed, power agility, reaction time, static balance, dynamic balance, hip flexibility and elbow flexion and strength. Finding shows significant difference between the grade levels on all variables. The largest increases were between grade one and two between five and six with the middle providing a plateau effect. The performance scare formed curve linear relationship for all variables.

Johnson & Fisher (1979) observed that the young children increase steadily in ability at the age of 12, when they enter in teenage, their agility tends not to increase rather it may decrease. After completing the rapid growth period, there is again steady rate of development until maturity.

Ludwig & Hirtz (1981) in their study examined the effects of high rate of increase in motor learning and agility takes place before the onset of puberty (7 years to 11 years) and there is a high rate of development of Coordinative abilities in this period.

Vance (1981) conducted a study on effect of Dynamic Balance tasks. It was administered on 2 successive days to 180 male and females in 3 age groups 7 — 8, 11 — 12 and 15 — 16. Comparisons of mean performance levels using the t test indicated no sex difference in balance performance. A 1-Way ANOVA and Turkey's HSD Test applied to group mean scores suggested that balance performance increases with age with some evidence of a decline or leveling off in performance during puberty. Generality levels were markedly higher for females than for males in of the groups (ages 11-12 and 15-16), suggesting that, these tasks, there was some sex difference in generality of balance performance.

Vilkner (1981) concluded from his experiments done from 1974 to 1978 on 1600 children upon 7 years to 16 years. He reported that intensive phase of development in simple reaction ability is from 7 years to 12 years of age, low development phase from 12 years to 16 years of age. He also reported that reaction times on acoustic signals are 0.03 to 0.04 seconds, which is less than the reaction time of optic signals. The difference between sports reaction ability performance in male and female children is higher than the performance in simple reaction ability form 7 years to 10 years of age. The girls face

stagnation at 10 years, whereas the boys show a slow but continuous development up to the age of 14 years.

Dixit (1982) investigated that interrelationship of reaction time, speed of movement and agility and their comparison among players from selected sports. The study was conducted on a sample of 48 male college students i.e. 12 subjects from each selected sport (football, volleyball, kho-kho, and kabaddi) of L.N.C.P.E, Gwalior. Results of the study revealed that agility and speed of movement were significantly related with either the speed of movement or agility at 0.05 level of confidence.

Hinsching (1983) investigated the study on 39 children with high co-ordinative performance at this period with normal body, weight and height showed better level reflex, speech, crawling and running and very few suffered from a disease. It was also found that they all belonged to well-settled families. On the other hand, children born under weight and height and brought up in broken (impaired) families showed low level of development in co-ordinative abilities, speech problem (stammering) and suffered from diseases.

Johan (1983) conducted a study to analyze on Indian male children and youth of 9 years to 16 years of age and reported that the agility improves markedly before 12 years of age, it stagnates from 12 years to 15 years and then again shows improvements from 15 years to 16 years.

Butteher (1983) conducted an experiment on 495 girls and 483 boys of 2nd class and found that there is a higher relationship between performance in back stroke and breast stroke in swimming and balance ability, space orientation ability and differentiation ability also.

Harre (1986)stated about the characteristics of Coordinative abilities that in an athlete Coordination is determined by the repertoire of technical skills and by his level of Coordinative abilities differ from all other in their directional dynamics and their level are never present in isolation, but always as pre-requisite for several athletic activities.

Bunnel et al. (1988) conducted a study to determine the effects of coordinative abilities of high school and college volleyball players. The purpose of this study was to find out differences in coordinative abilities of school and college volleyball players. Random sample of 60 subjects, (30 each) was taken for the study. It is concluded that college

volleyball players were more superior in Balance ability, Differentiation ability, Agility them the school volleyball players however, both group of volleyball players have all most equal status in Flexibility and Lateral jumping ability.

Kumar (1993) examine studied the cross section analysis of coordinative abilities of boys from 10 to 16 years of age. 240 boys with varied age groups of Kendriya Vidyalaya No.1, Gwalior were selected as subjects for the study. To find out significant difference of means among various groups, analysis of variance (F-ratio) was applied, followed by Scheffe's test of post hoc comparison to determine the significance difference between the paired means. The analysis of data revealed that variance existed among different age groups on different coordinative abilities.

Anderson and Sidway (1994) the purpose of this study was to examine the change is coordination associated with practice of a soccer kick video recorded were collected on 6 novice right footed soccer players prior to and after 20 regularly scheduled kicking practice season. Three experienced players were also videotaped for comparison. Movement of the right leg was digitized and analyzed using motion analysis software. As a result of practice, subjects were able to significantly increase the maximum resultant liner velocity of the foot, and these increases were accompanied by changes in the pattern of coordination underlying the movement. These changes were assessed qualitatively through the topological characteristics of the relative motions of the hip and knee and quantitatively through three different timing variables.

Gribble & Hertel (1999) examined the effect of dynamic balance; a simple test to measure it is the Star Excursion Balance Test (SEBT). It requires participants to maintain a single-leg stable stance and to reach for maximal distance with the other leg in 8 different directions. When the stability of the supporting leg is compromised, the test is repeated. Data have to be normalized to the subject's leg length. As for static balance, the need for a higher objectivity and reliability of measures, together with the corresponding advances in technology, make the force platforms' measurements the most used method, in literature, for assessing dynamic balance in adults and in children.

Sarkar (1999) "Tested the effect of relationship of coordinative abilities to Kicking accuracy in soccer on 20 male football players. The finding revealed that there is no significant relationship of the Coordinative abilities and Kicking accuracy in soccer.

Hota (2001) examined the selected coordinative abilities on 20 male football players studying at L.N.I.P.E. with the purpose to find out the relationship of coordinative abilities with performance in soccer. The variables selected for the study were orientation ability, differentiation ability, reaction ability, balance ability, rhythm ability and playing ability. To find out the relationship of coordinative ability to soccer playing ability, the collected data's were subjected to person's product moment correlation. On the basis of the results following conclusion were drawn:-

Coordinative abilities namely orientation ability, reaction ability and rhythm ability are significantly related to playing ability.

Differentiation ability and balance ability were not significantly related to playing performance.

Coordinative ability plays very crucial role in football performance.

Ghosh (2002) had conducted a study to determine on selected coordinative abilities on 15 male sprinters and 15 male jumpers of L.N.I.P.E, with the intention to observe the coordinative abilities between track and field events. The variables chosen for the study were orientation ability, differentiation ability, reaction ability, balance ability and rhythm ability. 't' ratio was applied to find out the significant differences between two groups. The outcome of the study indicated that on orientation and reaction ability there were considerable differences reported between the sprinters and jumpers. On the other hand in case of differentiation ability, balance ability and rhythm ability there was no significant difference between the sprinter and jumper. It was experiential from the result of the study that the co-coordinative abilities of sprinters and jumpers did not vary totally.

Knobloch (2005) examined the coordinative additional training intervention in elite female soccer changes frequency and pattern of injuries. 24 female soccer players of the German first division team of FC Bayen Miinchen were thoroughly supervised during the season 2003/04 regarding injuries resulting in an absence from at least one scheduled training session or game. During the winter break an additional proprioceptive-coordinative training program was initiated, which was performed on a regular basis during the second half of the season. Furthermore, the scholars evaluated jump & reach, throwing power, coordinative skills, and flexibility. All evaluated fitness results

increased significantly during the season after the training intervention, such as jump & reach 44 +/- 4 cm vs. 38 +/- 10 cm ($p<0.05$), coordinative power left and right leg, respectively (71 +/- 44 s vs. 45 +/- 37 s, 80 +/- 41 s vs. 50 +/- 32 s, both $p < 0.05$), flexibility left and right hip (89 +/- 8 degrees vs. 78 +/- 13 degrees and 88 +/- 9 degrees vs. 79 +/- 10 degrees, $p < 0.05$). Comparing the 1st to the 2nd half of the season, 25 vs. 26 injuries after foul play and 69 vs. 52 without contact occur ($p<0.05$). Muscle injuries resulting in game or training absence were significantly reduced by 400% (12 vs. 3, $P < 0.05$). In the 1st half of the season, 2 anterior cruciate ruptures (ACL) occur vs. none in the 2nd half after the training intervention. They concluded that an additional proprioceptive-coordinative training intervention increases coordinative abilities, jump power, throwing power, and flexibility during a half season.

Geldhof (2006) analyzed the effect of static and dynamic balance on 99 children from 9 to 10 years old; including test-retest reliability, with the aim of furnishing reference values for the balance at that age was published. The results showed significantly lower sway velocities in girls compared to boys, indicating a better postural control in girls at age 9 to 10 years.

Bhardwaj (2007) investigated the relation between coordinative abilities and physiological characteristics of badminton players of Delhi state at different levels. Ninety badminton players, 30 players at each level from Delhi state i.e. Senior; Sub junior and junior levels were considered as subjects. Variables selected for the purpose of study were: reaction ability, orientation ability, differentiation ability, balance ability, and rhythm ability. It was concluded that the senior level players were better in case of reaction ability, orientation ability and rhythm ability whereas in case of differentiation ability junior players were found better and in balance ability, sub junior players exclude on other two level players. Significant differences were found in case of differentiation ability and rhythm ability whereas no significant difference was found in case of reaction ability, orientation ability and balance ability among different levels of badminton players.

Shestakov et al. (2007) in their study examined the motor abilities and adroitness of an athlete, deviation is estimated from the optimal way of voluntary movements' execution in standard tasks. This approach considerably increases the efficacy of tests used for controlling athletes' condition in game sports, including soccer, which demand higher

level of motor and coordination abilities development. The objective of this research was to develop and validate a system of testing coordination abilities in soccer players. Methods included National Russian teams (15, 16, 18 yrs) and 2 teams of Russian 1st League participated in the study (n=96). A set of tests was performed in erect position on a stabilographic platform with biological feedback. Sensibility in body movement control; lateral asymmetry; tracking movements; state of the system of motor programs control; and short-term motor memory were assessed. Results showed that National Russian teams (15, 16, 18 yrs) and 2 teams of Russian 1st League took part in the study (n=96). A comparative analysis of the results' of coordination abilities testing demonstrated different features of motor control in soccer players; which depend as on age peculiarities, as on their roles in game. Test results were found reliable at p<O.05. It may be concluded that we have' elaborated a system of tests for estimating coordination abilities of soccer players. The analysis of the movement control system operation and specific preparedness of athletes permits to determine general and, individual peculiarities of their, condition at the moment of testing and to give recommendations concerning corrections to be made in technical and tactical training plans.

Simonek & Brodani (2009) analyzed the Coordination Abilities and Prediction of Coordination Performance in the Selected Sports. In the ontogenesis of motor performance, different sports lay specific requirements on the level of coordination abilities. Coordination abilities develop in a different way than conditional ones and we also have to take into account individual peculiarities of sportsmen. Hierarchy of coordination prerequisites in the structure of game performance plays an important role this is the reason why we present several important recommendations concerning the structure of coordination performance and the possible prediction of coordination performance in the selected sports in 11-19-year old sportsmen. The results should contribute to the facilitation of identification of sport talents, as well as to the reduction of coordination tests.

Bakhit & Hamed (2010) in this study investigated to identify the levels of complex coordinative abilities in children aged 9.5-10 who are applying for the National Project for the Preparation of Youngsters as a selection indicator. The researchers used the descriptive method as it suits the nature of this research. The study was conducted on a sample of 60 children randomly drawn from among the children applying for the National Project for the Preparation of Youngsters from three governorates, i.e., Sohag,

Assiut and Hurghada. (20 children from each governorate). To collect data for the study, the researchers used the Complex Coordinative Abilities Test designed by Kassel University in Germany in 1996, which assesses five coordinative abilities simultaneously under time pressure. The sample under study was assessed using the same specifications of the test during the period from 11/04/2009 to 23/04/2009. One of the most important results is that the time achieved by the children under study were relatively modest compared with the European criteria. The researcher recommends the inclusion of the Complex Coordinative Abilities Test in the tests administered to select the children applying for the National Project for the Preparation of Youngsters and development of programs to train children aged 6-10 in coordinative abilities, as this stage is best stage for developing these abilities and is of great importance for achievement in all sports.

Biswas et al. (2010) examined the effects of reaction time with respect to the nature of stimulus and age of male subjects. A total of 800 male subjects (50 from each of sixteen age groups) starting from five years to seventy years were randomly selected as subjects. Three different types of stimuli e.g. visual stimulus, auditory stimulus, and tactile stimulus were given to the subjects. Reaction time was measured by a multipurpose digital electronic reaction timer capable of measuring reaction time for one hundredth part of a second. Following conclusions were drawn: The auditory stimulus produced quicker reaction than both of visual and tactile stimuli. The visual stimulus found to be better in producing quicker reaction than the tactile stimulus. The reaction time decreased with the increase in the age especially from 21 to 25years.The reaction time became lowest showing quickest reaction ability of an Individual during 21-25 years of age.

Andreeva & Akimov (2011) conducted a study was to describe typical motor profiles in younger schoolchildren. A total of 89 subjects aged 8–10 years, students of primary schools of Moscow not going in for sports took part in the study. Twenty-five indices of psycho physiological, psychomotor, posture graph and locomotors tests (nine coordination tests) have been measured. According to their motor coordination, the children have been subdivided into groups using *k*~means cluster analysis. The four obtained clusters are supposed to reflect different types of motor coordination and correspond to four individual motor profiles typical of children aged 8–10 years. These motor coordination types were not associated with age, sex, or constitution; therefore, they may be promising for selecting sports. The ability to anticipate and a high speed of

wrist movement were typical of children from the first cluster. Subjects from the second cluster were more successful in rapid, rhythmic, and automatic actions, based on the mechanism of intrinsic programming. Subjects from the third cluster displayed a moderate ability of postural control, but at the same time, they were characterized by smooth, accurate, and rhythmic arm actions based on visual feedback, and an advanced sense of rhythm and space sense. Subjects from the fourth cluster were the most coordinated ones, which is important for sports and occupational activities requiring a high level of coordination.

Chicu (2012) conducted a study on effectiveness of learning process during the Physical Education lessons with middle school pupils. Their study demonstrated that the age of 11-12 years is very favorable for morpho-functional and motric training development and also to the learning of the motric skills and abilities. This stage of age coincides with sensitive time of coordination abilities development. In this way, the pupils who were studied had a pretty low level as regarding the development of the basic motric capacities as a rule and especially for the coordination abilities.

Khetmalis (2012) compared the selected coordinative abilities and Motor Abilities ofFemale Athletes of Selected International Schools in Pune. In the present study Ninety female subjects age ranging from 15 to 17 years were selected from three international schools of Pune, Maharashtra, India. Thirty subjects were selected from each of the schools. The mean, standard deviation and Analysis of variance was applied at 0.05 level of significance. Results: different schools of Symbiosis International School, Victorious Kids, and Mercedes Benz female athletes in relation to Reaction ability was less than the tabulated (3.09), Symbiosis International School, Victorious Kids, and Mercedes Benz female athletes in relation to orientation ability was greater than the tabulated (3.09) Significant difference was found in case of orientation ability, differentiation ability, explosive strength and 12 min. run/walk. No significant difference was found in case of rhythmic ability, reaction ability, speed and agility.

Nayak (2012) conducted a study to assess effect of motor coordinative ability of tribal adolescents in the light of their perceptual and reasoning abilities. Therefore 600 tribal adolescents (300 boys and 300 girls) residing in the State of Chhattisgarh, ranging from age group 12 to 17 years were selected. From each age group i.e. 12 years, 13 years, 14 years, 15 years, 16 years and 17 years respectively, 50 tribal boys and 50 tribal girls

residing in the State of Chhattisgarh were selected randomly. To solve Differential hypotheses Oneway ANOVA and 't' test was used to see the joint action effect; the suitable factorial design ANOVA technique was implemented. On the basis of statistical analysis of differential and interactional hypotheses, following results were found. The importance of perceptual abilities in influencing motor coordinative ability of tribal adolescent boys and girls is established. The importance of reasoning ability in influencing the motor coordinative ability of tribal adolescent boys and girls is not established fully because contrary findings are reported for different groups of tribal adolescents on the basis of gender.

Raju (2013) in this study analyzed the coordinative abilities of 11 to 14 year school boys total 120 boys studying in 6th, 7th, 8th and 9th standards were selected as subjects. A sample of 30 boys from each age group from11, 12, 13, and 14 years school boys at Municipal High School, Narasaraopet, Guntur district, Andhra Pradesh were selected at random after obtaining the date of birth of each subjects from the school records. Four coordinative abilities namely differentiation ability of the hands, space orientation ability, dynamic balancing ability, reaction ability were selected for the purpose of the study. Four standardized tests suggested by Peter Hirtz were used to measure these coordinative abilities. One way analysis of variances was used to compare the coordinative abilities among 11 to 14 years school boys. The level of significance was 0.5.

Elena & Elisabeta (2013) conducted a study to analyze the coordination abilities facilitate the fast learning of new movements and the efficient adaptation to a variety of situations. Our paper aims to determine the level of coordination abilities and to analyze them. Our research comprised 34 subjects, aged between 11 and 14, who were tested using the 505 Agility Test, Ruler Test, jumps rope, Stork Test. Significance differences were detected between groups for agility, reaction time and coordination, and no significant differences for both balance tests. We noticed that the level of coordination abilities was significantly higher in the case of athletes in three tests and not relevant in two tests.

Cuza (2013) examined the related in this study reflects the opinion of various experts regarding the importance in developing the coordinative abilities level to improve selection system of elite athletes. These coordinative abilities can be viewed as the

ability of a person that performs actions with a high degree of difficulty, adjusting the movements in time and space and taking into account new situations that occur. The main research method used in this paper is based on the literature studies in this area of interest, i.e. articles and publications, manuals, tutorials, etc. Initially, the study began from the hypothesis that significant improvements can be observed in the selection process of the young athlete's when is take into account the development of the coordinative abilities. Analyzing the related work in this field, selection process is the decisive factor in creating the assumptions for achieving high performances in sport. Also, these researches provide criteria, samples and standards, features and models for initial and primary selection process, and also for the selection of the Olympic or national athletes groups. The conclusion of this study shows that one of the most important criteria for athletes' selection process is represented by their level of development of coordination abilities. Researches included in this paper also argue the importance of athlete's coordination abilities development for selection process in different types of team sport games.

Juravle (2013) conducted a study related to reflect the opinion of various experts regarding the importance in developing the coordinative abilities level to improve selection system of elite athletes. These coordinative abilities can be viewed as the ability of a person that performs actions with a high degree of difficulty, adjusting the movements in time and space and taking into account new situations that occur. The main research method used in this paper is based on the literature studies in this area of interest, i.e. articles and publications, manuals, tutorials, etc. Initially, the study began from the hypothesis that significant improvements can be observed in the selection process of the young athlete's when is take into account the development of the coordinative abilities. Analyzing the related work in this field, selection process is the decisive factor in creating the assumptions for achieving high performances in sport. Also, these researches provide criteria, samples and standards, features and models for initial and primary selection process, and also for the selection of the Olympic or national athletes groups. The conclusion of this study shows that one of the most important criteria for athletes' selection process is represented by their level of development of coordination abilities. Researches included the importance of athlete's coordination abilities development for selection process in different types of team sport games.

Raghupati (2013) the study assessed to compare the coordinative and balancing abilities between urban and rural school going boys. For this purpose 180 boys age ranging from 10 to 15 years were selected as subjects for the study of which 90 were urban and the remaining 90 students were rural school going from different schools of Bangalore District, Karnataka. For the purpose of comparison variables between rural and urban school going children's' ratio and One-way ANOVA statistical technique was used. The level of significance was set at $p<0.05$ level. The results showed significant differences between rural and urban school boys' coordinative and balancing abilities. Analysis of variance was found significant in relation to orientation ability, static and dynamic balance abilities of school boys among different age categories.

Valsaraj (2013) conducted a study to discover the relationship of explosive strength, speed and coordinative measures with the playing ability of football players. Twenty four defenders football players 3(three) from every team who have participated in T. Egbert tournament for the session 2012-13 chosen as the subjects for the study. The study was conducted on independent variables; explosive strength, speed and coordinative measures and dependent variable; playing ability. Findings revealed that there was significant relationship found in explosive strength, speed and reaction ability, orientation ability, differentiation ability with the playing ability of football apart from rhythm ability.

Sharma & Gangwar (2014) Conducted a study was to investigate difference of coordinative abilities between footballer and hockey male players. To attain this study, 30 (15 footballer and 15 hockey players) represented interuniversity tournament with age ranging from 17 to 25 years were randomly selected from Lakshmibai National Institute of Physical Education, Gwalior. The statistical technique employed for this study was independent't'-test at 0.05 level of significance. As per the statistical analysis significant difference was found between football and hockey players on the sub-variables i.e. reaction ability, orientation ability and differentiation ability, However insignificant difference was found on sub-variable i.e. rhythmic ability at 0.05 level of significance.

Attri (2014) conducted a study was to compare the speed, coordinative ability among jumpers & throwers. The total number of sample size were 60 athlete's in which 30 jumpers & 30 throwers & equally divided in to two groups under 17 and 19 years. The sample was selected from Punjab State who had participated at State level of Competition. To find out the speed for 50mts dash, a Coordinative ability, Shuttle Run

test was used. Result found that under 17 to 19 years age groups jumpers have more speed than throwers & also jumpers have more coordinative ability than throwers.

Radwan (2014) had designed effect of training programmed to develop the special coordination abilities of table tennis players and to identify the impact of this programmed on the general skill ability for table tennis juniors under 12 years players. The subjects were assigned to experimental (N=8) and control group (N=8) of junior table tennis players in Ismailia city of Egypt. The duration of the program was three months, three training units in a week, for the duration of 90 minutes training session. The results of this study revealed that the special coordinative abilities were improved in table tennis players who assigned to the experimental group. The result revealed that there were significant differences between pre-test and post-test for the control group in favor of the post-test in both coordination abilities and general skill ability in table tennis.

Singh & Gaurav (2014) had examined physical status and coordinative abilities among university level female footballers in relation to different playing positions i.e. goalkeepers, defenders, midfielders and attackers. A sample of forty (N = 40) female footballers were selected. Coordinative abilities variables i.e. orientation ability, differentiation ability, reaction ability and balance ability were selected for study. One way Analysis of Variance (ANOVA) was applied to find out the significance of differences with regard to coordinative abilities among female goalkeepers, defenders, midfielders and attackers in football. Scheffe's post-hoc test (SPHT) was applied to see the direction and significance of differences where 'F' value found statistically significant. The level of significance was set at0.05. While comparing the means, it is revealed that goalkeepers had better orientation ability, reaction ability and balance ability than their counterparts; defenders, midfielders and attackers. It is also observed that attackers had better orientation ability, reaction ability and balance ability than their counterparts; defenders and midfielders. However, defenders showed better differentiation ability than goalkeepers, midfielders and attackers. Further, significant differences were found between football players of different playing positions with regard to orientation ability ($p < 0.05$) and balance ability ($p < 0.05$) but insignificant differences were found with regard to differentiation ability ($p > 0.05$) and reaction ability ($p > 0.05$)

Das & Mishra (2015) had observed the connection between football skill and performance connected fitness of rural footballers of West Bengal. 30 Rural footballers were selected randomly as the subject for this study. The footballers were selected as subjects from 2 districts; Nadia and South 24 parganas. The age of the subjects was ranged between 18-26 years. Performance was associated physical fitness parameters likes, speed was tested by 50 m dash, explosive power of leg by standing board Jump, agility was tested by 4×10 meter shuttle run, and reaction time tested using Stork Stand Test. The results of the study showed that explosive power of leg was absolutely connected with throw-ins for distance, dribbling for time, shooting for accuracy for rural footballers. Speed, agility, reaction time, balance was not positively related with football skill performance for rural footballers.

Popowczak et al. (2015) conducted a study was an attempt at analyzing results of the selected coordinative motor abilities: kinesthetic differentiation, quick reaction and spatial orientation. It was intended to find out whether the results of trials determining manifestations of the particular coordinative abilities exhibit any mutual relationships. Forasmuch as a static torque is a parameter determining the level of force components of the ability of kinesthetic differentiation, it would like to find out whether it's maximum level influences the final result. Research was carried out on 20 young basketball players with the use of a torque meter and Fusion Smart Speed System. It was noticed a lack of statistically significant relationships between the results of trials assessing manifestations of the ability of kinaesthetic differentiation, quick reaction and spatial orientation. However, it was noted statistically significant correlation between the maximum static torque and the accuracy of releasing a particular value of a static torque. The accuracy of releasing a particular value of a static torque ought to be classified as a comprehensive ability that comprises manifestations of strength abilities and kinaesthetic differentiation. Presented trials to evaluation manifestations of the selected coordinative abilities could be used by coaches during a training process. Coaches should also focus on the development of muscle strength of the upper body and upper limbs of basketball players.

Das (2016) conducted a study to analysis the various coordinative abilities among the striker and defender soccer players of Tripura. Subjects: twenty (20) strikers and twenty (20) defender national level soccer players were selected from Tripura state. Test: Various coordinative abilities like orientation ability, reaction ability, balance ability and rhythm ability test were administrated which was suggested by Peter Hintz. Data: The necessary data were collected from the national level soccer players of Tripura. Statistic:

To find out the significant difference between striker and defender soccer players on various coordinative abilities a T-test were used and level of significance was set at 0.05. Results: The results of the study indicated that there was no significant difference between the striker and defender on various selected coordinative abilities (orientation ability, reaction ability, balance ability and rhythm ability).

Frybort et al. (2016) had analyzed the connection between unstable exercise intensity and the visual-motor reaction time and the correctness of motor response in offensive game circumstances in soccer. The participants (n = 42) were male, semi-professional, soccer players (M age 18.0 ± 0.9 years) and trained five times a week. Each player performed four different modes of exercise concentration on the treadmill (motor inactivity, aerobic, intermittent and anaerobic activity). After the end of each exercise, visual-motor reaction time and accurateness of motor reaction were assessed. Players' movement was captured by digital video camera. ANOVA indicated no significant difference (p = 0.090) in the accurateness of motor response between the four exercise intensity modes. Practical significance (Z-test = 0.31) was established in visual-motor reaction time between exercise with dominant participation of aerobic metabolism, and concentrated irregular exercise. A medium size result (Z-test = 0.34) was also originated in visual-motor reaction time between exercise with overriding participation of aerobic metabolism and exercise with main participation of anaerobic metabolism, which was confirmed by ANOVA (897.02 ± 57.46 vs. 940.95 ± 71.14; p = 0.002). The outcome showed that different modes of exercise intensity do not negatively affect the accurateness of motor responses; on the other hand, high intensity exercise has an unenthusiastic result on visual-motor reaction time in assessment to restrained intensity exercise.

Zorba et al (2017) the aim of this study was to examined the relationship between reaction times (right left hand visual and auditory) and balance (static balance) in children between the ages 9-13. 74 male and 46 female, as a total of 120 students between the ages 9-13 from Ankara Bati College were voluntarily participated in this study. Visual and auditory reaction times were measured by new test 1000 reaction timer and Flamingo Balance Test was used to test static balance of players. The data was analyzed by using "Non-parametric Spearman Correlation Test" in SPSS software. The average visual reaction time of subjects for right and left hand were 448, 33 ± 156, 05 msec and 447, 88 ± 142, 70 msec respectively, Right and left subjects' auditory reaction time was 451,95± 166,83 msec and 460,48±166,24. Right and left dynamic

balancescores were obtained 30,37 ± 38,23 sec and 30,72 ± 41,84 sec. respectively. As aresult of the research subjects' reaction to the right visual balance with the right (r =- 212; p <0.05) and left-balance (r =- 183; p <0.05), the right balance with the right auditory reaction (r =- 235, p <0.05) negative correlation was found between scores. Age of the subjects with the right visual reaction (r =- 600; p <0.05), the left hand visual reaction (r =- 599, p <0.05), right-hand visual reaction (r =- 571, p <0.05), the left hand visual reaction (r =- 544, p <0.05) negative relationship found between the variables. However, there is no relationship between the balance and age variables.

Robert et al. (2018) In this study examined the intra- and inter-rater reliability of the Star Excursion Balance Test (SEBT) in two different age groups (6-9 years and 10-13 years) of school boys. The participants in this study were 42 primary school boys, aged from 6-13 years (9.71±2.00). For the intra-rater and inter-rater reliability of SEBT, school boys aged 6-9 years showed fair to excellent reliability (ICC = 0.58-0.90; SEM = 11.14-27.36; SDD = 4.02-9.87) in all directional reaches except poster lateral direction (ICC = 0.20) while school boys aged 10-13 years showed good reliability (ICC = 0.72-0.87; SEM = 2.97-7.63; SDD = 8.22-21.15). In conclusion, SEBT showed good intra-rater and inter-rater reliability in anterior, poster medial and poster lateral directional reaches in school boys aged 6-13 years old but not in inter-rater reliability in poster lateral directional reach of school boys aged 6-9 years old. The findings suggest that SEBT is a reliable and practical test to assess dynamic balance in school boys aged from 10 to 13 years old in school setting. Key words: SEBT, dynamic, PE lesson, teachers

Selvakumar & Vigneshwaran (2020) the purpose of the study was the analysis of balance and reaction abilities among School children. For this purpose, sixty school children (boys and girls) were randomly selected from Tiruchirappalli District, Tamil Nadu, in India. The selected participant’s age was 11 and 12 years old only. The selected subjects were divided into two groups of thirty subjects each namely boys (n=30) and girls (n=30). The selected variables such as balance and reaction abilities were assessed by using long nose balance test and ball reaction exercise test. The collected data on the selected variables were treated with independent "t" test at 0.05 level of significance. The results of the study indicated that there was a significant difference on selected variables such as balance and reaction abilities between boys and girls. This result shows that the boys were found excel than girls abilities on balance and reaction abilities.

CHAPTER- III

METHODOLOGY

Research methodology concerned systematic procedure by which the research started from the initial identification of the problem to its final conclusions. The role of the methodology was to take out the research work in a scientific and systematic manner. In this chapter, the methodology was engaged on the topic **"COMPARATIVE STUDY OF COORDINATIVE ABILITIES OF SOCCER PLAYERS IN RELATION TO AGE SEX OF RURAL AND URBAN POPULATION".** In this chapter methodology and procedure was adopted for the selection of subjects, Selection of variables, Criterion measures, Collection of data, Design of study, Reliability of data, statistical procedure and level of significance for analyzing the data were described.

SELECTION OF THE SUBJECTS

In the present study, subjects were selected from different age groups of male and female also rural and urban populations. The study was selected to two hundred (n=200) out of three hundred male and two hundred female (n=200) out of three hundred, age ranging between 9 to 13 years (100 each) and 14 to 18 years (100 each) for Male and Female, Rural and Urban soccer players. In each age group there were 50 subjects. So, the total number of subjects for male section was 50 x 4 = 200 and same number of subjects was there for female section. Thus the total number of subjects for the study was 400 (200+200). The distribution of subjects has been presented in Table No-1

Table: 1 : Distribution of subjects (N = 400)

Age (year)	Male(No)	Female(No)	Population/Area
09-13	50	50	Urban
09-13	50	50	Rural
14-18	50	50	Urban
14-18	50	50	Rural

The subjects were divided in different age groups on the basis of the official information regarding date of birth from 09 to 18 years. The subjects were randomly selected from different district of South 24 Parganas, North 24 Parganas, Hoogly, Kolkata, Bankura

and purulia in West Bengal. The subjects were homogeneous in respect of socioeconomic status and cultural background.

Table: 2: Age, Body Height and Weight 0f 9 to 13 and 14 to 18 Urban and Rural Boys Soccer players

Sl. No	VARIABLES	9-13 YEARS		14-18 YEARS	
		Urban	Rural	Urban	Rural
		Mean/SD	Mean/SD	Mean/SD	Mean/SD
1.	Age (Years)	11 ±1.43	11.06 ±1.40	15.92 ±1.40	16.06 ±1.45
2.	Height (CM)	143.64 ± 7.28	144.28±8.10	165.12 ±4.40	165.56±4.62
3.	Weight (Kg)	35.5 ± 5.20	35.26 ± 5.38	57 ± 6.14	56.52±6.06

Table: 3: Age, Body Height and Weight of 9 to 13 and 14 to 18 Urban and Rural Girls Soccer players

Sl. No	VARIABLES	9-13 YEARS		14-18 YEARS	
		Urban	Rural	Urban	Rural
		Mean/SD	Mean/SD	Mean/SD	Mean/SD
1.	Age (Years)	10.98 ±1.42	11.04 ±1.40	16.1 ±1.47	16 ±1.48
2.	Height (CM)	139.72 ± 7.11	140.76±7.09	158.04 ±4.8	157.78 ±3.44
3.	Weight (Kg)	33.52±5.30	34.01±5.42	51.14±3.34	50 ± 2.68

SELECTION OF VARIABLES

On the basis of available literature on coordinative abilities and their tests findings from the related research studies and keeping in mind the specific purpose of the study to compare the coordinative abilities of soccer players in relation to age sex of rural and urban population, the following variables were selected for the study:

1. **Coordinative Variables**

- Reaction Ability.
- Orientation Ability.
- Differentiation Ability.
- Balance Ability.

- Rhythm Ability.
- Coupling Ability.
- Adaptation Ability.

2. **Reaction Variables**

- Audio Reaction Time.
- Visual Reaction Time.
- Tactile Reaction Time.

TABLE 4: CRITERION MEASURES

S.NO	Criterion Variables		Test/Instruments	Unit of Measurement
1	Co-ordination Ability	Reaction ability	Ball reaction exercise test	Centimeters
2		Orientation ability	Number medicine ball run test	Seconds
3		Differentiation ability	Backward medicine ball throw test	Number of points
4		Balance ability	Bass stick test(Static balance)	Seconds
			Star Excursion Balance test (Dynamic balance)	Centimeters
5		Rhythm ability	sprint at given rhythm test	Seconds
6		Coupling ability	Burpee test or Squat thrust test	Number
7		Adaptation Ability	Alternate hand wall toss test	Number
8	Reaction Ability	Audio Reaction Time	Multipurpose Reaction Time Apparatus	Seconds
9		Visual Reaction Time		
10		Tactile Reaction Time		

DATA COLLECTION

Before the administration of tests for the collection of data, the research scholar had a meeting with his subject, expert and other technical assistant of physical education to ensure sincere efforts on their part. He explains them in plain and simple words the purpose and significance of the research work being undertaken by him. The procedure of tests was also explained them in detail. The subjects got fully convinced and assured the investigator for their sincere and whole hearted cooperation. The technical staff comprising the coaches in football and other trained officials in the field voluntarily agreed to extend their full cooperation and earnest assistance in the interest of his scientific investigation.

The data was collected from few districts of West Bengal including both male and female football player from urban and rural areas, after obtaining permission from the managers and coaches of different soccer club. The managers and coaches allowed their players to serve as subjects for the study and encouraged them to cooperate in the process of data collection for the study.

The researcher Started data collection during winter season between September - 2021 to February - 2022. For this purpose the researcher took help from 15 assistant. The data collection program session started in the morning from 7am to 10am. The Data collection started with 30 minute of warming up and the subjects were all in proper activity dress. After that there was a rest for few minutes and the subjects were asked to be prepared for the test. Then the subjects were taken to the specified ground with the entire required equipment ready at hand. The subject was divided according to their serial no in equal sections. After that a proper Demonstration of each test item were performed by an expert. Thus the data collection was performed successfully with the help of the subject and the assistant.

RELIABILITY OF THE DATA

The reliability of data was ensuring by establishing the instruments reliability, tester's competency and reliability of the tests.

INSTRUMENTS RELIABILITY

The instruments used in the study we're obtained from standard firms, which cater to the needs of various research laboratories in India and abroad. All the instruments were available at the Human Performance Laboratory and Sports Store of Department of Physical Education Jadavpur University, Lakshmbiai National Institute of Physical Education, Gwalior and their calibration was accepted as accurate enough for the purpose of this study.

TESTERS COMPETENCY

To ensure that the investigator was well versed in the technique of conducting the tests, the investigator had a number of practice sessions in the testing procedure under the guidance of the expert. The tester's competency was also evaluated together with the reliability of tests.

RELIABILITY OF TESTS

Reliability of the test for coordinative abilities was established by test-retest method where the consistency of results was obtained by Product Moment Correlation method. The obtained co-relation has been shown in Table-3

Table-5: Coefficient of Correlation for Tester Reliability in Coordination Abilities

S. No	Variables	Coefficient of Correlation
1	Reaction ability	.87
2	Orientation ability	.85
3	Differentiation ability	.89
4	Balance ability	.89
5	Rhythm ability	.85
6	Coupling ability	.85
7	Adaptation Ability	.89
8	Audio, Visual and Tactile Reaction Time	.89

*Significant at 0.01level of confidence

DESIGN OF THE STUDY

A comparative statistical group design was prepared to compare the soccer players of two groups (under 9-13 years & under 14-18 years) on the specific coordinative abilities. Each group was comprised of two hundred players from each category i.e. age: (under 9-13 years & under 14-18 years), sex: (male & Female), population: (Rural & Urban) and thus the total number of subjects in all category come to four hundred.

ADM1NISTRATION OF COORDINATIVE ABILITIES TEST

The necessary work was done before the start of the test. The entire test were administered and explained to the subjects by the scholar.

COORDINATIVE ABILITY TESTS

The necessary data was collected by administering coordinative abilities tests as suggested by Peter Hirtz (1985).

Reaction Ability: Ball Reaction Exercise Test : (Peter Hirtz, 1985).

Objective of the Test:

The test was administered to measure the reaction ability of the subjects.

Equipments:

i) Two wooden planks, each of 4m length.
ii) One inflated Volleyball.
iii) A supporting stand.
iv) Pencil, Papers and Clip Board.

Description of the Test

Two wooden planks of 4m each were kept inclined by a supporting stand having a height of one meter and twenty centimeters as shown in Picture-1.

Picture 1: Measurement of Reaction Ability: Ball Reaction Exercise Test

So that it could enable volleyball to roll freely from a height of l.20m. The lower ends of the wooden planks were kept at a distance of 1.5m away from the starting line, outer sides of one of the plank was marked in centimeters.

Volleyball was held by the tester at the top of the planks. The subjects were asked to stand behind the starting line, facing opposite to the planks. On clapping, the subject took a turn and run towards the planks and stopped the ball with both the hands which was dropped on the signal. Each subject was given a practice trial before actual commencement of the test.

Instructions

i) The ball should be stopped with both the hands.

ii) The ball should not be pushed upward while stopping.

Scoring:

The score was the distance measured in centimeters from the top of the planks to a point where the subject stopped the ball. Only two trials were given and the best one was recorded as the score of the subject.

Orientation ability: Numbered Medicine Ball Run Test: (Peter Hirtz, 1985).

Objective of the Test

Determine the orientation ability of the subjects.

Equipments

i) Five medicine balls each weight 3 Kg.
ii) One medicine ball weight 4 Kg.
iii) Stop Watch
iv) Five metallic numbered plates
v) Clapper
vi) Pencil, Papers and Clip Board

Description of the Test

All the medicine balls weight 3Kg. were arranged on an even ground in a semi-circle as shown in Picture-2.

Picture 2: Measurement of Orientation ability: Numbered Medicine Ball Run Test

The sixth medicine ball weight 4 Kg. was kept 3m away from these medicine balls. Behind all the medicine balls of 3 Kg. weights, metallic number plates of 1square foot size were kept from 1 to 5. Before the start of the test, the subjects were asked to stand behind the sixth medicine ball facing towards the opposite direction. On signal, the subject turned and run towards the particular ball number called by the tester and touched the medicine ball run back to touch the sixth medicine ball following which another number was called immediately. A total of three numbers were called by the tester and the subject performed accordingly without any break in between. Before the actual test was administered one practice trial was given to all the subjects.

Scoring:

The time taken to complete the course was noted in seconds. Two trials were givento each subject and the best one was recorded as score.

Differentiation ability: Backward Medicine Ball Throw Test: (Peter Hirtz, 1985).

Objective of the Test

The test was administered to assess the differentiation ability of the subjects.

Equipments

i) A gymnastic mat, size 3 x 6 feet.
ii) One medicine ball weight 2 Kg.
iii) five medicine balls weight 1 Kg. each.
iv)Paper, Pencil and clip board.

Procedure: A Gymnastic mat kept 2 M. away from the starting line as shown in Picture-3

Picture 3: Differentiation ability: Backward Medicine Ball Throw Test (Peter Hirtz, 1985).

A circle of 40 cm. radius was drawn in the middle of the mat and a medicine ball of 2 kg kept at the centre of the circle. The subjects were asked to stand behind the starting line facing the opposite direction. They were asked to throw five medicine balls (1 kg) over the head to hit the 2 Kg. balls kept on the mat, one after another by using both the hands.

Instructions

i) Only overhead throw was permitted.
ii) The students were not allowed to look back.

Scoring:

i) Medicine ball touching the mat — I point.
ii) Medicine ball touching the circle line —2 points.
iii) Medicine ball touching inside the circle — 3 points.
iv) Medicine ball touching the 2 Kg. Medicine ball —4 Points

Points were decided considering the first pitch of the ball. The score of the individual was the total points scored in all the five throws.

Rhythm Ability: Sprint at the Given Rhythm Test: (Peter Hirtz, 1985).

Objective

The test was administered to determine the Rhythm Ability of the Subjects.

Equipment:

i) Eleven gymnastic hoops each 1meter in diameter.
ii) One stop watch.
iii) One measuring tape.

Description of the Test

The subjects had to run a distance of 30m.with maximum sprinting speed marked between two lines. The Sprinting lime of the subject was taken by stopwatch. In the second attempted the subject had to run at a particular rhythm with maximum speed through eleven hoops, which were arranged systematically as shown in Picture- 4

Picture 4: Measurement of Rhythm Ability: Sprint at the Given Rhythm Test

Three hoops were kept in a sequence against each other at a distance of 5meter away from the starting line. Similarly, three hoops were kept at a distance of 5meter from the finish line. Five more hoops were kept in a sequence in the middle of the running distance. The subject had to run through those hoops stepping in between each hoop. The scholar explained the test along with one demonstration and each subject was given one trial run.

Scoring:

The difference between the timings of the first and second attempt was taken as the score.

Balance Ability: (Static Balance & Dynamic Balance)

Static Balance Bass stick Test (crosswise) (Bass, 1939)

Purpose

Bass stick test is used to measure the static balance of the subject by making the body stable on a narrow surface while standing on the ball of the foot. The test is suitable for both sexes aged 10 years and above.

Equipment

A stopwatch, one inch wide, one inch high and 12 inches long stick and an adhesive tape.

Test Administration

The tester gives a practical demonstration either himself/herself or through a trained helper of a group of 10 to 15 subjects by showing how to stand crosswise on the stick upon a given signal.

Picture 5: Measurement of Static Balance: Bass stick Test (crosswise)

After the demonstration the subject is asked to place the back of the right foot crosswise on the stick which is tightly secured to the ground to the help of adhesive tape. The tester then announces Ready, Steady, and "start"On the signal "start" the performer lifts the left foot from the floor and raises the heel of the right foot from the ground so as to balance his/her body on the ball of the foot placed crosswise on the stick for as long as possible up to a maximum of 60 seconds, on the signal "start" the timer starts the stopwatch which is stopped when one of the following

Event happens: -

a) The subject touches the floor either with his/her right heel or toes.
b) The subject loses balance and happens to touch the floor with the free foot.
c) 60 seconds are over when the test is officially announced as completed.

Each subject is required to perform the above test for six times, three times on right foot and three times on left foot alternating each trial with left after right foot.

Scoring

The score is given by the sum of the times in seconds recorded during all the six trials.

Dynamic Balance: Star Excursion Balance Test (Gribble, Hertel & Plisky., 2012)

Star Excursion Balance Test (SEBT) is a dynamic test that requires strength, flexibility, and proprioception. It is a measure of dynamic balance that provides a significant challenge to athletes and physically active individuals.

The test can be used to assess physical performance, but can also be used to screen deficits in dynamic postural control due to musculoskeletal injuries (e.g. chronic ankle instability), to identify athletes at greater risk for lower extremity injury, as well as during the rehabilitation of orthopedic injuries in healthy active adults .

Research has suggested using this test as a screening tool for sport participation as well as a post-rehabilitation test to ensure dynamic functional symmetry

Conducting the Test

1) The athlete should be wearing lightweight clothing and remove their footwear. After doing so, they are the required to stand in the centre of the star, and await further instruction.

2) When using the right foot as the reaching foot, and the left leg to balance, the athlete should complete the circuit in a clockwise fashion. When balancing on the right leg, the athlete should perform the circuit in an anti-clockwise fashion.

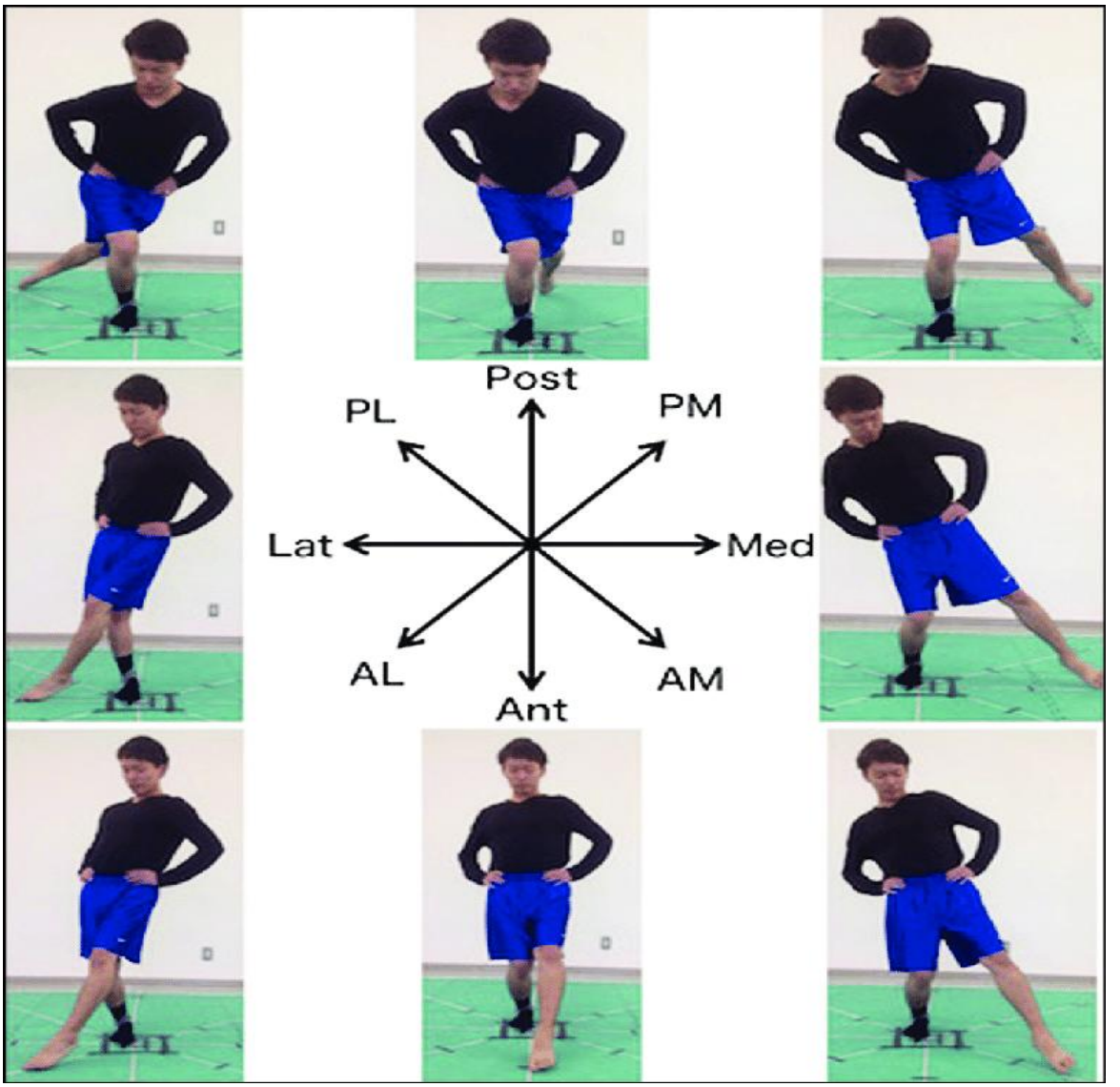
3) With their hands firmly placed on their hips, the athlete should then be instructed to reach with one foot as far as possible and lightly touch the line before returning back to the starting upright position.

4) With a pencil, the test administrator should mark the spot at which the athlete touched the line with their toe. This can then be measured from the centre spot after the test to calculate the reach distance of each reach direction. Reach distances should be recorded to the nearest 0.5cm.

5) They should then repeat this with the same foot for all reach directions before changing foot.

6) After they have completed a full circuit (every reach direction) with each foot, they should then repeat this process for a total of three times per leg. For example, they should have three anterior reach performances for both their right and left leg.

7) Once the athlete has performed 3 successful reaches with each foot in all directions, they are then permitted to step away from the testing area.



Picture 6: Measurement of Dynamic Balance: Star Excursion Balance Test

1. Anterior 2. Anteromedial 3. Medial 4. Posteromedial 5. Posterior

6. Posterolateral 7. Lateral 8. Anterolateral

Scoring System

With the test complete and all performances measured and recorded, the test administrator can then calculate the athlete's SEBT performance scores using the following simple equations:

- **Average distance in each direction (cm)** =(Reach 1 + Reach 2 + Reach 3) / 3
- **Relative (normalized) distance in each direction (%)** = Average distance in each direction / leg length * 100

These calculations should be performed for both the right and left leg in each direction, providing you with a total of 16 scores per athlete.

Adaptation Ability: Ball throw and catch test: (Hardayal Sing, 1991)

The Alternate-Hand Wall-Toss Test is a test of hand-eye coordination, where the participant throw a ball against a wall from one hand in an underarm action, and attempt to catch it with the opposite hand.

Purpose: to measure hand-eye coordination

Equipment required: tennis ball or baseball, smooth and solid wall, marking tape, stopwatch (optional).

Procedure: A line is placed on the ground a certain distance from the wall (e.g. 2 meters, /3 feet). The person stands behind the line and facing the wall. The ball is thrown from one hand in an underarm action against the wall, and attempted to be caught with the opposite hand. The ball is then thrown back against the wall and caught with the initial hand. The test can continue for a nominated number of attempts or for a set time period (e.g. 30 seconds). By adding the constraint of a set time period, you also add the factor of working under pressure.

Picture 7: Measurement of Adaptation Ability: Ball Throw and catch test

Scoring: This table lists general ratings (source unknown) for the wall toss test, based on the score of the number of successful catches in a 30 second period.

Coupling ability: Burpee Test: (Singh, R.1996)

This burpee test is a simple test of strength endurance, agility, balance and coordination, in which the participant attempts the maximum number of burpees in a set time period. Another name for the burpee is the Squat Thrust & Jump.

Purpose: this is a test of strength endurance, though body control, balance and coordination are also factors.

Equipment required: stopwatch, non-slip surface.

Technique: The standard starting position for the burpee is standing erect with the arms by the side. From the standing position, squat down and place the hands on the floor in front of the feet. Putting the bodyweight on the hands, the legs are thrust back to a push-up position with a straight line from the shoulders to the heels. Next pull the legs back and return to the squatting position, then up back to the starting standing position. One complete burpee is from the standing back to the standing position. In their test protocol, at the 'bottom' of the burpee the chest must touch the ground, and at the 'finish' of the burpee, the feet must leave the ground with the hands reaching above the ears.

Picture 8: Measurement of Coupling ability: Burpee Test

Procedure: The test requires the athlete to perform as many burpees as possible. The duration of the test can be from 30 seconds up to 5 minutes. Time how many correctly performed burpees are completed in the time limit.

Scoring: A good result for a 30 second test is >16 burpees for men and >12 for women.

REACTION TIME (AUDIO, VISUAL, AND TACTILE) (Debnath, 2005)

A multipurpose reaction timer capable of measuring visual, auditory and tactile reaction time was used. This reaction timer was designed and manufactured by Physifit Instrument Company, Chandan nagar. The equipment is shown in Picture-9

Picture 9: Measurement of Reaction Time

Purpose: To determine the simple reaction for visual, auditory and tactile stimuli.

Equipment: Multipurpose Reaction Time Apparatus

Procedure: In the reaction timer there was arrangement for producing three different types of stimuli - A) visual, B) auditory and C) tactile from electric energy. The Selecting of a specific stimulus is controlled by a knob. On the front side, there is a common switch to control the power button between 'ON and 'OFF' of the stimuli. The switch is controlled by the researcher. The subject used to take position in front of the reaction timer with his index finger on one hand, and on the other hand, there is another OFF switch. In front of the reaction timer, a digital watch is placed, capable of measuring time for one hundredth part of a second. There is a cable attached to the power supply for the supply of electricity for the reaction timer.

The same procedure was followed for the type C stimulus, namely the tactile. For this, the researcher used to set the equipment at first for tactile stimulus. The electrode used to be attached on the forehand. By pressing the knob by the researcher, a flow of current to the body of the subject and the subject used to respond as soon as possible.

Scoring: Three trials were permitted to each subject for every stimulus (audio, visual and tactile) and the average of those three timings is taken as an individual score.

STATISTICAL PROCEDURE

The purpose of comparing the coordinative abilities of soccer players in relation to age, sex, of rural and urban population Descriptive statistics and‘t’ test was used and the level of significance was set at 0.05.

To determine the homogeneity of variance between two groups the Levene’s test for homogeneity of variances was not significant ($p < .05$).

CHAPTER – 4

ANALYSIS OF DATA

The data gathered from different tests were statistically analyzed adopting the method mentioned in Chapter –III. The result are presented in this chapter in tabular and graphical form and discussion are made in all aspects of coordination variables such as Reaction Ability, Orientation ability, Differentiation ability, Balance ability, Rhythm Ability, Coupling Ability, Adaptation Ability and Reaction Variables (Visual reaction time, Audio reaction time, Tactile reaction time) on four hundred (n=400) soccer players. To determine the homogeneity of variance between the groups the Levene's test for homogeneity of variance was applied and presented in the table no. Descriptive analysis of coordination variables of urban and rural soccer players (boys) in various age categories along with Mean, Standard Deviation have been presented in table no. - 6.

Table 6: Test of Homogeneity of Variances of coordinative abilities of soccer players (boys) in relation to age of rural and urban population

Sl. No	VARIABLES	9-13 YEARS		14-18 YEARS	
		Levene Statistic	Sig.	Levene Statistic	Sig.
1	Reaction ability	0.197	0.660	1.680	0.203
2	Differentiation ability	0.014	0.907	0.957	0.334
3	Static Balance	0.188	0.667	3.470	0.070
4	Dynamic Balance (Right Leg)	0.768	0.386	3.701	0.062
5	Dynamic Balance (Left Leg)	0.439	0.512	1.886	0.178
6	Rhythm Ability	0.057	0.813	1.133	0.294
7	Orientation Ability	0.142	0.708	2.407	0.129
8	Coupling Ability	1.081	0.305	1.772	0.191
9	Adaptation Ability	0.003	0.959	1.095	0.302
10	Audio reaction time	0.022	0.882	1.869	0.180
11	Visual reaction time	0.071	0.792	2.102	0.155
12	Tactile reaction time	0.043	0.837	2.491	0.123

*Significant at 0.05 level

In the above table no 6 (Test of Homogeneity of Variances) the p-value or significance value of 9-13 years and 14-18 years boys soccer players Reaction ability, Differentiation ability, Static Balance, Dynamic Balance, (Right Leg), Dynamic Balance (Left Leg), Rhythm Ability, Orientation Ability, Coupling Ability, Adaptation Ability, Audio reaction time, Visual reaction time and Tactile reaction time are 0.660, 0.907, 0.667, 0.386, 0.512, 0.813, 0.708, 0.305, 0.959, 0.882, 0.792 and 0.837 and 0.203, 0.334, 0.070, 0.062, 0.178, 0.294, 0.129, 0.191, 0.302, 0.180, 0.155 and 0.123 Respectively which is greater than 0.05 ($p > 0.05$), so we fail to reject the null hypothesis as the variances of the differences between groups were not significantly different. Therefore we conclude that the distribution of the responses is the same (homogeneous) between the groups.

Table 7: Test of Homogeneity of Variances of coordinative abilities of soccer players (girls) in relation to age of rural and urban population

Sl. No	VARIABLES	9-13 YEARS		14-18 YEARS	
		Levene Statistic	Sig.	Levene Statistic	Sig.
1	Reaction ability	1.454	0.235	0.272	0.605
2	Differentiation ability	1.152	0.290	0.710	0.405
3	Static Balance	0.071	0.792	1.081	0.305
4	Dynamic Balance (Right Leg)	2.102	0.155	0.057	0.813
5	Dynamic Balance (Left Leg)	0.022	0.882	2.491	0.123
6	Rhythm Ability	1.772	0.191	0.188	0.667
7	Orientation Ability	0.006	0.939	0.156	0.695
8	Coupling Ability	0.957	0.334	0.957	0.334
9	Adaptation Ability	0.439	0.512	0.768	0.386
10	Audio reaction time	0.188	0.667	0.014	0.907
11	Visual reaction time	2.102	0.155	2.407	0.129
12	Tactile reaction time	0.207	0.652	0.216	0.645

*Significant at 0.05 level

In the above table no 7 (Test of Homogeneity of Variances) the p-value or significance value of 9-13 years and 14-18 years girls soccer players Reaction ability, Differentiation ability, Static Balance, Dynamic Balance, (Right Leg), Dynamic Balance (Left Leg), Rhythm Ability, Orientation Ability, Coupling Ability, Adaptation Ability, Audio

reaction time, Visual reaction time and Tactile reaction time are 0.235, 0.290, 0.792, 0.155, 0.882, 0.191, 0.939, 0.334, 0.512, 0.667, 0.155, and 0.652 and 0.605, 0.405, 0.305, 0.813, 0.123, 0.667, 0.695, 0.334, 0.386, 0.907, 0.129 and 0.645 Respectively which is greater than 0.05 ($p > 0.05$), so we fail to reject the null hypothesis as the variances of the differences between groups were not significantly different. Therefore we conclude that the distribution of the responses is the same (homogeneous) between the groups.

Table – 8: Descriptive Statistics of coordinative abilities of soccer players (boys) in relation to age of urban and rural population

Sl. No	VARIABLES	9-13 YEARS		14-18 YEARS	
		Urban	Rural	Urban	Rural
		Mean/SD	Mean/SD	Mean/SD	Mean/SD
1.	Reaction ability	162.01±14.83	155.02 ±17.79	153.7 ±11.58	149.08 ±10.3
2.	Orientation Ability	10.37 ± 0.47	10.08±0.53	9.77 ±0.38	9.59 ±0.45
3.	Differentiation ability	9.94±1.58	10.68±1.97	10.76±1.84	11.56±1.91
4.	Static Balance	89.86±25.28	99.95±21.31	114.47±30.3	128.05±35.86
5.	Dynamic Balance (Right Leg)	663.38±20.16	671.82± 19.99	763.34± 11.39	770.34± 12.13
6.	Dynamic Balance (Left Leg)	659.98± 16.51	666.86± 16.61	742.64± 10.36	748.28± 15.67
7.	Rhythm Ability	1.16± 0.31	1.05±0.24	1.03±0.29	0.9±0.32
8.	Coupling Ability	13.34±1.75	14.16±1.50	14.96±1.53	15.54±1.31
9.	Adaptation Ability	27.54 ± 5.66	29.88 ±3.24	31.68±5.21	33.84±7.06
10.	Audio reaction time	0.24±0.03	0.23±0.03	0.23±0.032	0.22±0.026
11.	Visual reaction time	0.25±0.03	0.24±0.04	0.25±0.04	0.23±0.04
12.	Tactile reaction time	0.27±0.04	0.26±0.04	0.25±0.03	0.24±0.04

The descriptive statistics of all variables are presented in Table 8. It appears from the table that the mean and Standard Deviation of Reaction ability of 9- 13 years and 14- 18 years of Urban and Rural subjects were 162.01&±14.83, 155.02 &±17.79, 153.7 & ±11.58 and 149.08&±10.3 respectively. The mean and Standard Deviation of Orientation ability of two distinct age groups of Urban and Rural subjects were 10.37&±0.47, 10.08 &±0.53, 9.77&±0.38 and 9.59&±0.45respectively.The mean and Standard Deviation of Differentiation ability of two distinct age groups of Urban and Rural subjects were 9.94

&±1.58, 10.68 &±1.97, 10.76 &±1.84 and 11.56 &±1.91respectively.The mean and Standard Deviation of Static balance ability of two distinct age groups of Urban and Rural subjects were 89.86&±25.28,99.95&±21.31, 114.47&±30.3 and 128.05&±35.86 respectively. The mean and Standard Deviation of Dynamic balance (Right Leg) ability of two distinct age groups of Urban and Rural subjects were 663.38 &± 20.16, 671.82&± 19.99, 763.34&± 11.39, and 770.34&±12.13respectively. The mean and Standard Deviation of Dynamic balance (Left Leg) ability of two distinct age groups of Urban and Rural subjects were 659.98 &±16.51, 666.86 &±16.61, 742.64 &±10.36 and 748.28 &±15.67 respectively. The mean and Standard Deviation of Rhythm ability of two distinct age groups of Urban and Rural subjects were 1.16 &± 0.31, 1.05 &±0.24, 1.03 &±0.29 and 0.9 &±0.32respectively. The mean and Standard Deviation of Coupling ability of two distinct age groups of Urban and Rural subjects were 13.34 &±1.75, 14.16&±1.50, 14.96&±1.53, and 15.54&±1.31respectively.The mean and Standard Deviation of Adaptation ability of two distinct age groups of Urban and Rural subjects were 27.54 &± 5.66,29.88&±3.24,31.68&±5.21 and 33.84&±7.06 respectively. The mean and Standard Deviation of Audio reaction time ability of two distinct age groups of Urban and Rural subjects were 0.24&±0.03, 0.23&±0.03, 0.23 &±0.032, and 0.22 &±0.026 respectively. The mean and Standard Deviation of Visual reaction time ability of two distinct age groups of Urban and Rural subjects were 0.25 &±0.03, 0.24 &±0.04, 0.25&±0.04 and 0.23&±0.04respectively. The mean and Standard Deviation of Tactile reaction time ability of two distinct age groups of Urban and Rural subjects were 0.27 &±0.04, 0.26 &±0.04, 0.25&±0.03 and 0.24&±0.04respectively.

Descriptive analysis of coordination variables of urban and rural soccer players (girls) in various age categories along with Mean, Standard Deviation have been presented in table no. - 9.

Table – 9: Descriptive Statistics of coordinative abilities of soccer players (girls) in relation to age of urban and rural population

Sl. No	VARIABLES	9-13 YEARS		14-18 YEARS	
		Urban	Rural	Urban	Rural
		Mean/SD	Mean/SD	Mean/SD	Mean/SD
1.	Reaction ability	171.6 ±10.46	167.42 ±8.84	165.51 ±8.09	161.63 ±9.68
2.	Orientation Ability	10.86±0.26	10.74±0.3	9.96±0.51	9.77±0.38
3.	Differentiation ability	8.74±1.43	9.48±1.83	10.56±2.03	11.1±2.19
4.	Static Balance	62.91±9.60	66.82±9.37	77.64±21.84	85.45±12.96
5.	Dynamic Balance (Right Leg)	646.98±14.33	654.86± 14.84	727.52± 18.65	734.48± 18.45
6.	Dynamic Balance (Left Leg)	639.38± 15.96	650.06± 15.84	714.16± 18.69	722.26± 18.97
7.	Rhythm Ability	1.32±0.29	1.19±0.34	1.13±0.25	1.04±0.35
8.	Coupling Ability	10.12±1.52	10.72±1.37	11.5±1.30	11.92±1.46
9.	Adaptation Ability	18.86±4.39	20.2±3.4	25.88±2.52	27.38±2.89
10.	Audio reaction time	0.25±0.027	0.24±0.023	0.23±0.03	0.22±0.02
11.	Visual reaction time	0.27±0.03	0.26±0.03	0.24±0.03	0.23±0.04
12.	Tactile reaction time	0.27±0.04	0.26±0.04	0.25±0.03	0.24±0.04

The descriptive statistics of all variables are presented in Table 9. It appears from the table that the mean and Standard Deviation of Reaction ability of 9- 13 years and 14- 18 years of Urban and Rural subjects were171.6&±10.46, 167.42 &±8.84, 165.51 &±8.09 and161.63 &±9.68respectively. The mean and Standard Deviation of Orientation ability of two distinct age groups of Urban and Rural subjects were 10.86&±0.26, 10.74&±0.3, 9.96&±0.51 and 9.77 &±0.38 respectively. The mean and Standard Deviation of Differentiation ability of two distinct age groups of Urban and Rural subjects were8.74&±1.43, 9.48&±1.83, 10.56&±2.03and 11.1&±2.19 respectively. The mean and Standard Deviation of Static balance ability of two distinct age groups of Urban and Rural subjects were 62.91&±9.60, 66.82&±9.37, 77.64&±21.84 and 85.45&±12.96 respectively. The mean and Standard Deviation of Dynamic balance (Right Leg) ability of two distinct age groups of Urban and Rural subjects were 646.98&±14.33, 654.86&±

14.84, 727.52&±18.65 and 734.48&±18.45respectively. The mean and Standard Deviation of Dynamic balance (Left Leg) ability of two distinct age groups of Urban and Rural subjects were639.38&±15.96, 650.06&± 15.84, 714.16&±18.69 and 722.26 &±18.97respectively.The mean and Standard Deviation of Rhythm ability of two distinct age groups of Urban and Rural subjects were1.32&±0.29, 1.19&±0.34, 1.13&±0.25 and1.04&±0.35respectively. The mean and Standard Deviation of Coupling ability of two distinct age groups of Urban and Rural subjects were 10.12&±1.52, 10.72&±1.37, 11.5&±1.30 and 11.92&±1.46respectively.The mean and Standard Deviation of Adaptation ability of two distinct age groups of Urban and Rural subjects were18.86&±4.39, 20.2&±3.4, 25.88&±2.52 and 27.38&±2.89respectively.The mean and Standard Deviation of Audio reaction time ability of two distinct age groups of Urban and Rural subjects were0.25&±0.027, 0.24&±0.023, 0.23&±0.03 and 0.22&±0.02 respectively. The mean and Standard Deviation of Visual reaction time ability of two distinct age groups of Urban and Rural subjects were0.27&±0.03, 0.26&±0.03, 0.24&±0.03 and 0.23&±0.04 respectively. The mean and Standard Deviation of Tactile reaction time ability of two distinct age groups of Urban and Rural subjects were0.27&±0.04, 0.26&±0.04, 0.25&±0.03and 0.24&±0.04respectively.

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Reaction Ability was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -10.

Table 10: Significance of difference between Urban and Rural Boys Soccer Players on Reaction Ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Reaction Ability (Centimeters)	Urban (Boys)	162.01	14.83	3.31	6.99	2.11*	Significant
	Rural (Boys)	155.02	17.79				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984.*

The table- 10 reveals that there was a significant difference in Reaction Ability (t= 2.11) between Urban and Rural Boys Soccer Players within the age groups of 9 to 13 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 1.

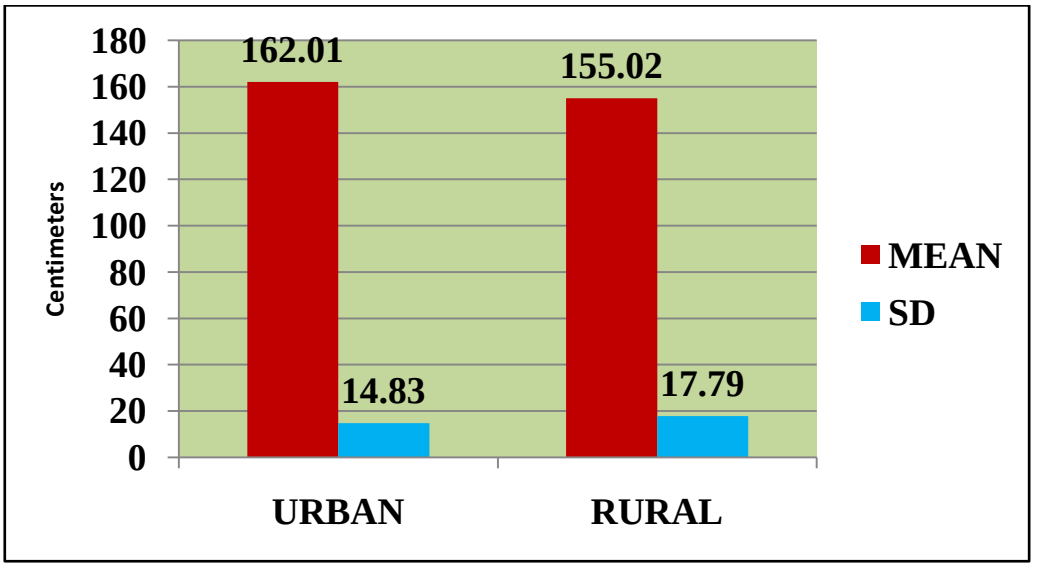


Fig.1. Graphical representation of urban and rural boys soccer players on reaction ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Reaction Ability was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -11.

Table-11: Significance of difference between Urban and Rural Girls Soccer Players on Reaction ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Reaction Ability (Centimeters)	Urban (Girls)	171.6	10.46	1.96	4.18	2.14*	Significant
	Rural (Girls)	167.42	8.84				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 11 reveals that there was a significant difference in Reaction Ability (t= 2.14) between Urban and Rural Girls Soccer Players within the age groups of 9 to 13 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 2.

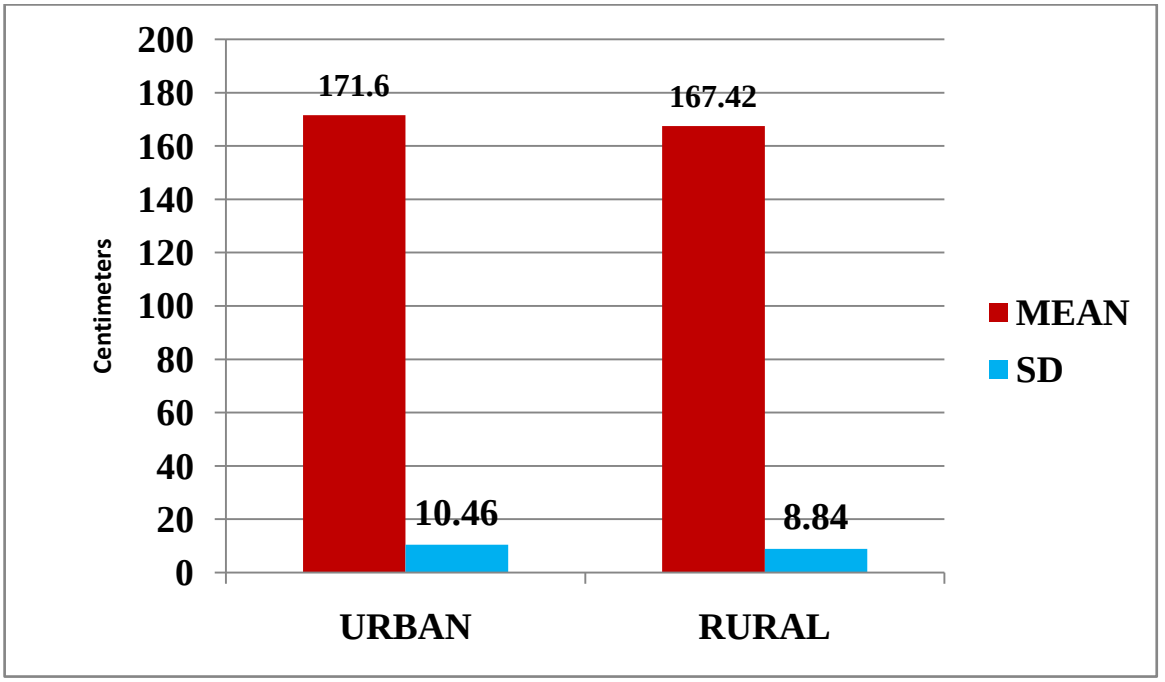


Fig.2. Graphical representation of urban and rural girls soccer players on reaction ability belonging to the age group of 9 to 13years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Reaction Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -12.

Table 12: Significance of difference between Urban and Rural Boys Soccer Players on Reaction Ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Reaction Ability (Centimeters)	Urban (Boys)	153.7	11.58	2.21	4.62	2.09*	Significant
	Rural (Boys)	149.08	10.3				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984.*

The table- 12 reveals that there was a significant difference in Reaction Ability (t= 2.09) between Urban and Rural Boys Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 3.

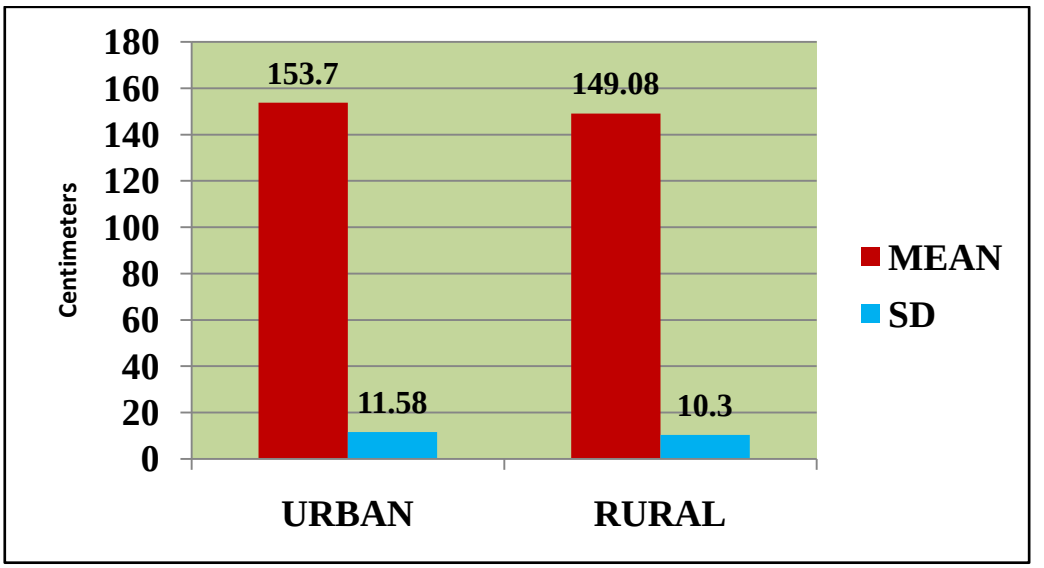


Fig.3. Graphical representation of urban and rural boys soccer players on reaction ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Reaction Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -13

Table-13:Significance of difference between Urban and Rural Girls Soccer Players on Reaction ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Reaction Ability (Centimeters)	Urban (Girls)	165.51	8.09	1.80	3.88	2.15*	Significant
	Rural (Girls)	161.63	9.68				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 13 reveals that there was a significant difference in Reaction Ability (t= 2.15) between Urban and Rural Girls Soccer Players within the age groups of 14 to 18Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 4.

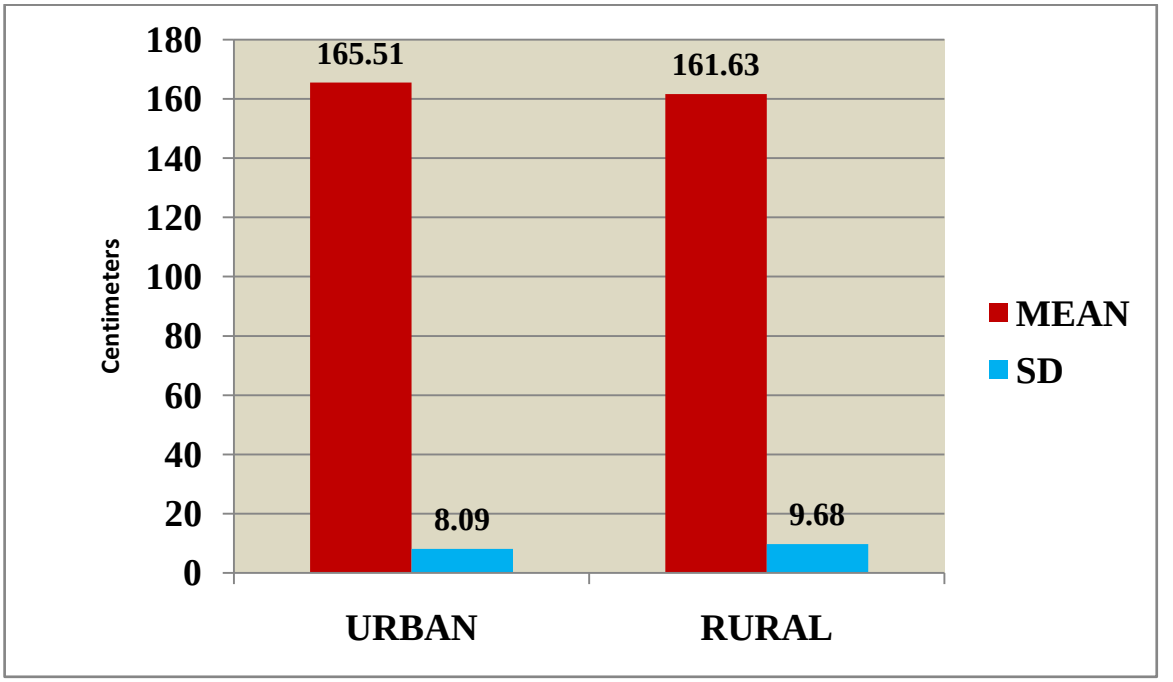


Fig.4. Graphical representation of urban and rural girls soccer players on reaction ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Orientation Ability was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -14.

Table 14: Significance of difference between Urban and Rural Boys Soccer Players on Orientation Ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Orientation Ability (Seconds)	Urban (Boys)	10.37	0.47	0.10	0.29	2.90*	Significant
	Rural (Boys)	10.08	0.53				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 14 reveals that there was a significant difference in Orientation Ability (t= 2.90) between Urban and Rural Boys Soccer Players within the age groups of 9 to 13 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 5.

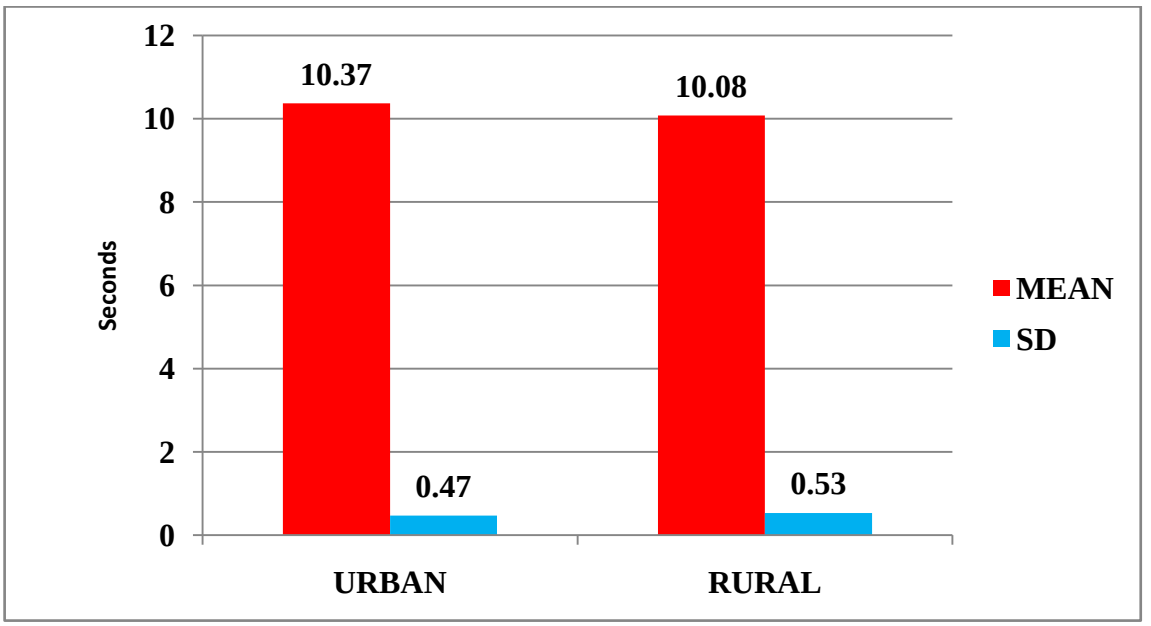


Fig.5. Graphical representation of urban and rural boys soccer players on Orientation ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Orientation Ability was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -15

Table-15:Significance of difference between Urban and Rural Girls Soccer Players on Orientation ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Orientation Ability (Seconds)	Urban (Girls)	10.86	0.26	0.06	0.12	2.19*	Significant
	Rural (Girls)	10.74	0.3				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 15 reveals that there was a significant difference in Orientation Ability (t= 2.19) between Urban and Rural Girls Soccer Players within the age groups of 9 to 13 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 6.

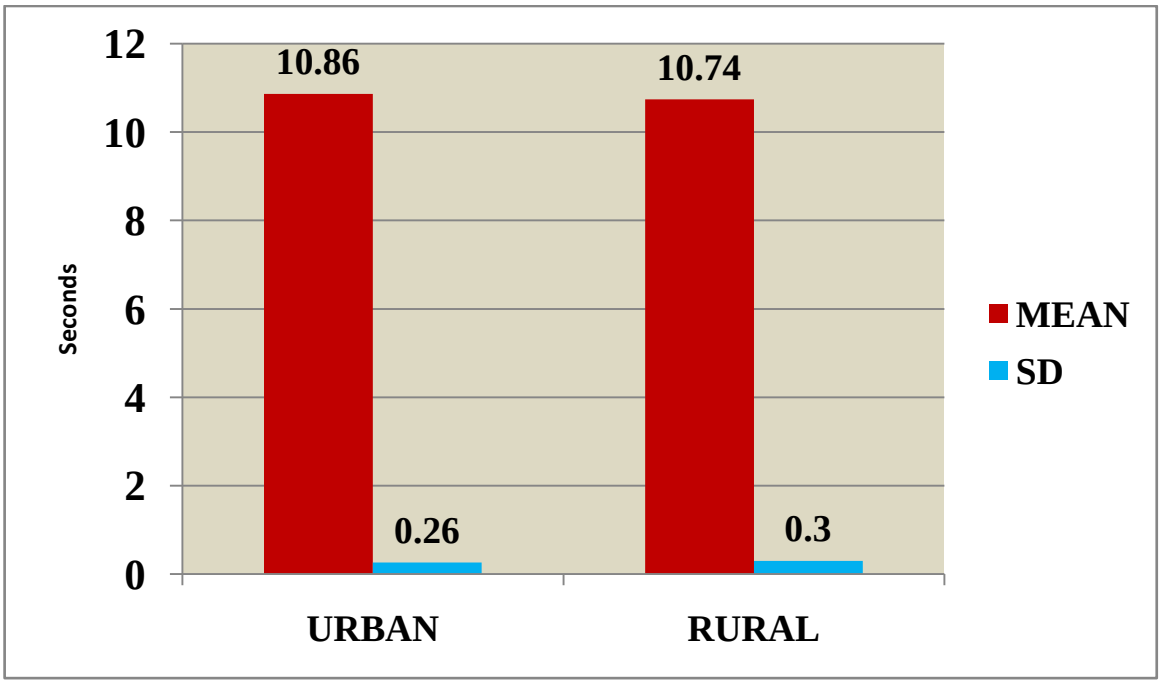


Fig.6. Graphical representation of urban and rural girls soccer players on orientation ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Orientation Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -16.

Table 16: Significance of difference between Urban and Rural Boys Soccer Players on Orientation Ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Orientation Ability (Seconds)	Urban (Boys)	9.77	0.38	0.08	0.19	2.21*	Significant
	Rural (Boys)	9.59	0.45				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 16 reveals that there was a significant difference in Orientation Ability (t= 2.21) between Urban and Rural Boys Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 7.

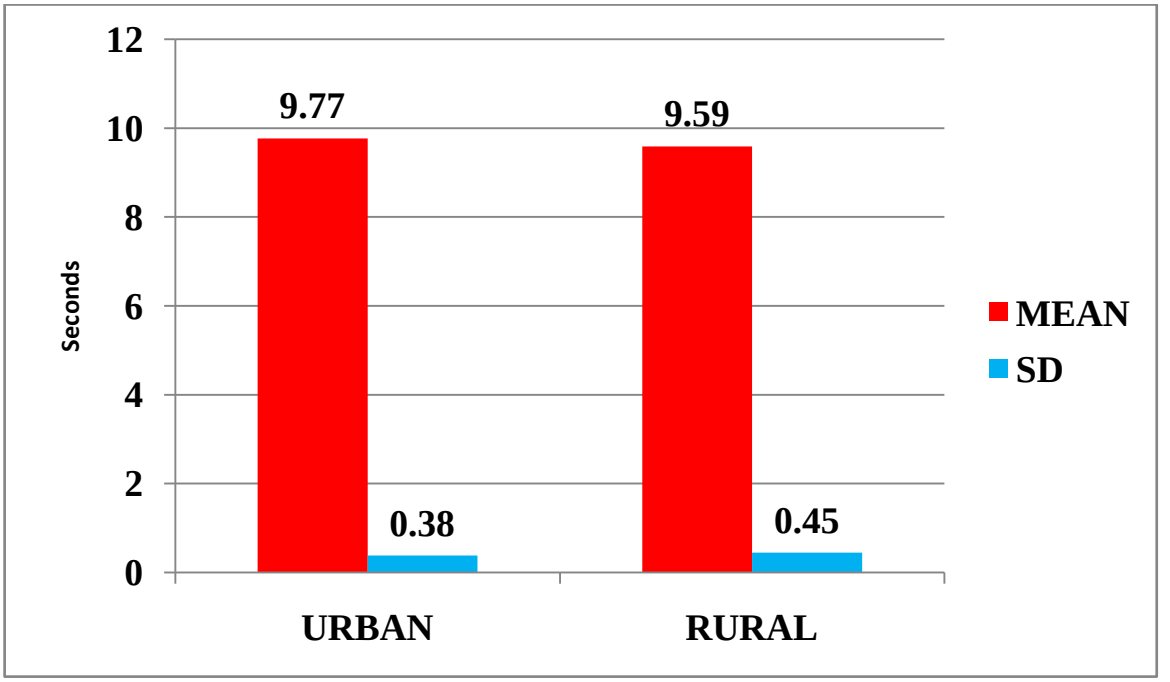


Fig.7. Graphical representation of urban and rural boys soccer players on Orientation ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Orientation Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -17

Table-17: Significance of difference between Urban and Rural Girls Soccer Players on Orientation ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Orientation Ability (Seconds)	Urban (Girls)	9.96	0.51	0.09	0.19	2.09*	Significant
	Rural (Girls)	9.77	0.38				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 17 reveals that there was a significant difference in Orientation Ability (t= 2.09) between Urban and Rural Girls Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 8.

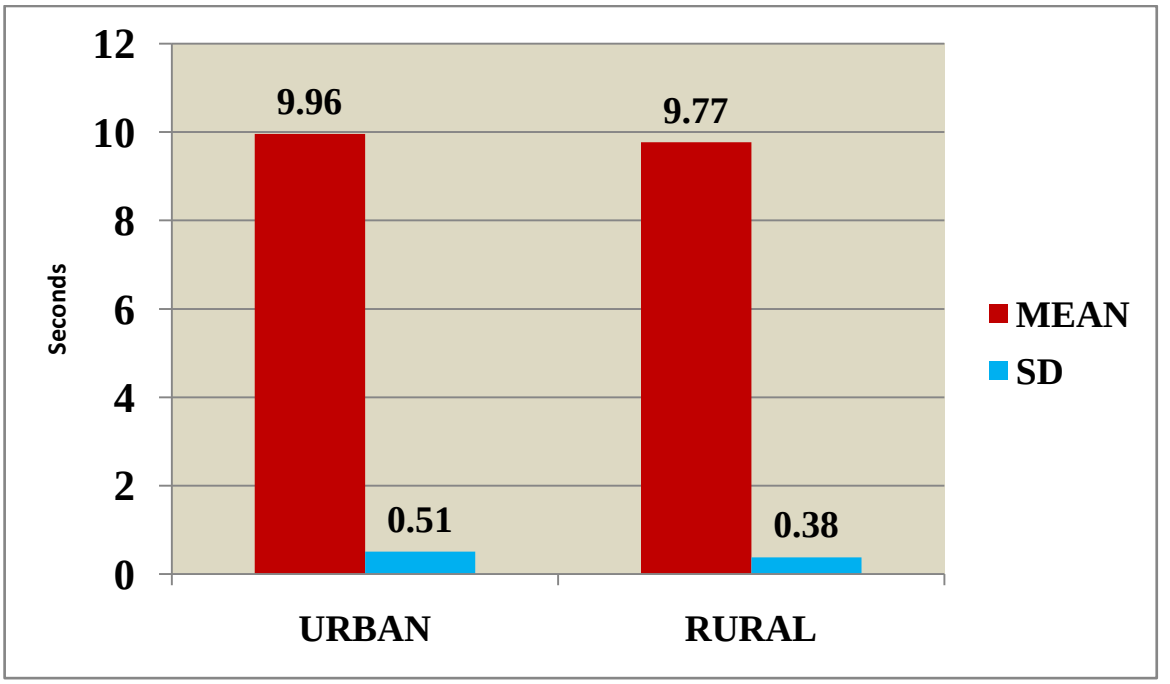


Fig.8. Graphical representation of urban and rural girls soccer players on orientation ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Differentiation Ability was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -18.

Table 18: Significance of difference between Urban and Rural Boys Soccer Players on Differentiation Ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Differentiation Ability (Number of points)	Urban (Boys)	9.94	1.58	0.36	0.74	2.05*	Significant
	Rural (Boys)	10.68	1.97				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984.*

The table- 18 reveals that there was a significant difference in Differentiation Ability (t= 2.05) between Urban and Rural Boys Soccer Players within the age groups of 9 to 13 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 9.

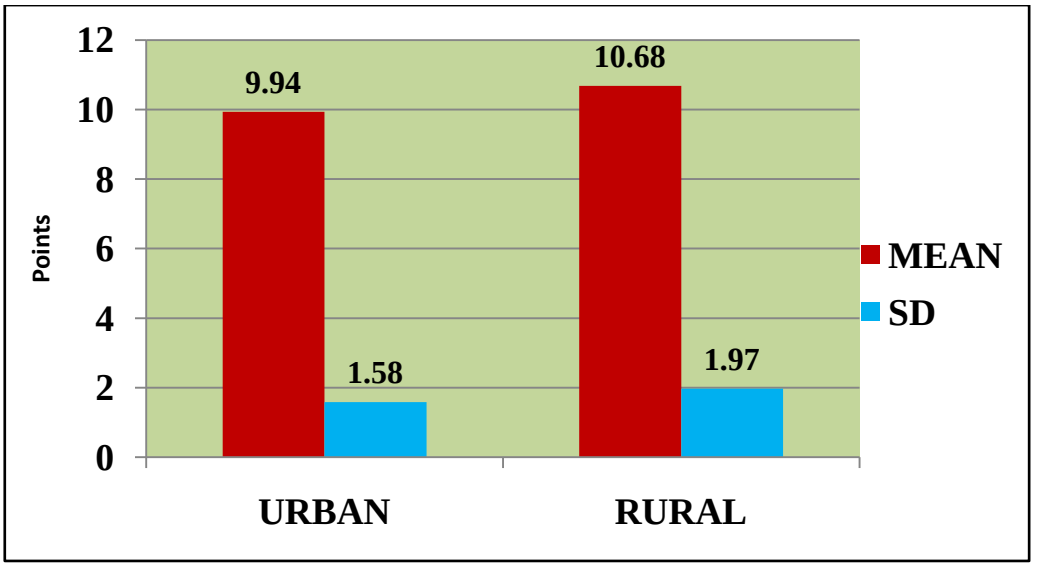


Fig.9.Graphical representation of urban and rural boys soccer players on Differentiation ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Differentiation Ability was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -19

Table-19: Significance of difference between Urban and Rural Girls Soccer Players on Differentiation ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Differentiation Ability (Number of points)	Urban (Girls)	8.74	1.43	0.33	0.74	2.23*	Significant
	Rural (Girls)	9.48	1.83				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 19 reveals that there was a significant difference in Differentiation Ability (t= 2.23) between Urban and Rural Girls Soccer Players within the age groups of 9 to 13 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 10.

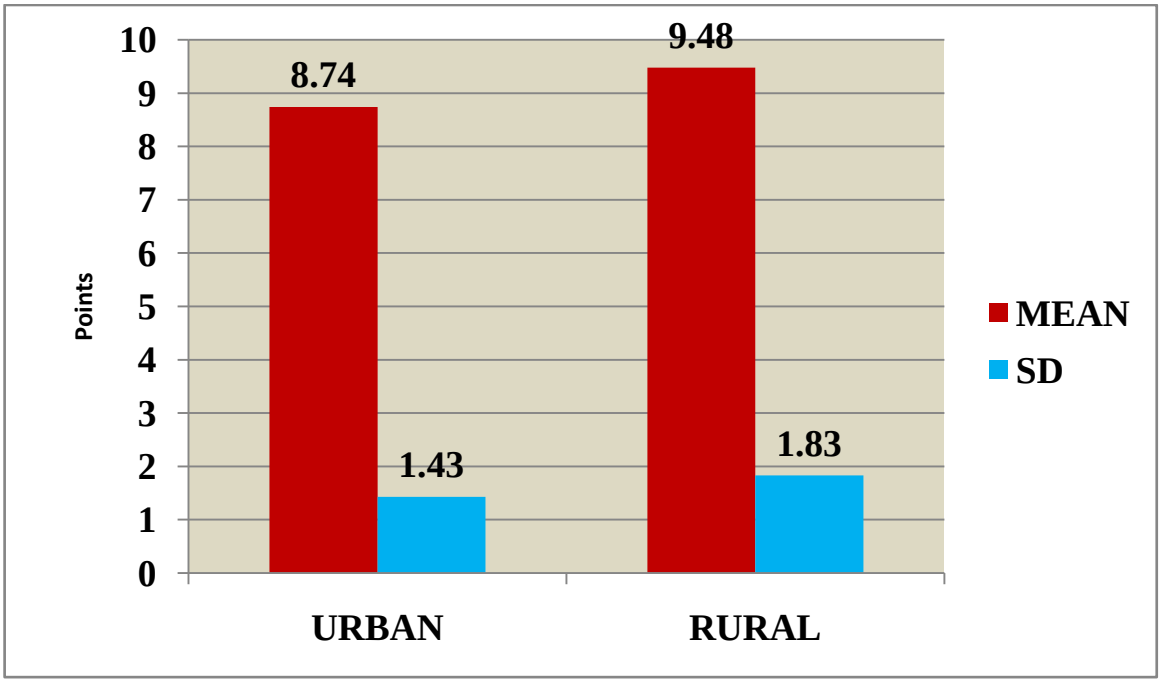


Fig.10. Graphical representation of urban and rural girls soccer players on differentiation ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Differentiation Ability was analyzed by using Independent "t" test for the age groups of14 to 18 Years have been presented in table -20.

Table 20: Significance of difference between Urban and Rural Boys Soccer Players on Differentiation Ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Differentiation Ability (Number of points)	Urban (Boys)	10.76	1.84	0.38	0.8	2.12*	Significant
	Rural (Boys)	11.56	1.91				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 20 reveals that there was a significant difference in Differentiation Ability (t= 2.12) between Urban and Rural Boys Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 11.

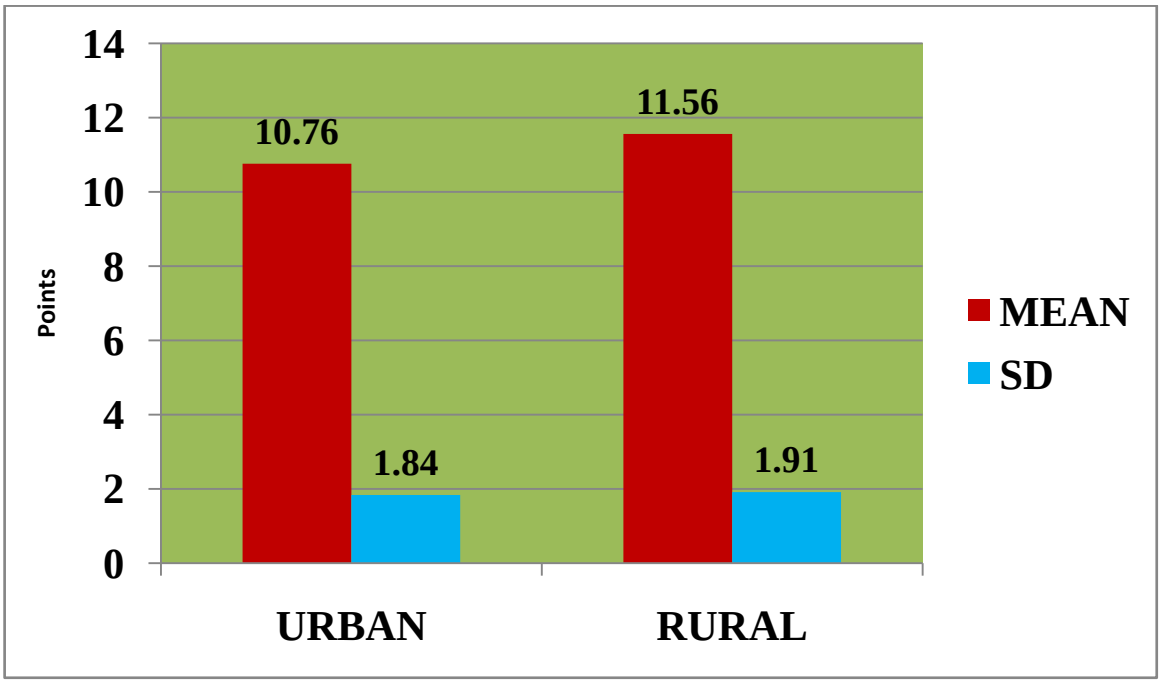


Fig.11.Graphical representation of urban and rural boys soccer players on Differentiation ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Differentiation Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -21

Table-21: Significance of difference between Urban and Rural Girls Soccer Players on Differentiation ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Differentiation Ability (Number of points)	Urban (Girls)	10.56	2.03	0.43	0.54	1.27	Insignificant
	Rural (Girls)	11.1	2.19				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 21 reveals that there was no significant difference in Differentiation Ability (t= 1.27) between Urban and Rural Girls Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 12.

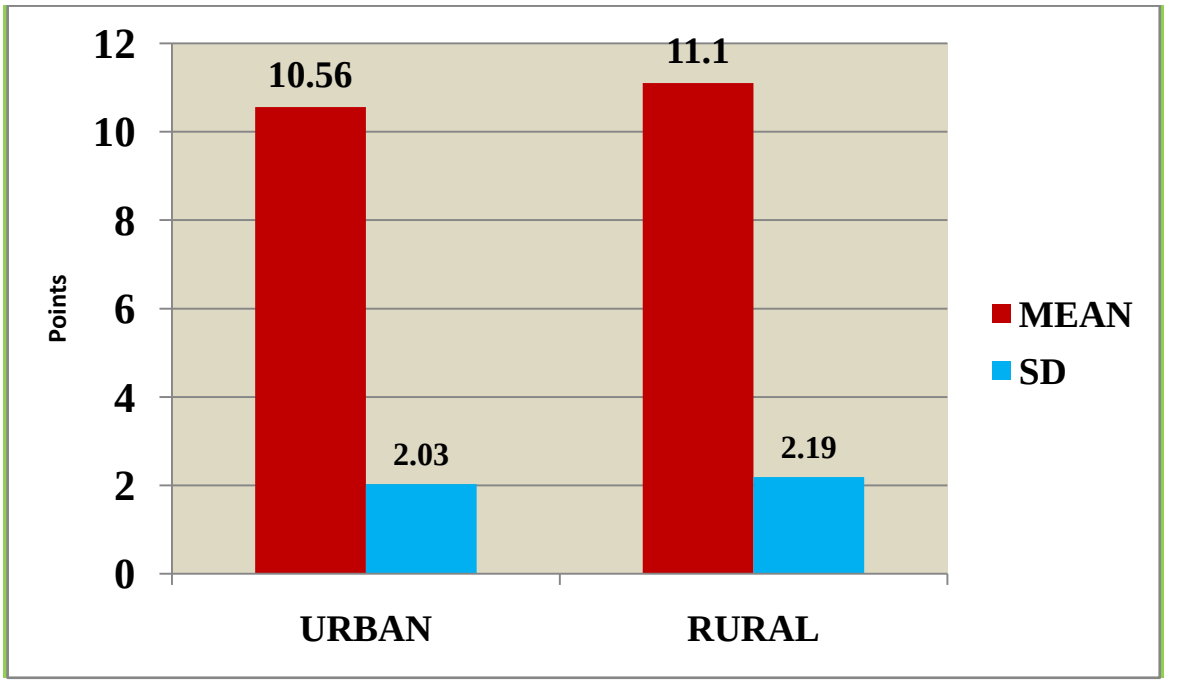


Fig.12. Graphical representation of urban and rural girls soccer players on Differentiation ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Static Balance Ability was analyzed by using Independent "t" test for the age groups of 9 to 13Years have been presented in table -22.

Table –22: Significance of difference between Urban and Rural Boys Soccer Players on Static balance ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Static Balance Ability (Seconds)	Urban (Boys)	89.86	25.28	4.72	10.08	2.13*	Significant
	Rural (Boys)	99.95	21.31				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 22 reveals that there was a significant difference in Static Balance ability (t= 2.13) between Urban and Rural Boys Soccer Players within the age groups of 9 to 13Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 13

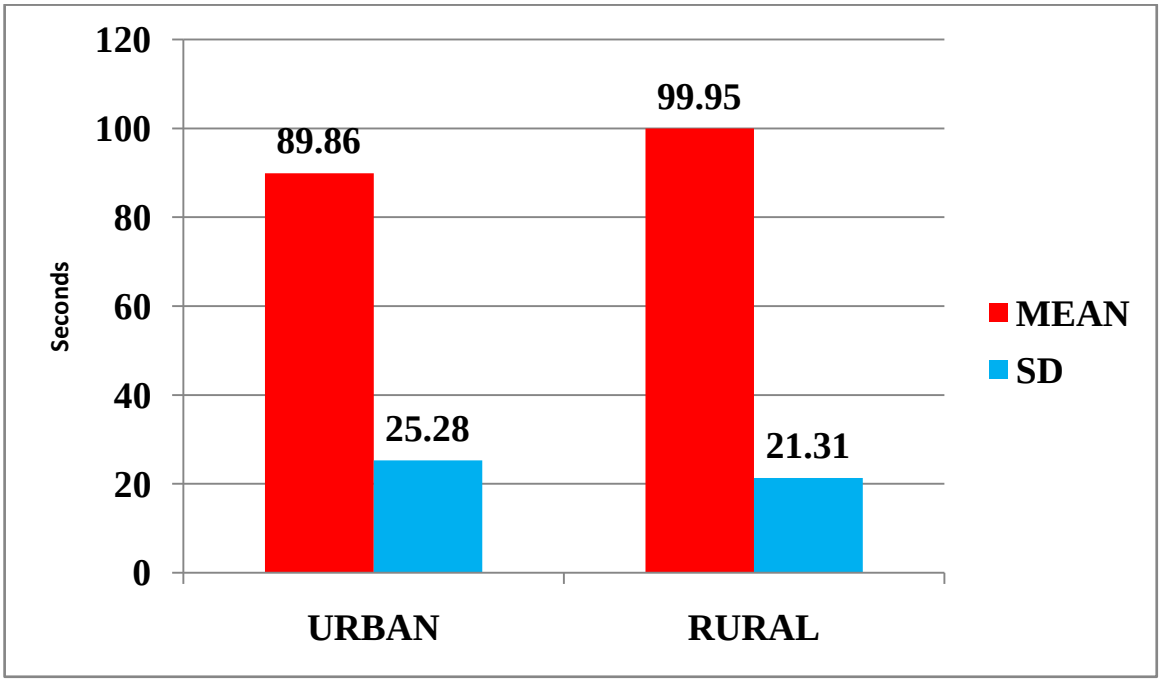


Fig.13.Graphical representation of urban and rural boys soccer players on Static balance ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Static Balance Ability was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -23.

Table 23: Significance of difference between Urban and Rural Girls Soccer Players on Static balance ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Static Balance Ability (Seconds)	Urban (Girls)	62.91	9.60	1.92	3.91	2.04*	Significant
	Rural (Girls)	66.82	9.37				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 23 reveals that there was a significant difference in Static Balance ability (t= 2.04) between Urban and Rural Girls Soccer Players within the age groups of 9 to 13Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 14

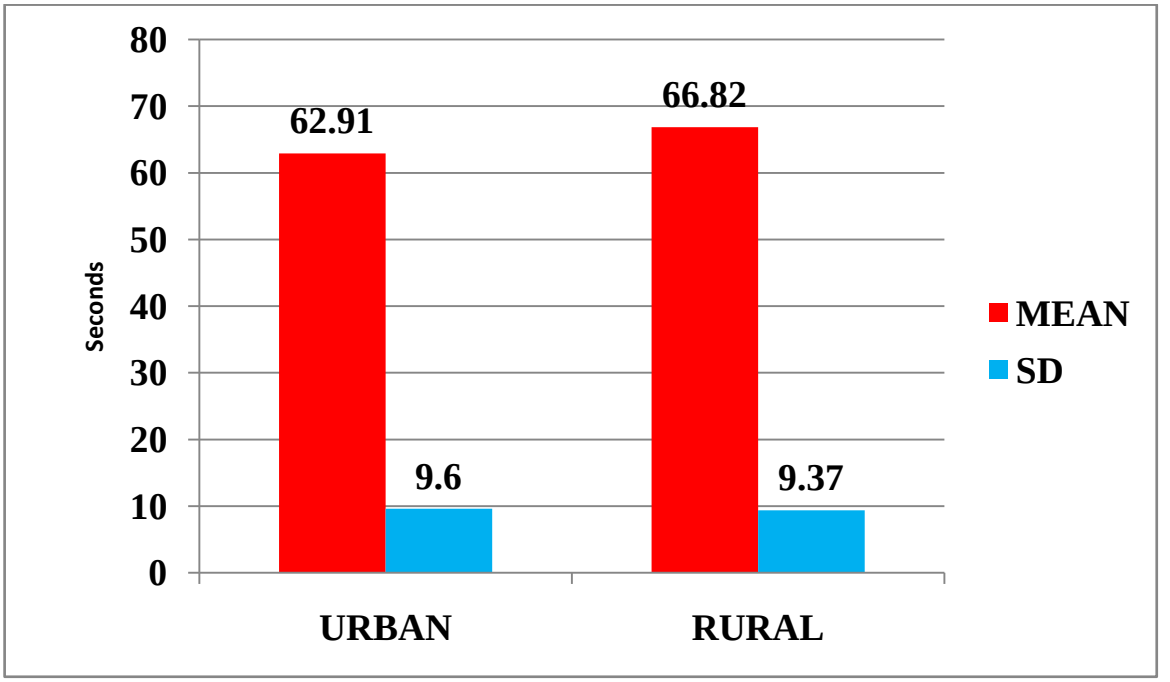


Fig.14.Graphical representation of urban and rural girls soccer players on Static balance ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Static Balance Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -24.

Table 24: Significance of difference between Urban and Rural Boys Soccer Players on Static balance ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Static Balance Ability (Seconds)	Urban (Boys)	114.47	30.3	6.71	13.58	2.03*	Significant
	Rural (Boys)	128.05	35.86				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 24 reveals that there was a significant difference in Static Balance ability (t= 2.03) between Urban and Rural Boys Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 15

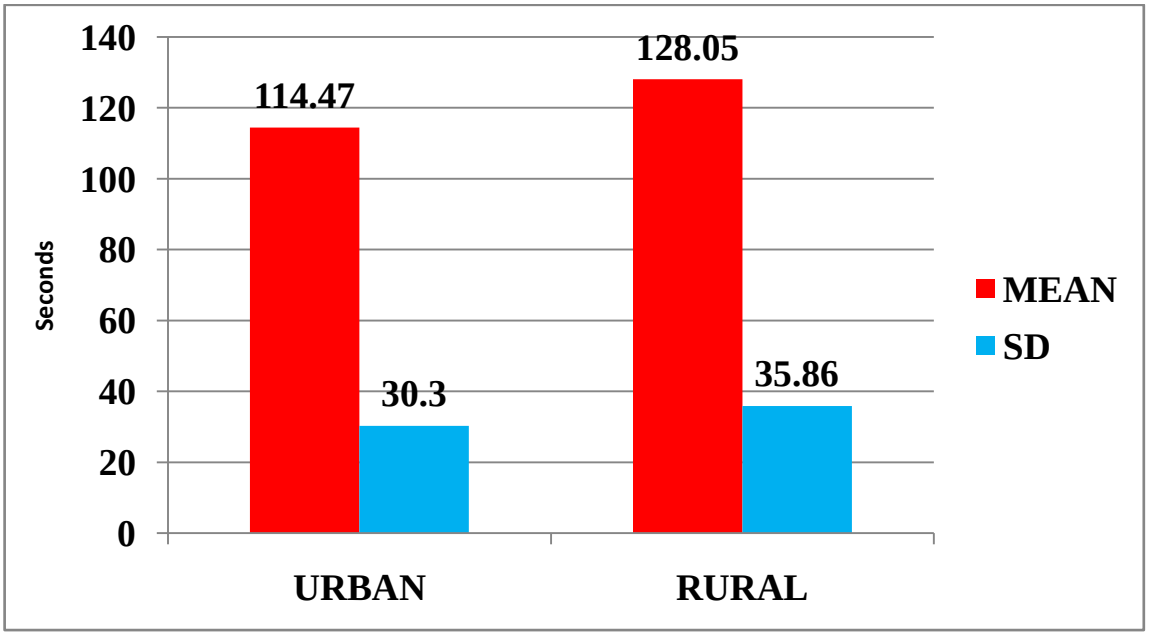


Fig.15.Graphical representation of urban and rural boys soccer players on Static balance ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Static Balance Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -25.

Table 25: Significance of difference between Urban and Rural Girls Soccer Players on Static balance ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Static Balance Ability (Seconds)	Urban (Girls)	77.64	21.84	3.63	7.80	2.15*	Significant
	Rural (Girls)	85.45	12.96				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 25 reveals that there was a significant difference in Static Balance ability (t= 2.15) between Urban and Rural Girls Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 16

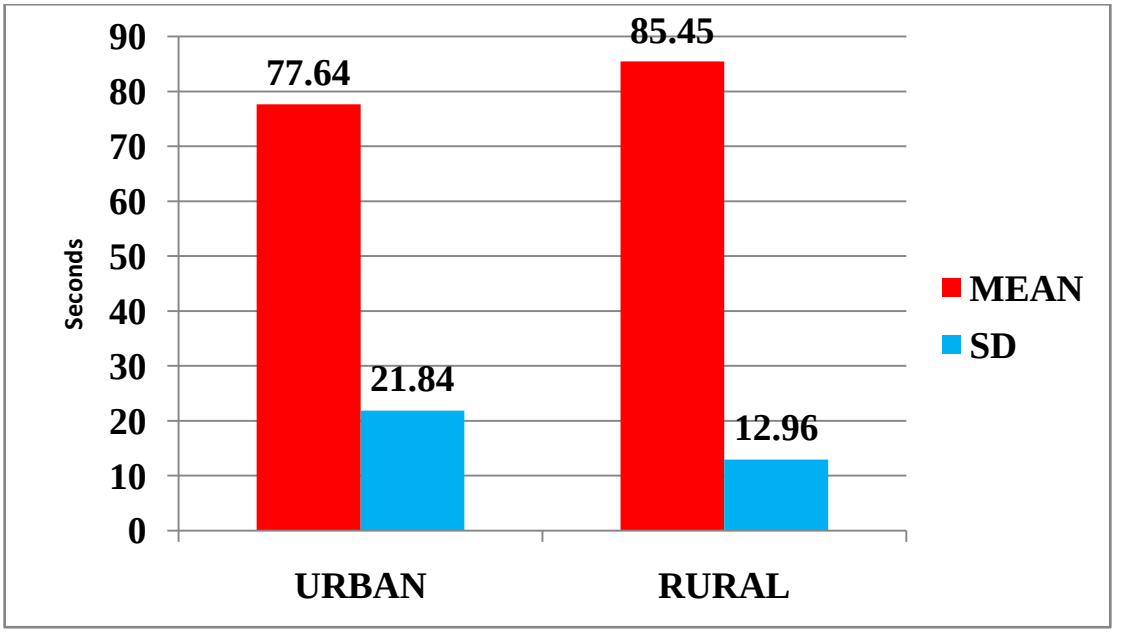


Fig.16.Graphical representation of urban and rural girls soccer players on Static balance ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Dynamic Balance Ability (Right Leg) was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -26

Table 26: Significance of difference between Urban and Rural Boys Soccer Players on Dynamic Balance ability (Right Leg) belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Dynamic Balance Right Leg (Centimeters)	Urban (Boys)	663.38	20.16	4.06	8.44	2.08*	Significant
	Rural (Boys)	671.82	19.99				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 26 reveals that there was a significant difference in Dynamic Balance ability (Right Leg) (t= 2.08) between Urban and Rural Boys Soccer Players within the age groups of 9 to 13 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 17

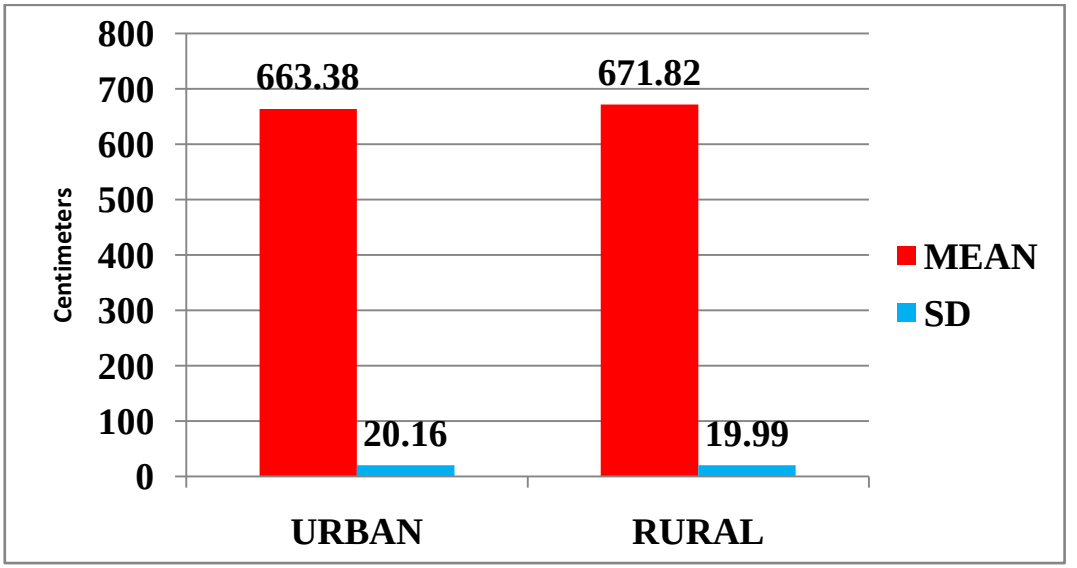


Fig.17. Graphical representation of urban and rural boys soccer players on Dynamic balance ability (Right Leg) belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Dynamic Balance Ability (Right Leg) was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -27

Table 27: Significance of difference between Urban and Rural Girls Soccer Players on Dynamic Balance ability (Right Leg) belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Dynamic Balance Right Leg (Centimeters)	Urban (Girls)	646.98	14.33	2.95	7.88	2.67*	Significant
	Rural (Girls)	654.86	14.84				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 27 reveals that there was a significant difference in Dynamic Balance ability (Right Leg) (t= 2.67) between Urban and Rural Girls Soccer Players within the age groups of 9 to 13 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 18

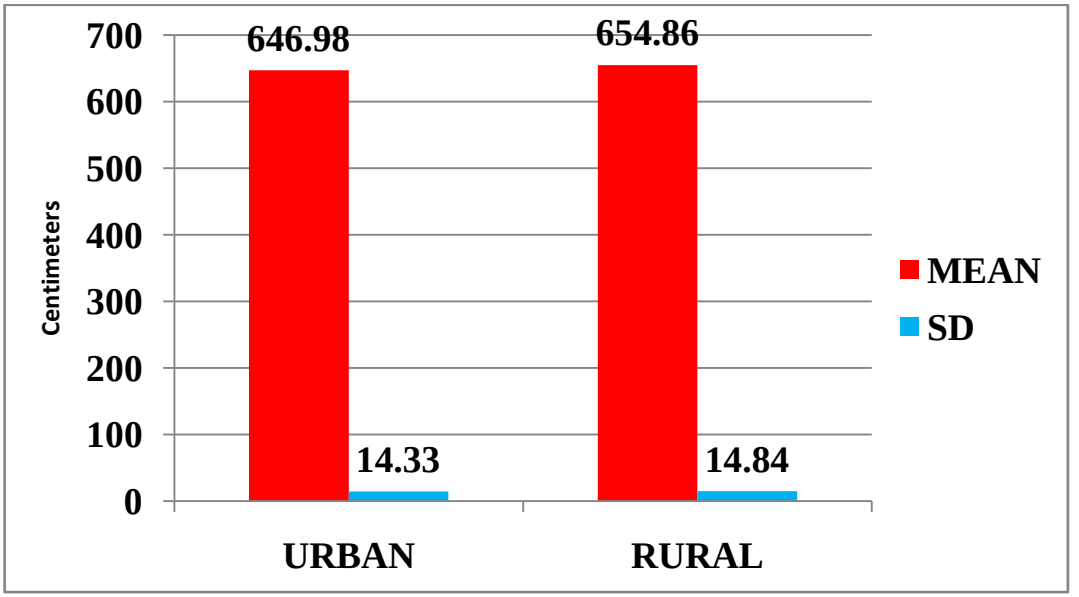


Fig.18.Graphical representation of urban and rural girls soccer players on Dynamic balance ability (Right Leg) belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Dynamic Balance Ability (Left Leg) was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -28

Table 28: Significance of difference between Urban and Rural Boys Soccer Players on Dynamic Balance ability (Left Leg) belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Dynamic Balance Left Leg (Centimeters)	Urban (Boys)	659.98	16.51	3.35	6.88	2.06*	Significant
	Rural (Boys)	666.86	16.61				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 28 reveals that there was a significant difference in Dynamic Balance ability (Left Leg) (t= 2.06) between Urban and Rural Boys Soccer Players within the age groups of 9 to 13 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 19

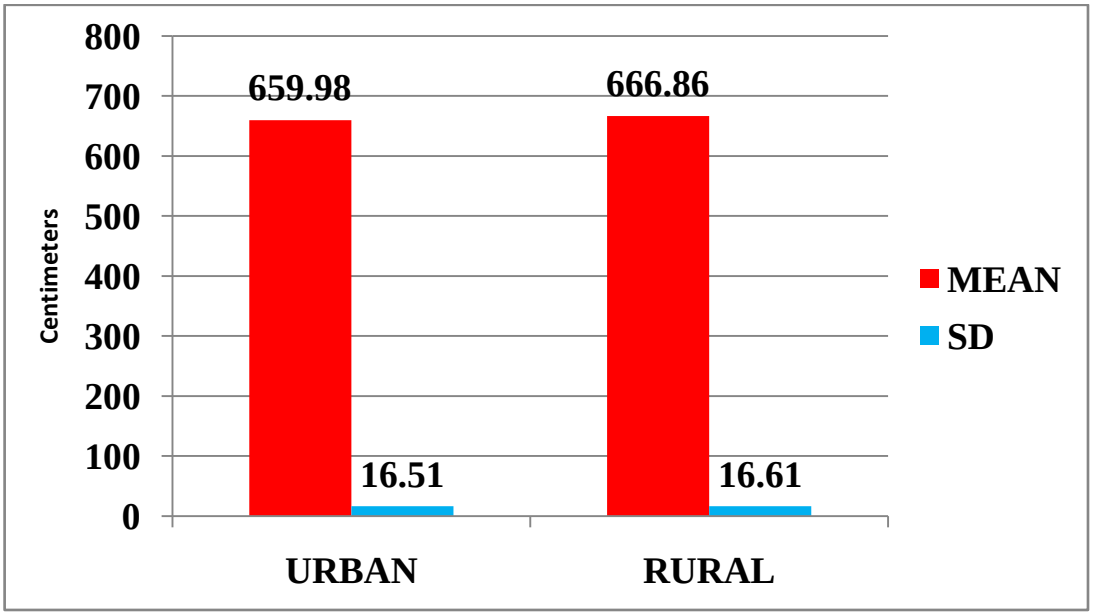


Fig.19.Graphical representation of urban and rural boys soccer players on Dynamic balance ability (Left Leg) belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Dynamic Balance Ability (Left Leg) was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -29

Table 29: Significance of difference between Urban and Rural Girls Soccer Players on Dynamic Balance ability (Left Leg) belonging to the Age Groups of 9to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Dynamic Balance Left Leg (Centimeters)	Urban (Girls)	639.38	15.96	3.21	10.68	3.33*	Significant
	Rural (Girls)	650.06	15.84				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 29 reveals that there was a significant difference in Dynamic Balance ability (Left Leg) (t= 3.33) between Urban and Rural Girls Soccer Players within the age groups of 9 to 13 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 20

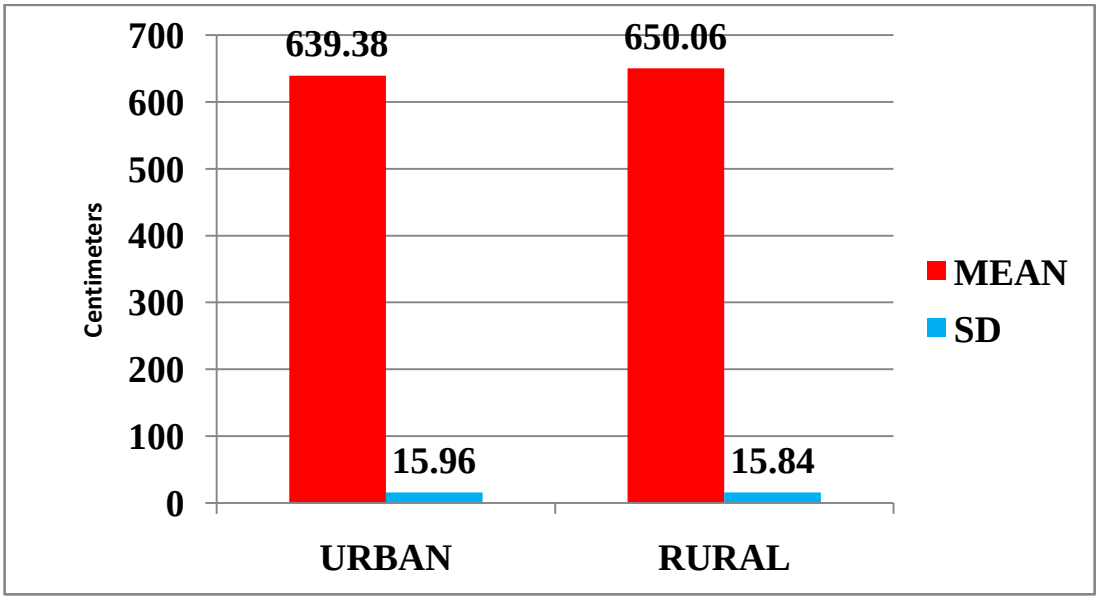


Fig.20.Graphical representation of urban and rural girls soccer players on Dynamic balance ability (Left Leg) belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Dynamic Balance Ability (Right Leg) was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -30

Table 30: Significance of difference between Urban and Rural Boys Soccer Players on Dynamic Balance ability (Right Leg) belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Dynamic Balance Right Leg (Centimeters)	Urban (Boys)	763.34	11.39	2.38	7	2.95*	Significant
	Rural (Boys)	770.34	12.13				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 30 reveals that there was a significant difference in Dynamic Balance ability (Right Leg) (t= 2.95) between Urban and Rural Boys Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 21

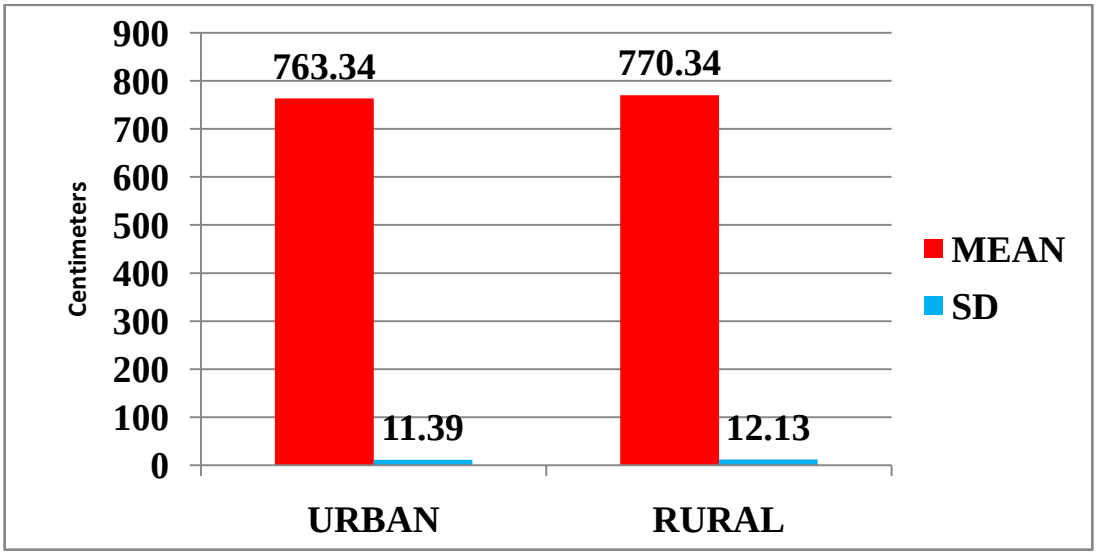


Fig.21. Graphical representation of urban and rural boys soccer players on Dynamic balance ability (Right Leg) belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Dynamic Balance Ability (Right Leg) was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -31

Table 31: Significance of difference between Urban and Rural Girls Soccer Players on Dynamic Balance ability (Right Leg) belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Dynamic Balance Right Leg (Centimeters)	Urban (Girls)	727.52	18.65	3.75	6.96	1.86	Insignificant
	Rural (Girls)	734.48	18.45				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 31 reveals that there was no significant difference in Dynamic Balance ability (Right Leg) (t= 1.86) between Urban and Rural Girl Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 22

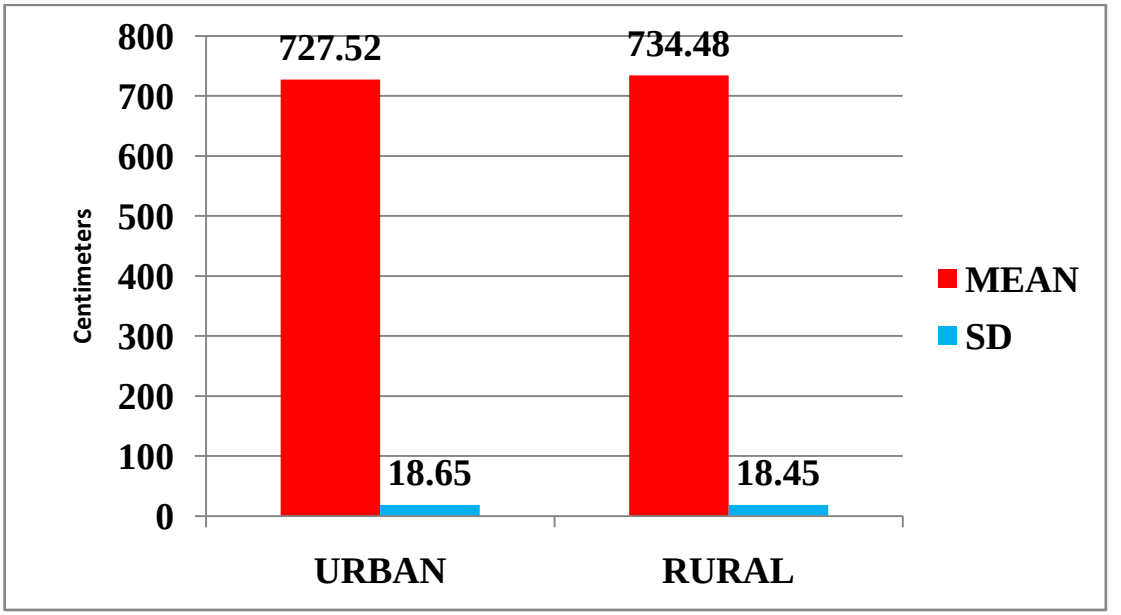


Fig.22.Graphical representation of urban and rural girls soccer players on Dynamic balance ability (Right Leg) belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Dynamic Balance Ability (Left Leg) was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -32

Table 32: Significance of difference between Urban and Rural Boys Soccer Players on Dynamic Balance ability (Left Leg) belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Dynamic Balance Left Leg (Centimeters)	Urban (Boys)	742.64	10.36	2.68	5.64	2.10*	Significant
	Rural (Boys)	748.28	15.67				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 32 reveals that there was a significant difference in Dynamic Balance ability (Left Leg) (t= 2.10) between Urban and Rural Boys Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 23

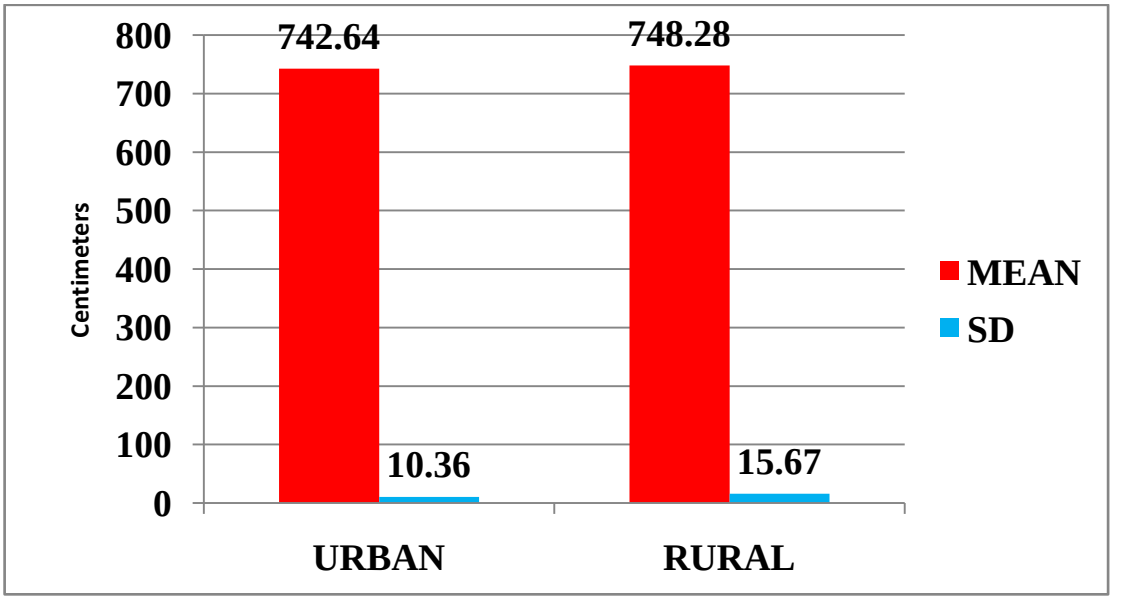


Fig.23.Graphical representation of urban and rural boys soccer players on Dynamic balance ability (Left Leg) belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Dynamic Balance Ability (Left Leg) was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -33

Table 33: Significance of difference between Urban and Rural Girls Soccer Players on Dynamic Balance ability (Left Leg) belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Dynamic Balance Left Leg (Centimeters)	Urban (Girls)	714.16	18.69	3.80	8.1	2.13*	Significant
	Rural (Girls)	722.26	18.97				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 33 reveals that there was a significant difference in Dynamic Balance ability (Left Leg) (t= 2.13) between Urban and Rural Girls Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 24

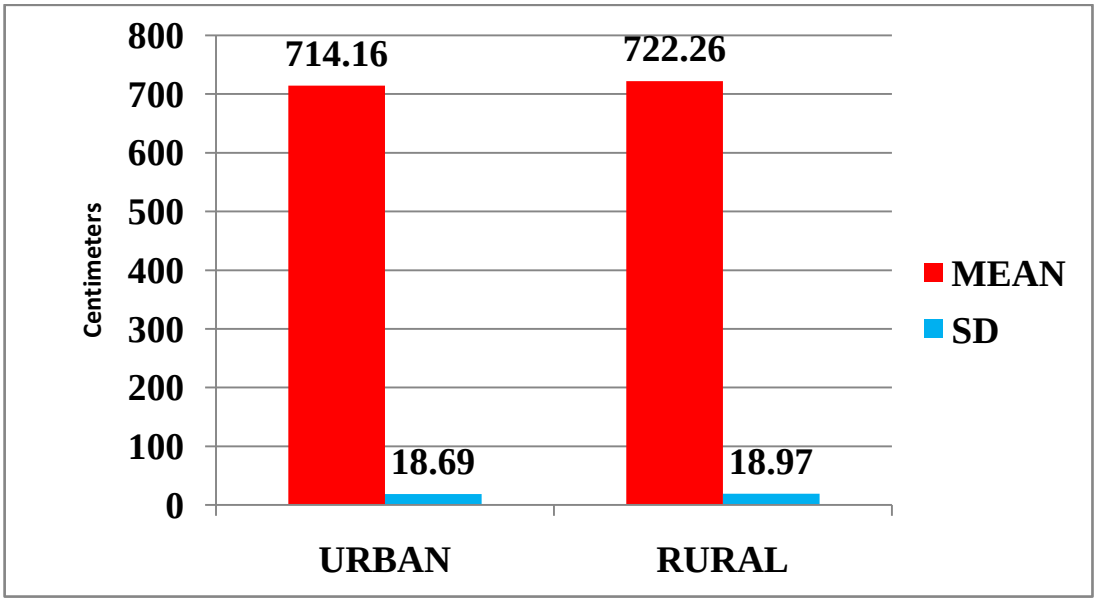


Fig.24.Graphical representation of urban and rural girls soccer players on Dynamic balance ability (Left Leg) belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Rhythm Ability was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -34.

Table 34: Significance of difference between Urban and Rural Boys Soccer Players on Rhythm Ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Rhythm Ability (Seconds)	Urban (Boys)	1.16	0.31	0.06	0.12	2.15*	Significant
	Rural (Boys)	1.05	0.24				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 34 reveals that there was a significant difference in Rhythm Ability (t= 2.15) between Urban and Rural Boys Soccer Players within the age groups of 9 to 13Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 25.

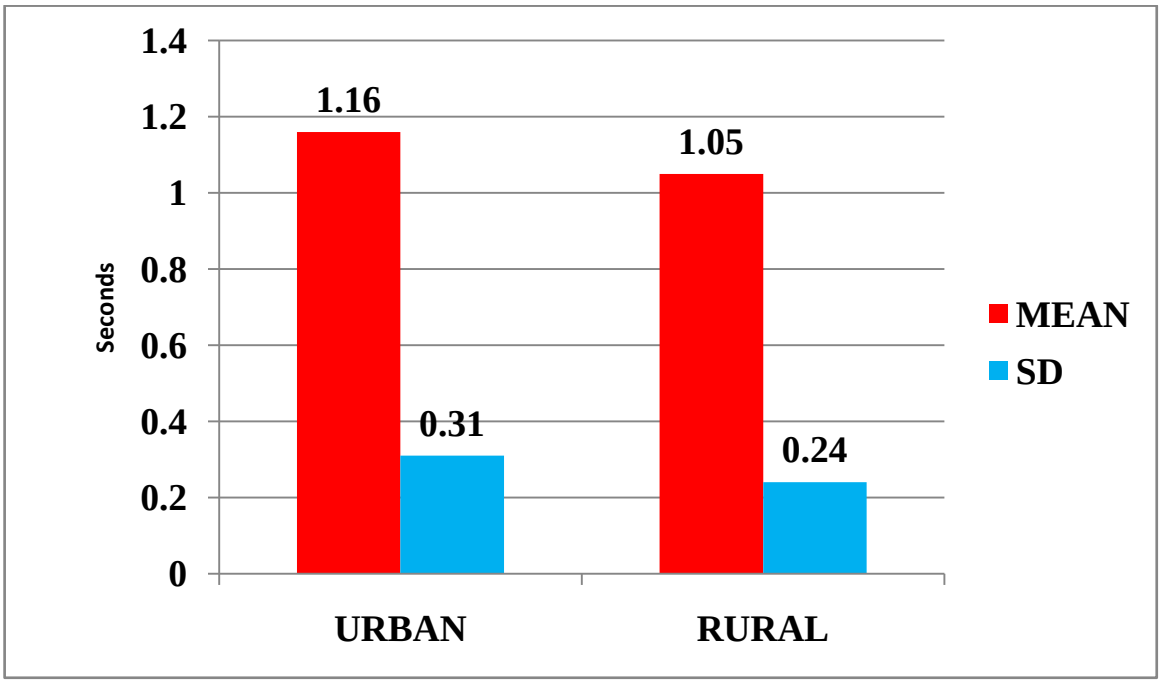


Fig.25.Graphical representation of urban and rural boys soccer players on Rhythm ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Rhythm Ability was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -35

Table-35: Significance of difference between Urban and Rural Girls Soccer Players on Rhythm ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Rhythm Ability (Seconds)	Urban (Girls)	1.32	0.29	0.06	0.13	2.07*	Significant
	Rural (Girls)	1.19	0.34				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 35 reveals that there was a significant difference in Rhythm Ability (t= 2.07) between Urban and Rural Girls Soccer Players within the age groups of 9 to 13 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 26.

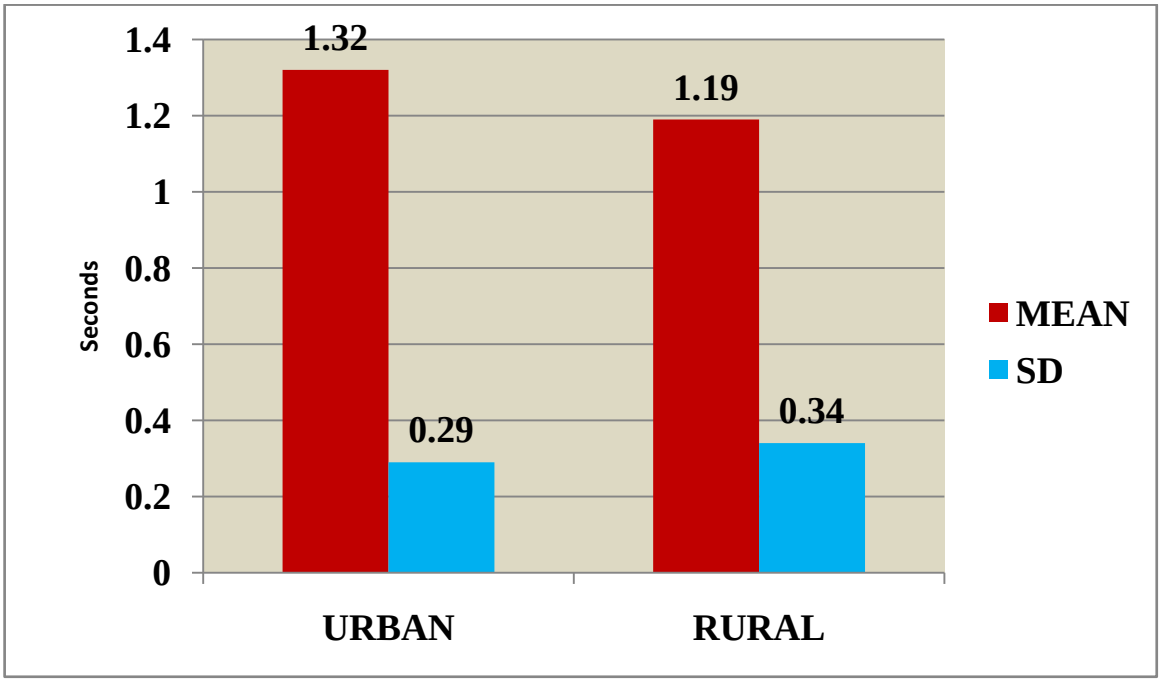


Fig.26. Graphical representation of urban and rural girls soccer players on Rhythm ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Rhythm Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -36.

Table 36: Significance of difference between Urban and Rural Boys Soccer Players on Rhythm Ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Rhythm Ability (Seconds)	Urban (Boys)	1.03	0.29	0.06	0.13	2.07*	Significant
	Rural (Boys)	0.9	0.32				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table-36 reveals that there was a significant difference in Rhythm Ability (t= 2.07) between Urban and Rural Boys Soccer Players within the age groups of 14 to 18Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 27.

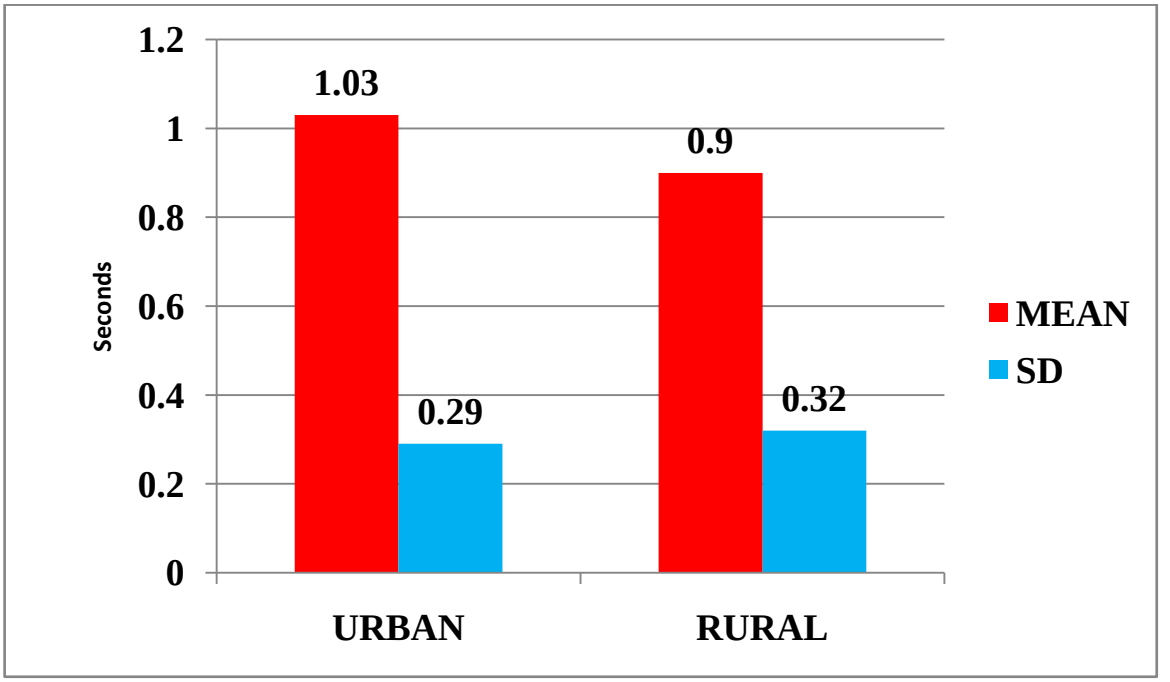


Fig.27.Graphical representation of urban and rural boys soccer players on Rhythm ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Rhythm Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -37

Table-37: Significance of difference between Urban and Rural Girls Soccer Players on Rhythm ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Rhythm Ability (Seconds)	Urban (Girls)	1.13	0.25	0.06	0.09	1.57	Insignificant
	Rural (Girls)	1.04	0.35				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 37 reveals that there was no significant difference in Rhythm Ability (t= 1.57) between Urban and Rural Girls Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 28.

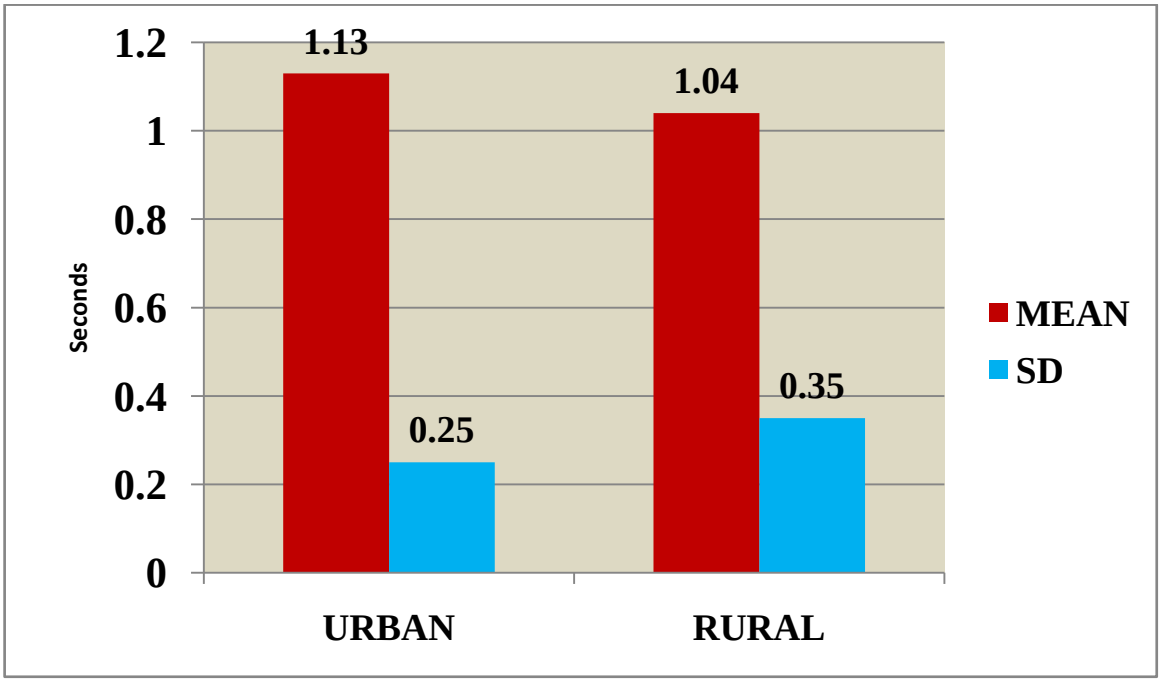


Fig.28. Graphical representation of urban and rural girls soccer players on Rhythm ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Coupling Ability was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -38.

Table 38: Significance of difference between Urban and Rural Boys Soccer Players on Coupling Ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Coupling Ability (Number)	Urban (Boys)	13.34	1.75	0.82	0.33	2.49*	Significant
	Rural (Boys)	14.16	1.50				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 38 reveals that there was a significant difference in Coupling Ability (t= 2.49) between Urban and Rural Boys Soccer Players within the age groups of 9 to 13Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 29.

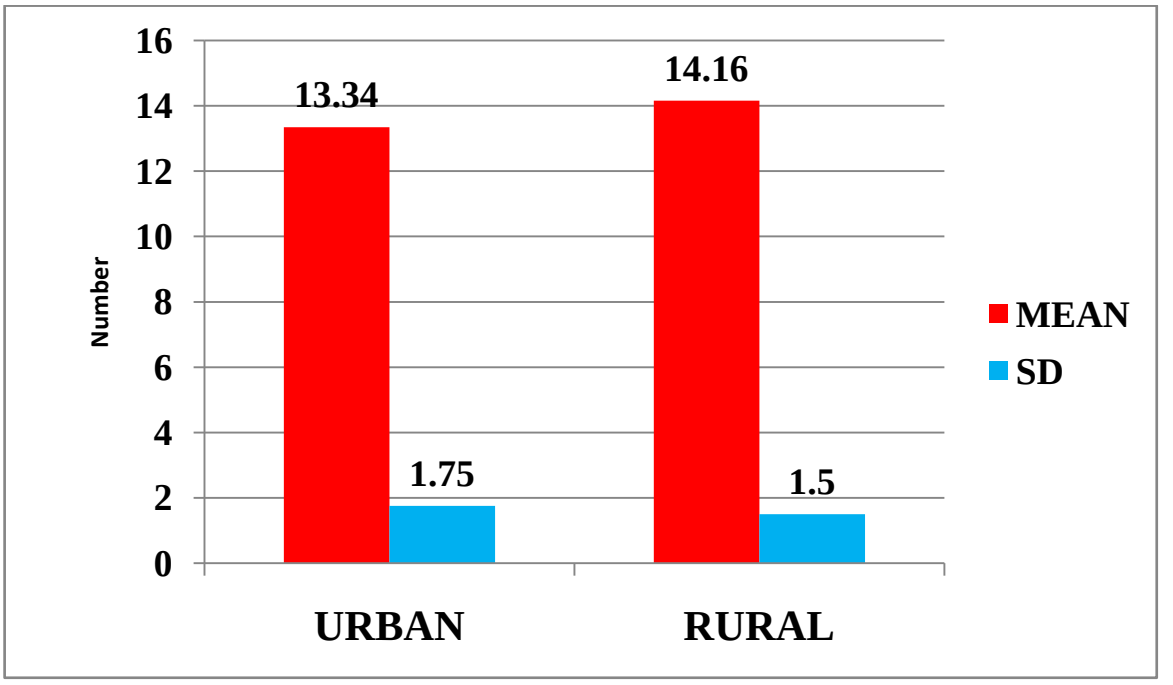


Fig.29.Graphical representation of urban and rural boys soccer players on coupling ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on coupling Ability was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -39

Table-39: Significance of difference between Urban and Rural Girls Soccer Players on coupling ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Coupling Ability (Number)	Urban (Girls)	10.12	1.52	0.6	0.29	2.05*	Significant
	Rural (Girls)	10.72	1.37				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 39 reveals that there was a significant difference in Coupling Ability (t= 2.05) between Urban and Rural Girls Soccer Players within the age groups of 9 to 13Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 30.

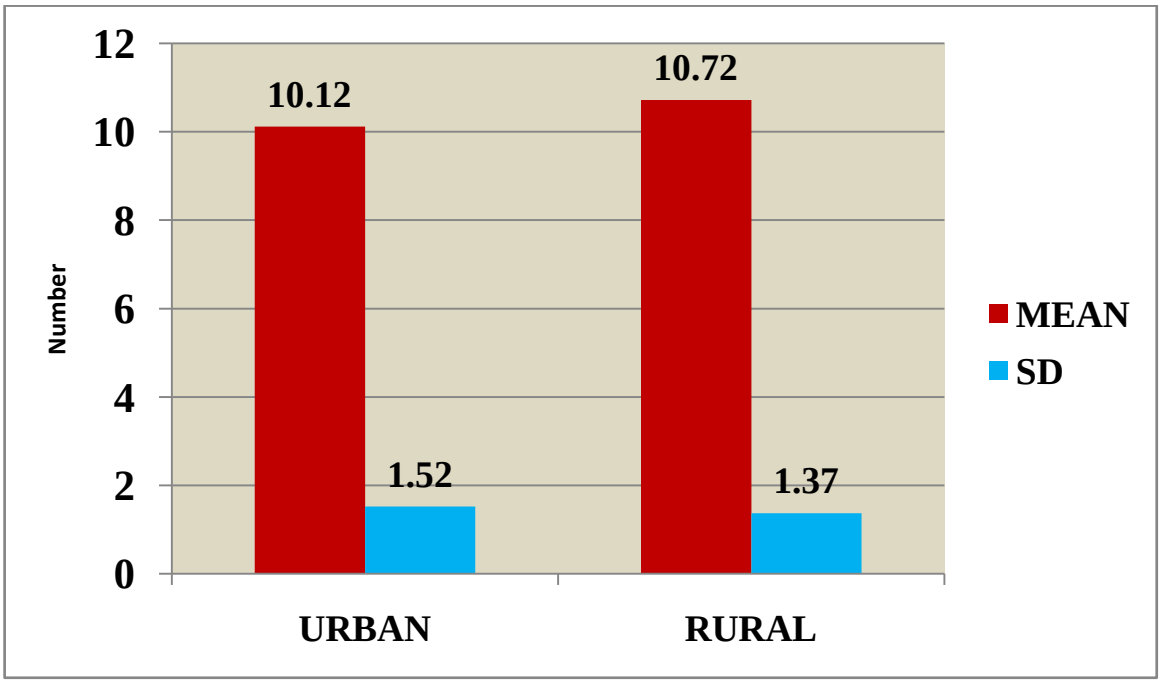


Fig.30. Graphical representation of urban and rural girls soccer players on coupling ability belonging to the age group of 9 to 13years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Coupling Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -40.

Table 40: Significance of difference between Urban and Rural Boys Soccer Players on Coupling Ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Coupling Ability (Number)	Urban (Boys)	14.96	1.53	0.58	0.29	2.02*	Significant
	Rural (Boys)	15.54	1.31				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 40 reveals that there was a significant difference in Coupling Ability (t= 2.02) between Urban and Rural Boys Soccer Players within the age groups of 14 to 18Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 31.

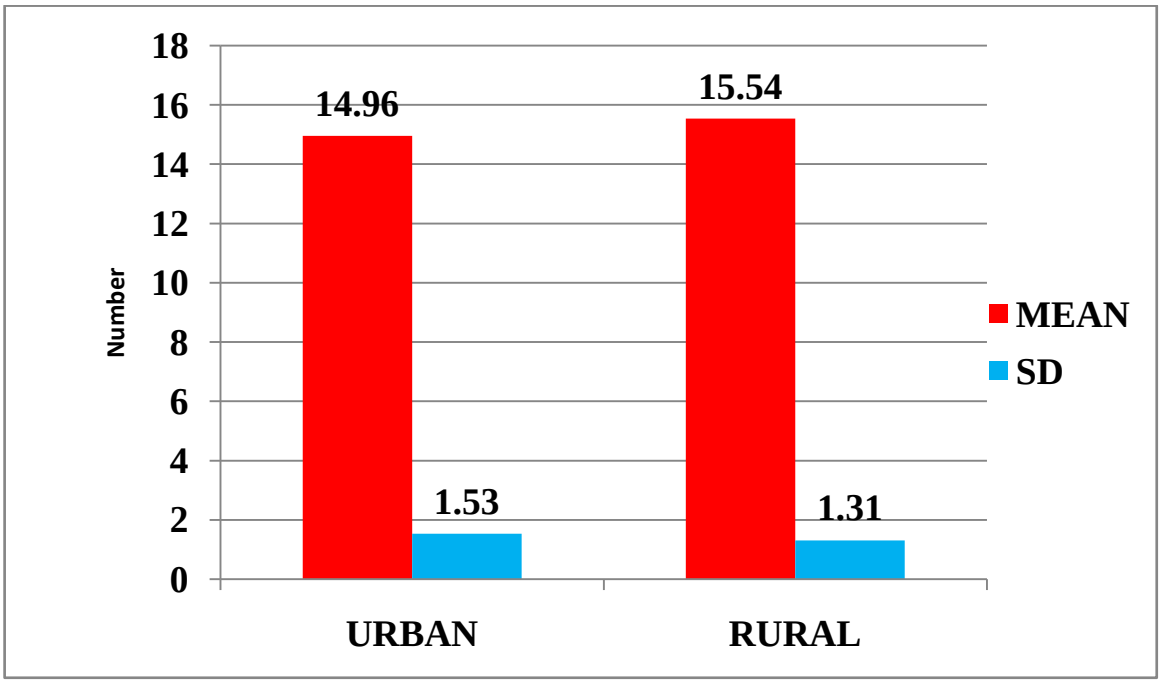


Fig.31.Graphical representation of urban and rural boys soccer players on coupling ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on coupling Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -41

Table 41: Significance of difference between Urban and Rural Girls Soccer Players on coupling ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Coupling Ability (Number)	Urban (Girls)	11.5	1.30	0.28	0.42	1.51	Insignificant
	Rural (Girls)	11.92	1.46				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 41 reveals that there was no significant difference in Coupling Ability (t= 1.51) between Urban and Rural Girls Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 32.

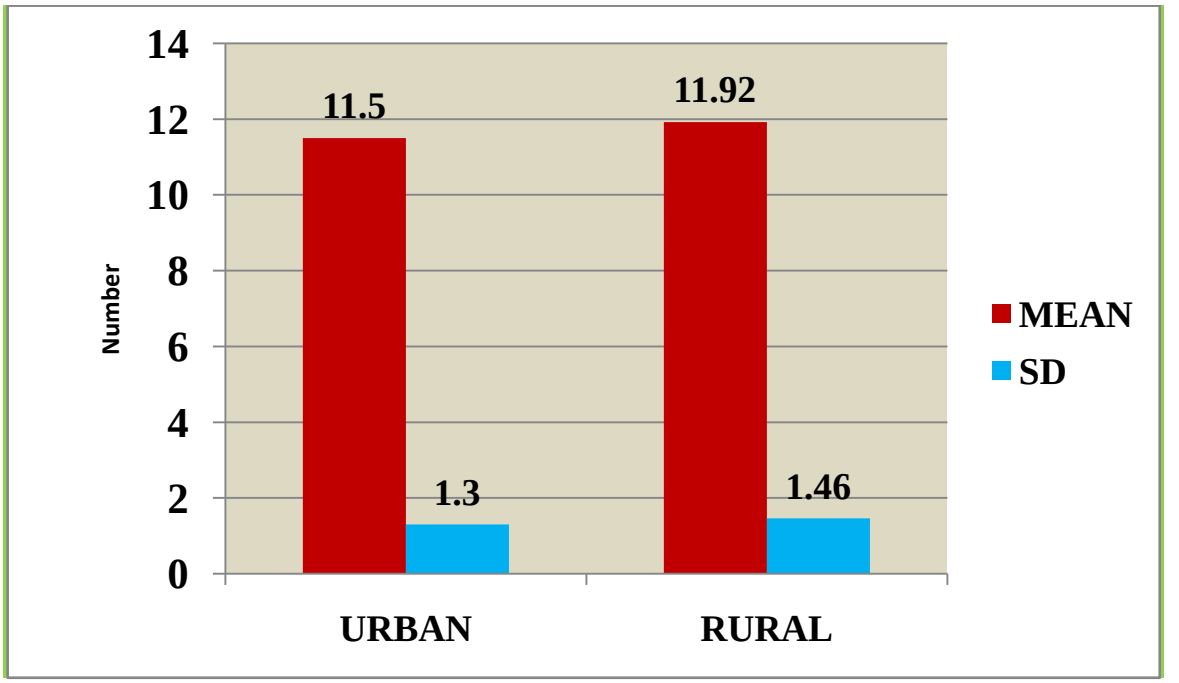


Fig.32. Graphical representation of urban and rural girls soccer players on coupling ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Adaptation Ability was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -42.

Table 42: Significance of difference between Urban and Rural Boys Soccer Players on Adaptation Ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Adaptation Ability (Number)	Urban (Boys)	27.54	5.66	0.93	2.34	2.51*	Significant
	Rural (Boys)	29.88	3.24				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 42 reveals that there was a significant difference in Adaptation Ability (t= 2.51) between Urban and Rural Boys Soccer Players within the age groups of 9 to 13 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 33.

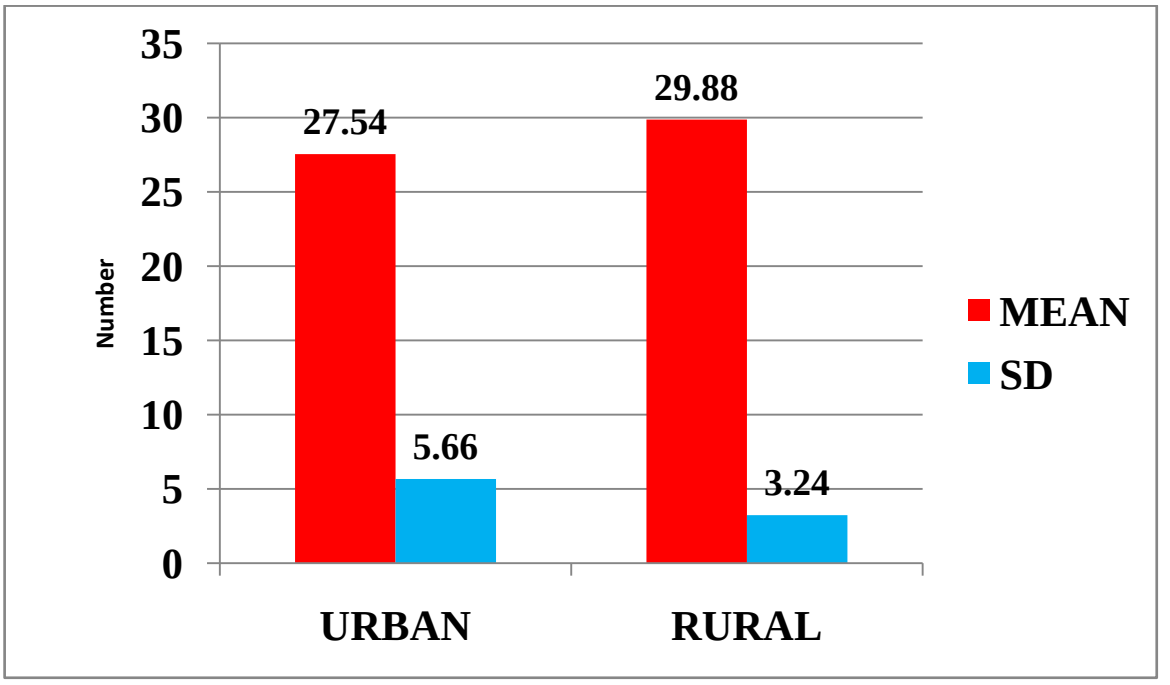


Fig.33.Graphical representation of urban and rural boys soccer players on Adaptation ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Adaptation Ability was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -43

Table-43: Significance of difference between Urban and Rural Girls Soccer Players on Adaptation ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Adaptation Ability (Number)	Urban (Girls)	18.86	4.39	0.79	1.34	1.69	Insignificant
	Rural (Girls)	20.2	3.4				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 43 reveals that there was no significant difference in Adaptation Ability (t= 1.69) between Urban and Rural Girls Soccer Players within the age groups of 9 to 13 Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 34.

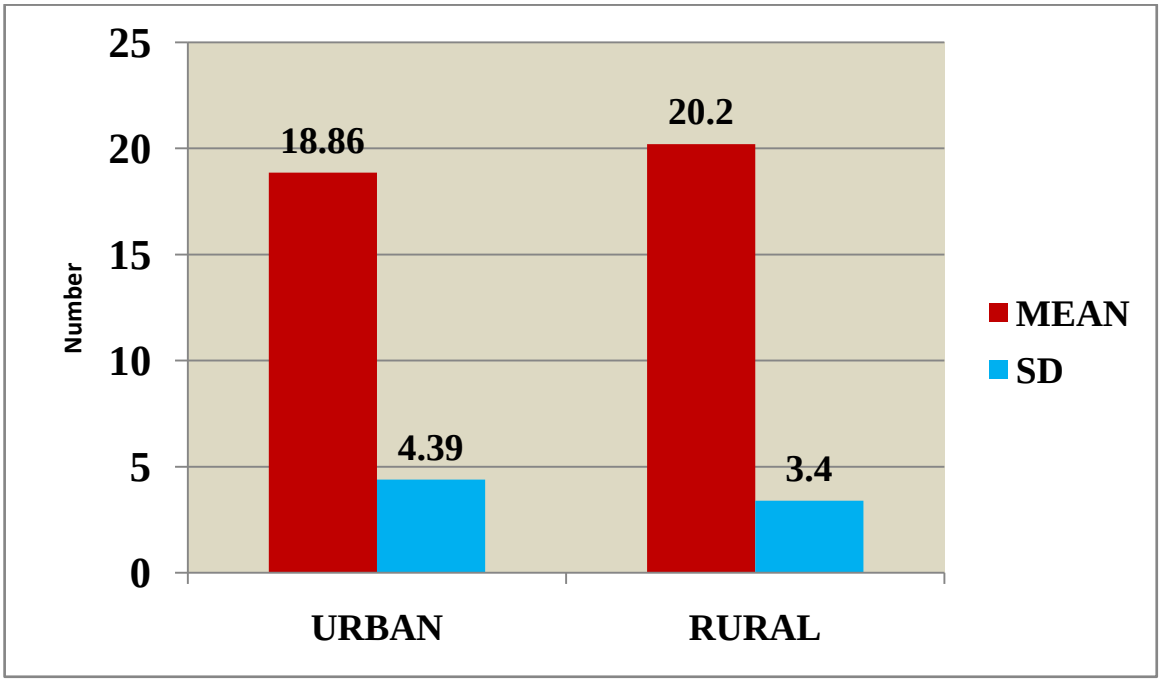


Fig.34. Graphical representation of urban and rural girls soccer players on adaptation ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Adaptation Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -44.

Table 44: Significance of difference between Urban and Rural Boys Soccer Players on Adaptation Ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Adaptation Ability (Number)	Urban (Boys)	31.68	5.21	1.25	2.16	1.72	Insignificant
	Rural (Boys)	33.84	7.06				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 44 reveals that there was no significant difference in Adaptation Ability (t= 1.72) between Urban and Rural Boys Soccer Players within the age groups of 14 to 18Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 35.

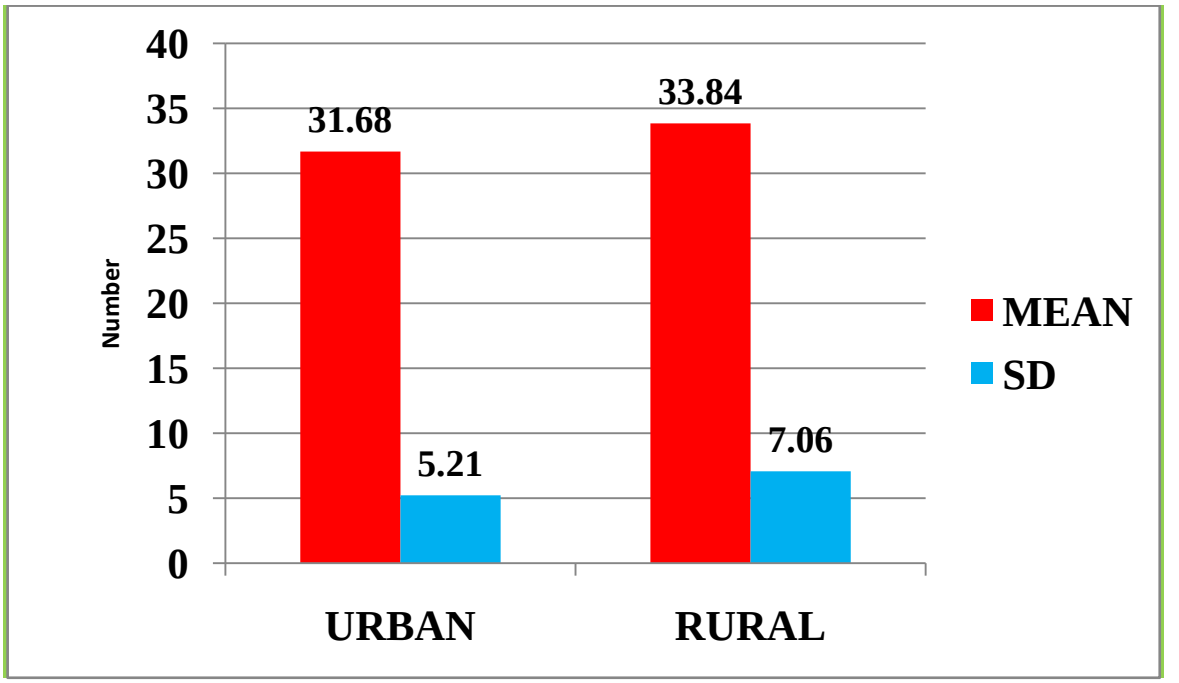


Fig.35.Graphical representation of urban and rural boys soccer players on Adaptation ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Adaptation Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -45

Table-45: Significance of difference between Urban and Rural Girls Soccer Players on Adaptation ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Adaptation Ability (Number)	Urban (Girls)	25.88	2.52	0.55	1.5	2.73*	Significant
	Rural (Girls)	27.38	2.89				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 45 reveals that there was a significant difference in Adaptation Ability (t= 2.73) between Urban and Rural Girls Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is more than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 36.

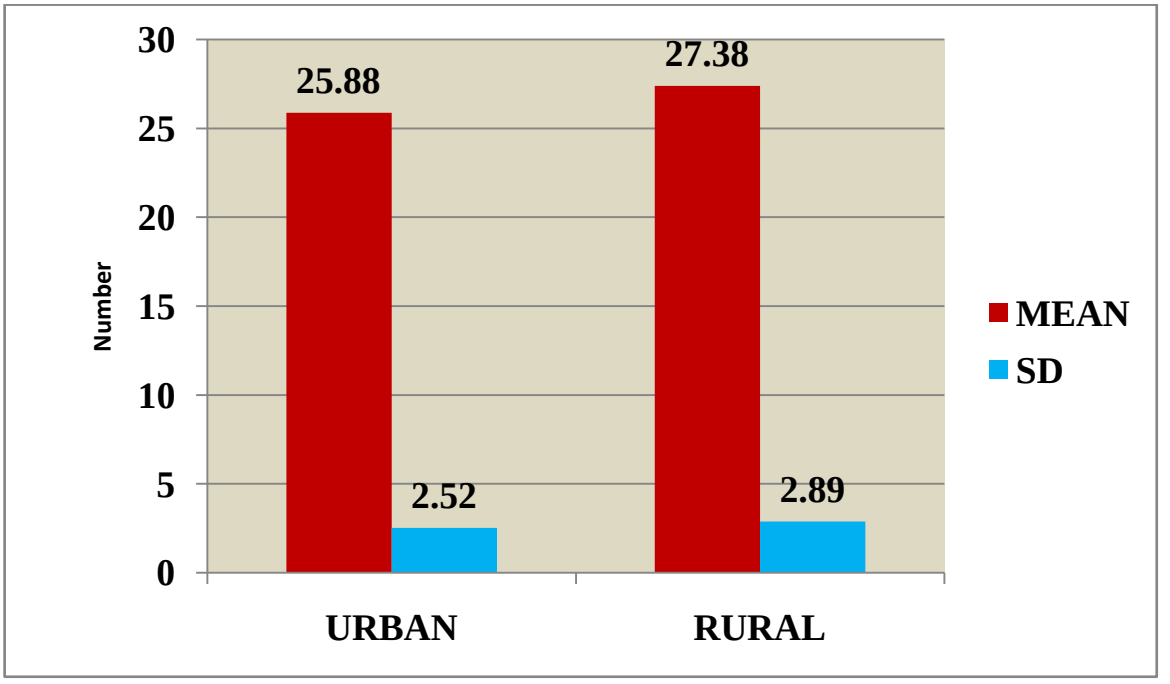


Fig.36. Graphical representation of urban and rural girls soccer players on adaptation ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Audio Reaction Ability was analyzed by using Independent "t" test for the age groups of 9 to 13Years have been presented in table -46.

Table 46: Significance of difference between Urban and Rural Boys Soccer Players on Audio-Reaction ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Audio Reaction Ability (Seconds)	Urban (Boys)	0.24	0.03	0.006	0.01	1.8	Insignificant
	Rural (Boys)	0.23	0.03				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 46 reveals that there was no significant difference in Audio-Reaction ability (t= 1.8) between Urban and Rural Boys Soccer Players within the age groups of 9 to 13Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 37

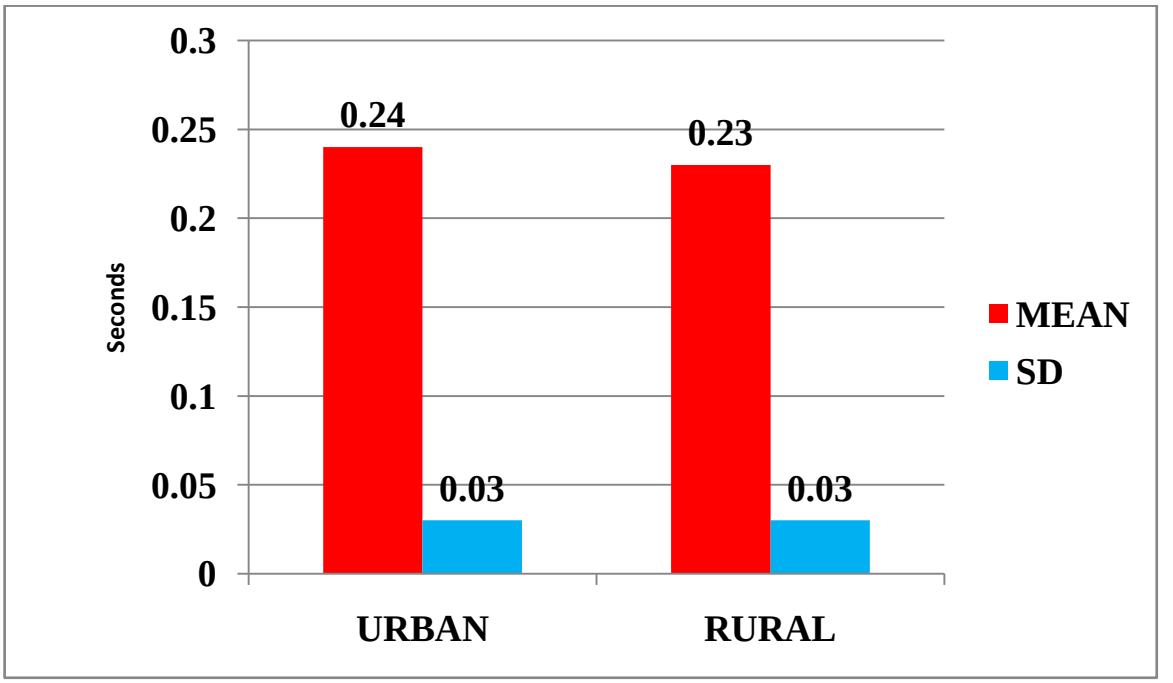


Fig.37.Graphical representation of urban and rural boys soccer players on Audio-Reaction ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Audio Reaction Ability was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -47.

Table 47: Significance of difference between Urban and Rural Girls Soccer Players on Audio-Reaction ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Audio Reaction Ability (Seconds)	Urban (Girls)	0.25	0.027	0.005	0.009	1.87	Insignificant
	Rural (Girls)	0.24	0.023				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 47 reveals that there was no significant difference in Audio Reaction Ability (t= 1.87) between Urban and Rural Girls Soccer Players within the age groups of 9 to 13 Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 38.

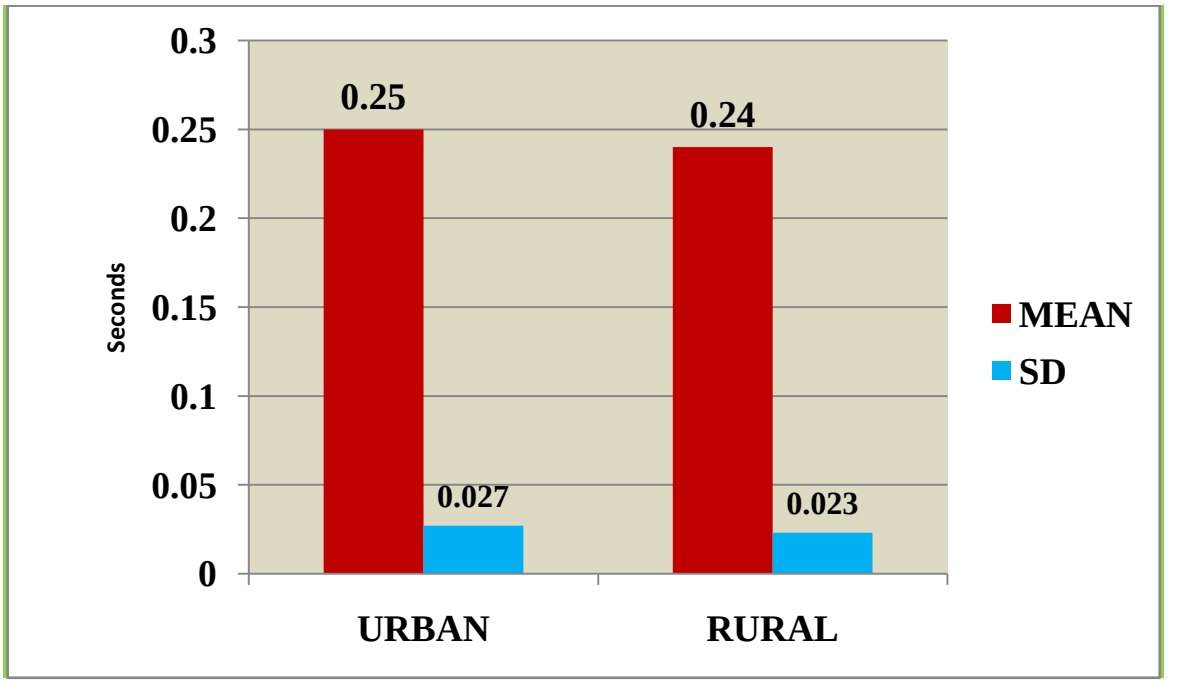


Fig.38. Graphical representation of urban and rural girls soccer players on Audio Reaction ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Audio Reaction Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -48.

Table 48: Significance of difference between Urban and Rural Boys Soccer Players on Audio-Reaction ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Audio Reaction Ability (Seconds)	Urban (Boys)	0.23	0.032	0.006	0.01	1.82	Insignificant
	Rural (Boys)	0.22	0.026				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 48 reveals that there was no significant difference in Audio-Reaction ability (t= 1.82) between Urban and Rural Boys Soccer Players within the age groups of 14to 18Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 39

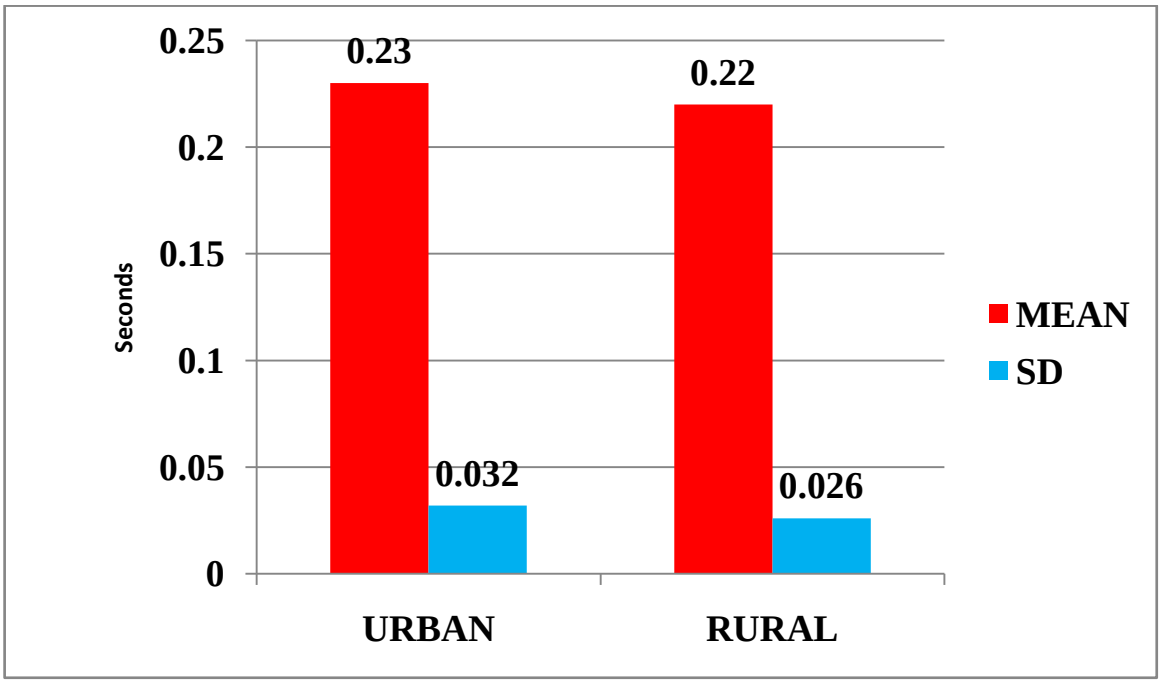


Fig.39.Graphical representation of urban and rural boys soccer players on Audio-Reaction ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Audio Reaction Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -49.

Table 49: Significance of difference between Urban and Rural Girls Soccer Players on Audio-Reaction ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Audio Reaction Ability (Seconds)	Urban (Girls)	0.23	0.03	0.005	0.007	1.59	Insignificant
	Rural (Girls)	0.22	0.02				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 49 reveals that there was no significant difference in Audio Reaction Ability (t= 1.59) between Urban and Rural Girls Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 40

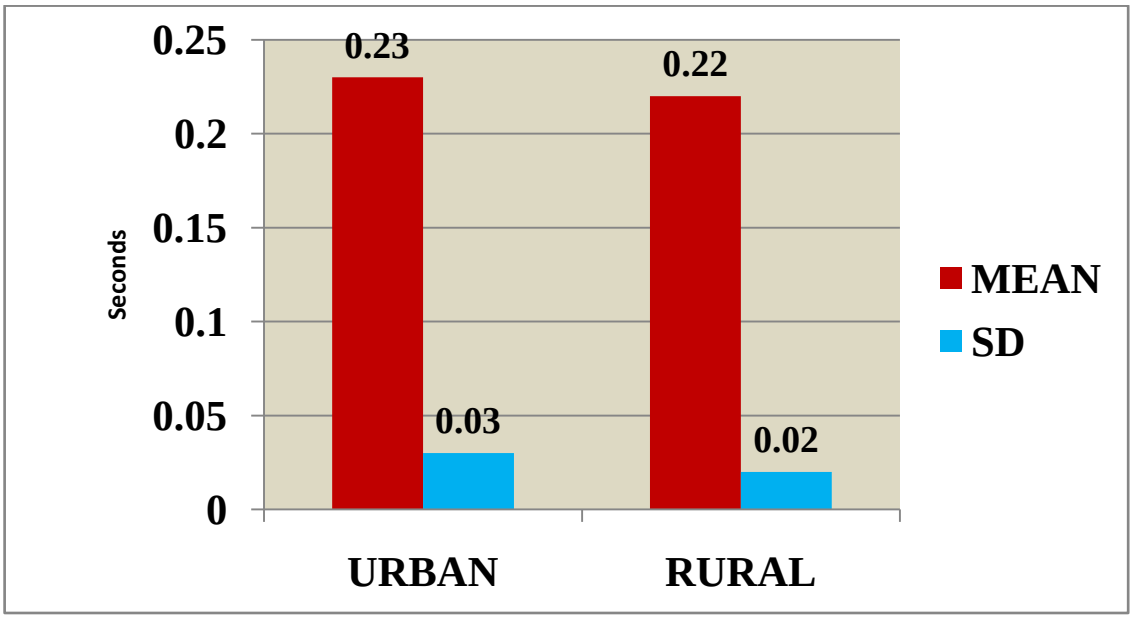


Fig.40. Graphical representation of urban and rural girls soccer players on Audio Reaction ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Visual Reaction Ability was analyzed by using Independent "t" test for the age groups of 9 to 13Years have been presented in table -50.

Table 50: Significance of difference between Urban and Rural Boys Soccer Players on Visual-Reaction ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Visual Reaction Ability (Seconds)	Urban (Boys)	0.25	0.03	0.007	0.009	1.4	Insignificant
	Rural (Boys)	0.24	0.04				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 50 reveals that there was no significant difference in Visual-Reaction ability (t= 1.4) between Urban and Rural Boys Soccer Players within the age groups of 9 to 13Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 41

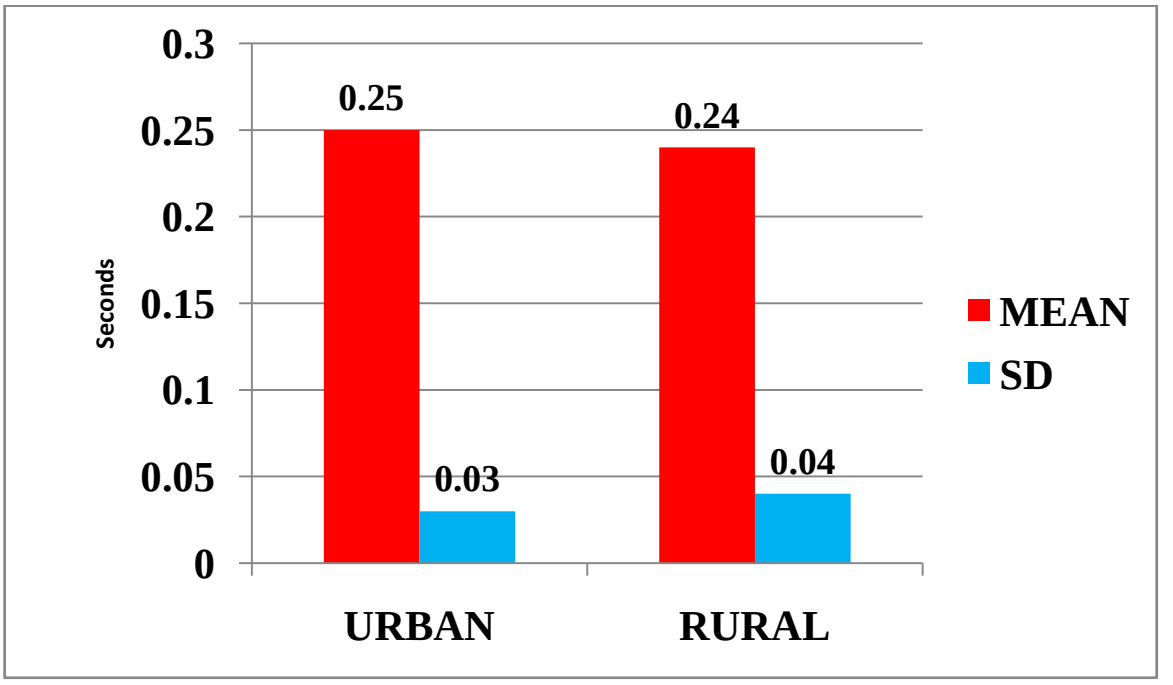


Fig.41.Graphical representation of urban and rural boys soccer players on Visual-Reaction ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Visual- Reaction Ability was analyzed by using Independent "t" test for the age groups of 9 to 13Years have been presented in table -51.

Table 51: Significance of difference between Urban and Rural Girls Soccer Players on Visual-Reaction ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Visual Reaction Ability (Seconds)	Urban (Girls)	0.27	0.03	0.006	0.009	1.54	Insignificant
	Rural (Girls)	0.26	0.03				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 51 reveals that there was no significant difference in Visual-Reaction Ability (t= 1.54) between Urban and Rural Girls Soccer Players within the age groups of 9 to 13 Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 42

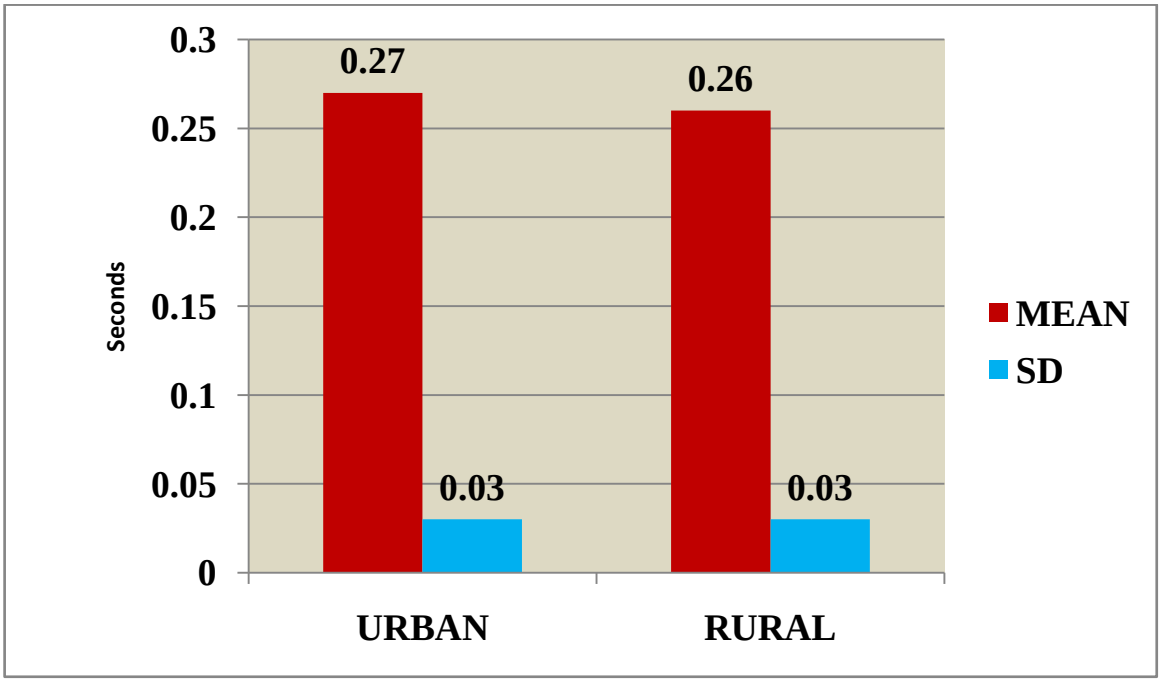


Fig.42. Graphical representation of urban and rural girls soccer players on Visual-Reaction ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Visual Reaction Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -52.

Table 52: Significance of difference between Urban and Rural Boys Soccer Players on Visual-Reaction ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Visual Reaction Ability (Seconds)	Urban (Boys)	0.25	0.04	0.008	0.014	1.86	Insignificant
	Rural (Boys)	0.23	0.04				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 52 reveals that there was no significant difference in Visual-Reaction ability (t= 1.86) between Urban and Rural Boys Soccer Players within the age groups of 14 to 18Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 43

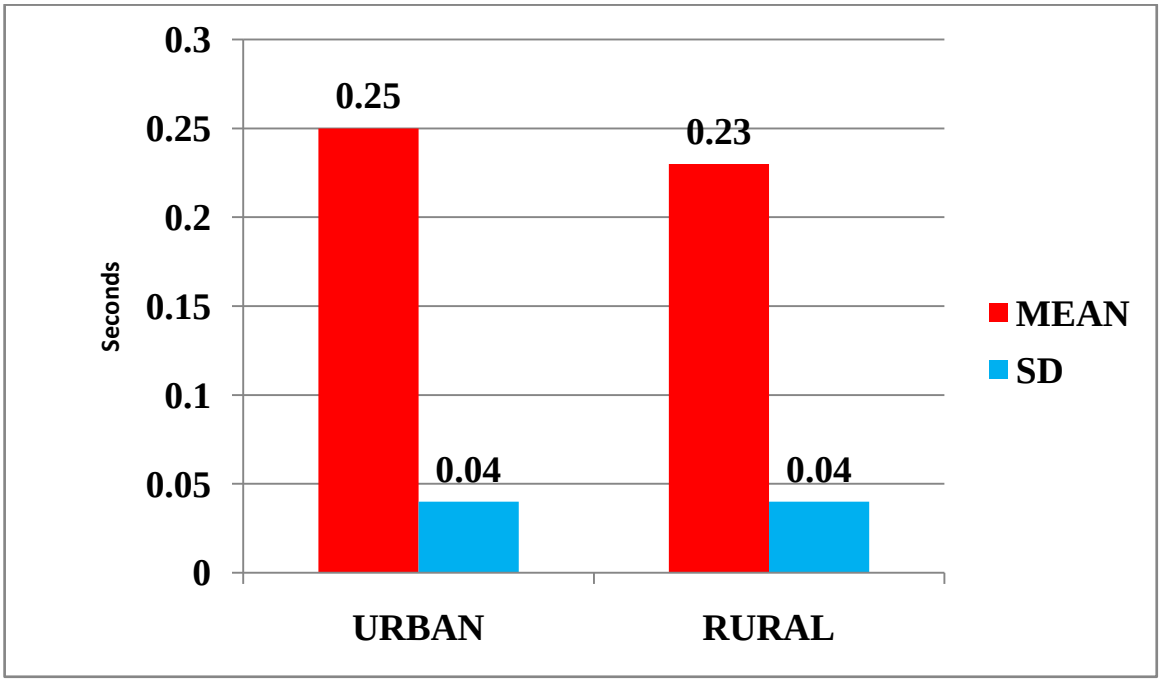


Fig.43.Graphical representation of urban and rural boys soccer players on Visual-Reaction ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Visual- Reaction Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -53.

Table 53: Significance of difference between Urban and Rural Girls Soccer Players on Visual-Reaction ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Visual Reaction Ability (Seconds)	Urban (Girls)	0.24	0.03	0.007	0.01	1.52	Insignificant
	Rural (Girls)	0.23	0.04				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 53 reveals that there was no significant difference in Visual-Reaction Ability (t= 1.52) between Urban and Rural Girls Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 44

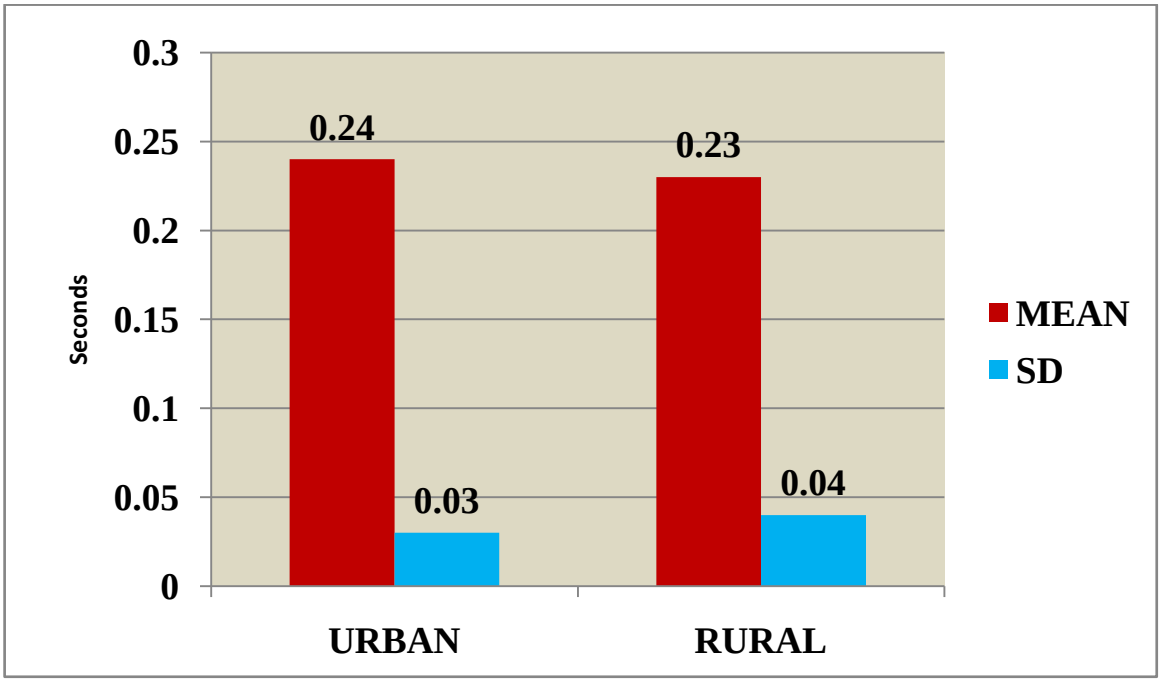


Fig.44. Graphical representation of urban and rural girls soccer players on Visual-Reaction ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Tactile Reaction Ability was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -54.

Table 54: Significance of difference between Urban and Rural Boys Soccer Players on Tactile-Reaction ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Tactile Reaction Ability (Seconds)	Urban (Boys)	0.27	0.04	0.007	0.009	1.27	Insignificant
	Rural (Boys)	0.26	0.04				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 54 reveals that there was no significant difference in Tactile-Reaction ability (t= 1.27) between Urban and Rural Boys Soccer Players within the age groups of 9 to 13Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 45

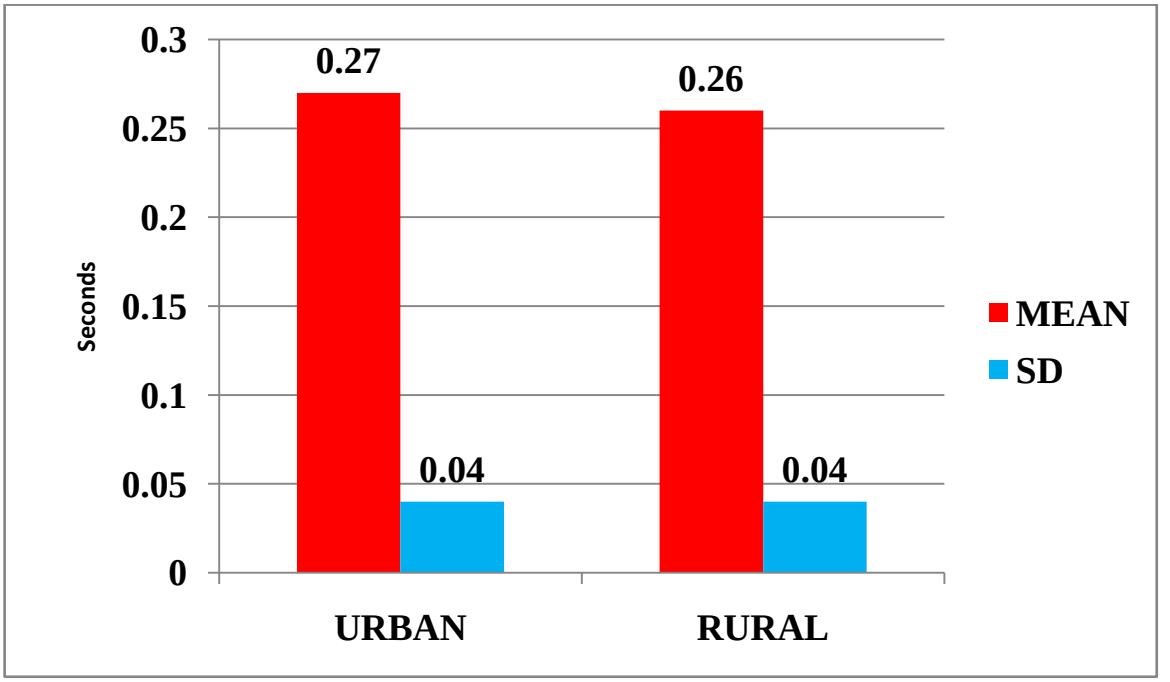


Fig.45.Graphical representation of urban and rural boys soccer players on Tactile-Reaction ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Tactile- Reaction Ability was analyzed by using Independent "t" test for the age groups of 9 to 13 Years have been presented in table -55.

Table 55: Significance of difference between Urban and Rural Girls Soccer Players on Tactile-Reaction ability belonging to the Age Groups of 9 to 13 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Tactile Reaction Ability (Seconds)	Urban (Girls)	0.27	0.04	0.008	0.1	1.17	Insignificant
	Rural (Girls)	0.26	0.04				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 55 reveals that there was no significant difference in Tactile-Reaction Ability (t= 1.17) between Urban and Rural Girls Soccer Players within the age groups of 9 to 13 Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 46

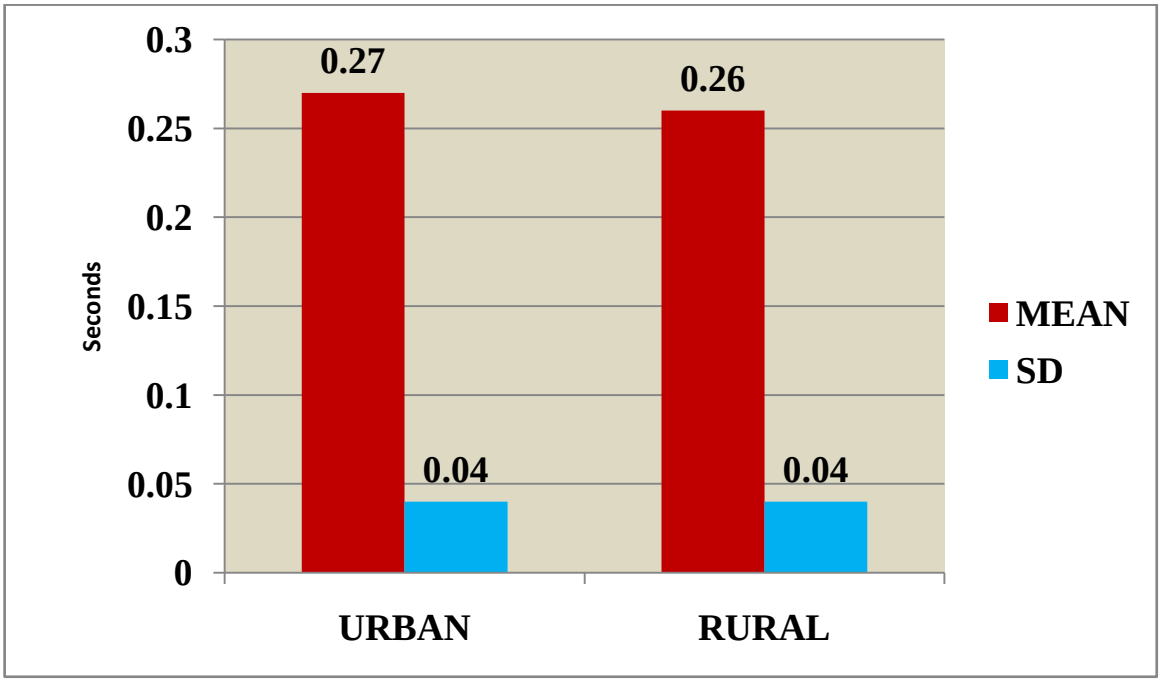


Fig.46. Graphical representation of urban and rural girls soccer players on Tactile-Reaction ability belonging to the age group of 9 to 13 years

As a byproduct of this study comparing the means of Urban and Rural Boys Soccer Players on Tactile Reaction Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -56.

Table 56: Significance of difference between Urban and Rural Boys Soccer Players on Tactile-Reaction ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Tactile Reaction Ability (Seconds)	Urban (Boys)	0.25	0.03	0.007	0.01	1.46	Insignificant
	Rural (Boys)	0.24	0.04				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 56 reveals that there was no significant difference in Tactile-Reaction ability (t= 1.46) between Urban and Rural Boys Soccer Players within the age groups of 14 to 18Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 47

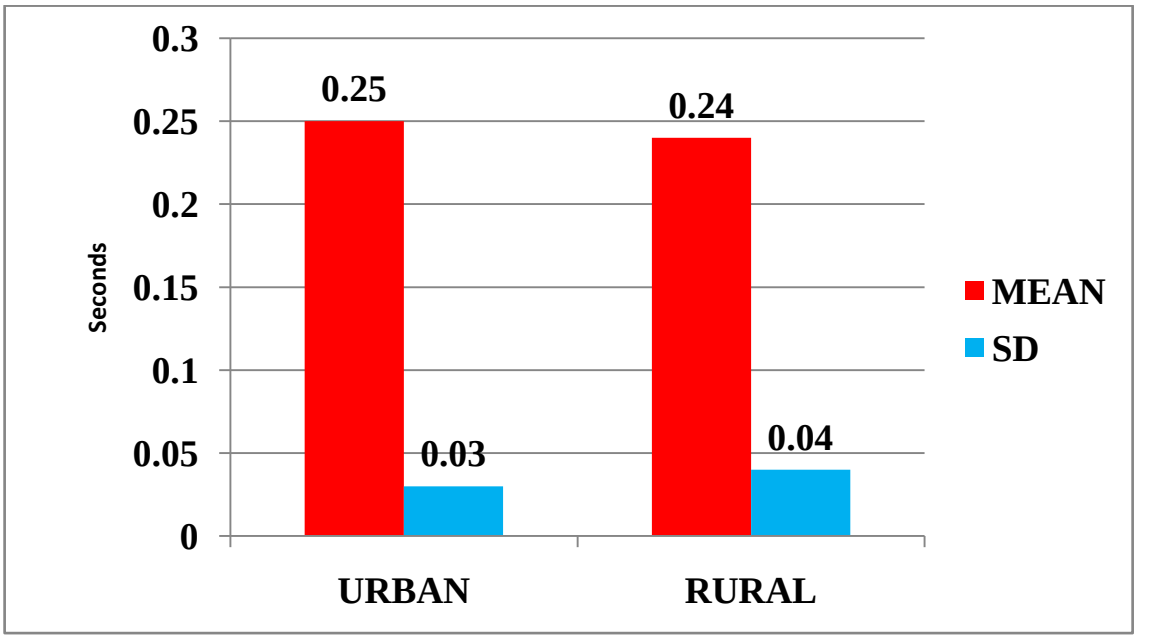


Fig.47.Graphical representation of urban and rural boys soccer players on Tactile-Reaction ability belonging to the age group of 14 to 18 years

As a byproduct of this study comparing the means of Urban and Rural Girls Soccer Players on Tactile- Reaction Ability was analyzed by using Independent "t" test for the age groups of 14 to 18 Years have been presented in table -57.

Table 57: Significance of difference between Urban and Rural Girls Soccer Players on Tactile-Reaction ability belonging to the Age Groups of 14 to 18 Years

Variables	Subjects	Mean	S.D.	S.E	M.D	t-Test	Remarks
Tactile Reaction Ability (Seconds)	Urban (Girls)	0.25	0.03	0.007	0.1	1.44	Insignificant
	Rural (Girls)	0.24	0.04				

**t-value required to be significant at 0.05 level of Confidence with 98 degree of freedom was 1.984*

The table- 57 reveals that there was no significant difference in Tactile-Reaction Ability (t= 1.44) between Urban and Rural Girls Soccer Players within the age groups of 14 to 18 Years as the calculated "t" value is less than the tabulated "t" value (1.984) at 0.05 level of significance.

The mean scores of both the groups have been illustrated graphically in figure- 48

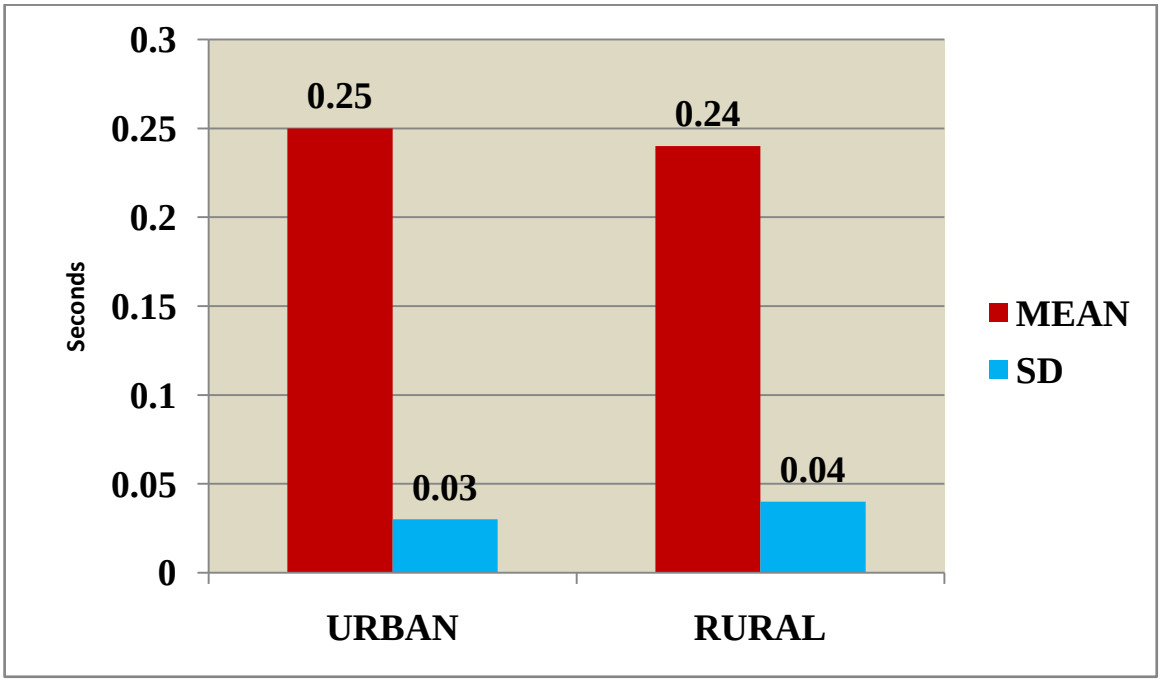


Fig.48. Graphical representation of urban and rural girls soccer players on Tactile-Reaction ability belonging to the age group of 14 to 18 years

Discussion of findings

The present study has been conducted on the two age groups (9- 13 years and 14-18 years) of urban and rural Boys and Girls. Coordination variables measurements of 200 urban and 200 rural Boys and Girls have been taken in order to investigate their Orientation ability, Differentiation ability, Balance ability, Rhythm Ability, Reaction Ability, Coupling Ability, Adaptation Ability and Reaction Times (Visual reaction time, Audio reaction time, Tactile reaction time).

Reaction Ability:

The findings of study indicate that the Reaction ability shows significant differences at 0.05 level of confidence between rural and urban soccer players (Table- 10, 11, 12 & 13). It shows that the rural soccer players are better in Reaction ability than the urban soccer players.

Reaction ability of rural soccer players was better than urban soccer players. The above results are in agree with Stavrou and Kakkos (2002) who found that the major reasons for participation of women were to improve their health and mood, while Zervas (1999) indicated the importance of physical activity for people's psychological health. Probably the cause's life style of people in rural, activity level, body composition, less fat, better physical fitness in rural people lead to increase their reaction quality. Other studies observed varied results regarding physical fitness test among urban and rural young people, there were significant differences for the standing broad jump, sit-ups, 20m shuttle run, and hand grip tests (Tinazci & Emiroglu, 2009).

The results of this contradict with findings of Singh **Kumar (2012)** but were agree with the finding of Manumit **(2010).** The result of this study was agreed with findings of **haldar (2012), vishal (2013).** But the results were opposed with finding of **Singh et al. (2010), Dave (2014) and Gontarev (2013).** Life style of people in rural, activity level, body composition, less fat, better physical fitness in rural people lead to increase their reaction ability.

Leisure-related physical activity is thought to be one of the most important dimensions of physical activity, **Koezuka et al. (2006).** Given 55% to 65% of moderate to vigorous activities undertaken by children and adolescents fall within this category. **Katzmarzyk et al. (2009).** This study revealed that youth living in rural areas tended to have lower

preference for leisure activities involving lower energy expenditure, such as playing dominoes or cards, watching television, playing video games, using a computer or chatting with friends. Similarly, recent studies have documented high prevalence of such sedentary behaviors and low levels of physical activity among youth living in urban areas, **Rios et al. 2012; Nahas et al. (2009).** This may reflect ease of access to technological devices, particularly computers **Hallal et al. (2006).**

The present study showed that rural children were better in physical fitness than the urban children, it might be due to more activity-oriented routine in rural areas, engagement in agriculture-related work, more open spaces and playing fields compared to cities, clean air, etc. in the rural areas of West Bengal.

Orientation Ability:

The statistical analysis of data shows that there were significant differences for Orientation Ability between urban and rural soccer players (Table-14, 15, 16 &17). The results of presents study showed that the rural soccer players had performed significantly better in Orientation Ability, as compared to urban soccer players. As supported (Raghupati & Krishnaswamy, 2013).

The orientation ability is the ability determined and changed the position and movement of the body in time and space in relation to definite field of action. The orientation ability may be attributing to the reason that there is a greater need of awareness of footballer teammates and oppositions players in football and the training that there is a sensor developed without any conscious effort. Significant difference in the urban and rural soccer players might be due to the reason that rural soccer players have high kinesthetic sense organs assume more importance of orientation than urban soccer players (Raghupathi & Krishnaswamy, 2013).

Differentiation Ability:

The results of the present study showed that there were significant differences found in Differentiation abilities between urban and rural both sexes and both age groups soccer players except for Differentiation abilities of 14-18 years girls soccer players (Table-21).The results of presents study showed that the rural soccer players had performed significantly better in Differentiation Ability, as compared to urban soccer players.

Differentiation ability is the ability to achieve a high level of fine tuning or harmony of individual movement phases and body part movements. The differentiation ability may be argued that kinesthetic sense of awareness is most required in the game of football. It is due to the reason that there is a need to give passes when condition demand without being seeing the players on the bases of previously seen moment of players. Therefore, during training and competition the regular conditioning of such ability helps the footballers to develop better differentiation ability.

Significant difference between urban and rural soccer players in relation to differentiation ability might be due to the reason that the different level of tuning and harmony of individual movement phase and body part movements. Because differentiation ability enable the player to separate the different body part during execution with high accuracy which may be significant as shown in the result of the study. Rural school soccer players might have high level of tuning and harmony due to less weight. This result is reliable with the results reached by **Bakhit (2010).**

Thus at different in nature of sports person that is at urban and rural areas the level of accuracy in execution differs, which may have resulted due to the differentiation ability of soccer players. Adolescents living in rural areas had higher levels of physical activity, showed less preference for passive leisure and were less exposed to sedentary behaviors compared to adolescents living in urban areas.

Balance ability:

The results of the present study showed that there were significant differences found in Balance abilities such as Static balance and Dynamic balance both legs between urban and rural both sexes and both age groups soccer players except for Dynamic balance (Right leg) of 14-18 years girls soccer players (Table-31). The result of the study reveals that the rural soccer players both sexes and both age groups are significantly better in Static balance and Dynamic balance both legs than the rural soccer players both sexes and both age groups except for Dynamic balance (Right leg) of 14-18 years girls soccer players.

Significant difference in the urban and rural soccer players might be due to the reason that rural soccer players have the ability to rhythmically transfer their center of gravity

(COG) from left to right and forward to backward with more excursions than urban soccer players (Raghupathi & Krishnaswamy, 2013).

Though outdoor physical activity has deep roots in Maine, the state is unfortunately not immune to the health challenges faced by rural America. In the United States, children in rural areas are more likely to be overweight or obese than those that live in urban areas, and despite popular perception that rural children must be more "outdoorsy," they are not significantly more active than their urban counterparts **(Joens-Matre, 2008).**

The current study found that rural adolescents engaged in moderate-to-vigorous physical activity (MVPA) at school than their non-rural counterparts. This effect was largely the result of differences in rural and non-rural environments rather than rural residence *per se* **(Moore et al., 2013, 2014; Euler et al., 2019; Machado-Rodrigues et al., 2014).**

The results were agree with findings of **Vishal (2013), Haldar (2012)** and there was no opposed findings with these results. As for geographical location and rural circumstance in rural students who had more activities at home and outside than urban students, therefore rural students had less over weight than urban students.

Further the result shows that there is no significant difference between the urban and rural 14-18 years girls soccer players in Dynamic balance (Right leg).

Rhythm Ability:

The results of the present study showed that there were significant differences found in Rhythm Ability between 9-13 years age group of both sex urban and rural soccer players (Table-34& 35) and also the result shows that there is significant difference between 14-18 years age group of boys urban and rural soccer players (Table-36). The result of the study reveals that the rural soccer players are significantly better in Rhythm Ability than the urban soccer players.

The living in rural areas is adapted to a physically strenuous type of life. Apart from their household duties they also help their parents in their routine work.

Further the result shows that there is no significant difference between 14-18 years age group of the urban and rural girls soccer players (Table-37) in Rhythm Ability.

Rhythmic ability allows athletes to perceive an externally given rhythm and to reveal it during an action. In addition to this, athletes can reproduce a rhythm which is in the motor memory due to their rhythm abilities **(Minz, 2003)**. The rhythmic ability was found insignificant of urban and rural soccer player's reason due to the similar kind of coordinated and rhythmic moments required during the dribbling and feinting to the opponents in match situations. This finding is in agreement with previous studies **(Sharma & Gangwar, 2014); (Tsimeas et al. 2005)** did not find any difference for the measured physical fitness components (flexibility, muscular fitness, cardio respiratory, speed and agility) among urban and rural people.

Studies conducted by (**Aandstad et al. 2006); (Chen et al. 2008)** Showed that there is no significant difference between the urban and rural area school girls in Muscular Strength and Endurance, Explosive Leg Power, Speed, and Cardio Respiratory Endurance.

This more active lifestyle may be associated with participation in the labor market, consisting mainly of physical labor in subsistence agriculture **Koezuka et al. (2006), Pena et al. (2003).** Common household activities performed by women living in rural areas **Bicalho et al. (2010).** This finding differs from other studies **Tenório et al. 2010; Lima et al. 2014.** That reported higher likelihood of being classified as insufficiently active among adolescents living in rural areas, due to greater availability of public leisure spaces (squares, sport centers and public courts) in urban compared to rural areas. Hence, inclusion of adolescents living in rural areas evaluated in this study in the labor market was thought to be an important factor behind the higher levels of physical activity documented in this group.

Coupling ability:

The results of the present study showed that there were significant differences found in coupling ability between 9-13 years age group of boys and girls urban and rural soccer players (Table- 38& 39) and also the result shows that there is significant difference between 14-18 years age group of boys urban and rural soccer players (Table-40). The result of the study reveals that the rural soccer players are significantly better in coupling ability than the urban soccer players.

Further the result shows that there is no significant difference between 14-18 years age group of the urban and rural girls soccer players in Coupling Ability.

Health disparities have consistently been found between rural residents of the United States and suburban and urban residents (Joens-Matre et al., 2008), prompting considerable research to address a critical area of wellness: physical activity (Gilbert et al., 2019;Kegler et al., 2013;Umstattd Meyer et al., 2016;Yousefian et al., 2009). Due to significant differences in demographics, economies, the built environment, and more, researchers have highlighted the need to consider specific assets and barriers to PA in rural communities and not just impose urban-centric solutions onto those areas (Umstattd Meyer et al., 2016).

A previous narrative review *(*McCormack, et al., 2016) which included studies comparing PA and diet between urban and rural children and youth reported equivocal results. Some studies showed no difference (one was septic to boys and not girls).

Adaptation ability:

The results of the present study showed that there were significant differences found in Adaptation ability between 9-13 years age group of boys urban and rural soccer players (Table-42) and also the result shows that there is significant difference between 14-18 years age group of girls urban and rural soccer players (Table-45). The result of the study reveals that the rural soccer players are significantly better in Adaptation ability than the urban soccer players.

It is the ability to adjust or completely change the movement programmed during tire movement on the basis of changes or anticipated changes in the situation. The situational changes may be expected ones or may suddenly take place. The present data also agreed with the **Wilczewski et al., (1996); Ozdirenc et al., (2005); Saha and Haldar, (2012); Das and Chatterjee, (2013),** the reports from Poland, Turkey and Bengal proposed that rural children were fitter than their urban counterparts. **Raghupati & Krishnaswamy (2013)** suggested that need to create awareness among urban school boys and their parents about physical growth and health which can be improved by providing proper care and nutrition right from early childhood period.

These might be explained by the fact that the coordinative component of the movement increases synapses in important brain areas such as the cerebellum **(Donnelly et al.,**

2016). Complex movement patterns engage the cerebellum which affects areas such as attention and memory functions that are affected by cerebellum **(Guillamon et al., 2020). Smidu, (2014)** also suggested that the importance of coordinative abilities in achieving athletic performance depends on biological factors, motor factors and psychological factors. **Singh, (2017)** says that rural children were better in physical fitness than the urban children, it might be due to more activity oriented routine in rural areas, engagement in agriculture related work, more open spaces and play fields compared to cities, clean air etc in the rural areas of Punjab.

The present study findings were also in line with the studies conducted by **Riyes et al., (2003).** Whereas in the case of **Dollman, Noxton and Thacker, (2002)** found that rural boys and girls are better in running performance than the urban counterparts.

The definition of urban and rural areas goes beyond simple spatial boundaries to include different social, economic and cultural organization forms, leading to two distinct lifestyles. **(Rodrigues et al., 2014).** In this context, some urban environment factors, such as lack of security, high population density and excessive involvement in intellectual activities may contribute to reduced level of physical activities and greater exposure to sedentary behaviors, resulting in less fitness among adolescents **(Santos et al., 2010; Katzmarzyk et al., 2009).** Hence, place of residence may also be a significant factor in obesity development, a major global health issue directly associated with physical inactivity. **(Glaner et al., 2005).**

Further the result shows that there is no significant difference between the 9-13 years girls soccer players of urban and rural and also 14-18 years boys soccer players.

The present study findings were also in line with the study conducted by **Girish (1989)** found that no significant difference in physical fitness level between urban and rural school boys.

Probably the causes of contradiction with results of the present study were age of participants. Use of both sexes and geographical location of individuals, Life style of people in rural, activity level, body composition, less fat, better physical fitness in rural people lead to increase their Coordination abilities.

Reaction time:

Further the result shows that there is no significant difference between the urban and rural boys and girls both age groups soccer players (Table-46,47,48,49,50,51, 52, 53,54, 55, 56 & 57) in Audio reaction time, Visual reaction time and Tactile reaction time.

Soccer player emphasized a lot of reaction in training during their practice session because they have to tackle the ball with their body and at the same time they need dribbling and fainting maneuvers with their own body. It has been reported in recent studies that environmental factors, lifestyles, diet, family structure, cultural differences, and several other factors are closely related with physical fitness and physical activity **(Clark & Ferguson, 2002; Finn et al., 2002; Hussey et al., 2001; Rowlands et al., 1999 & Strauss & Pollack, 2001).**

TESTING OF HYPOTHESES

The first hypothesis stated earlier in the introductory chapter regarding the existence of no significant difference in coordinative abilities of Male and Female soccer players respectively in the age category of 9-13years between Rural and Urban areas was hereby rejected as significant difference in coordinative abilities (except Audio, Visual & Tactile reaction time) of urban and rural boys soccer players and (except Adaptation Ability, Audio, Visual & Tactile reaction time) urban and rural girls soccer players for age group (9-13 years) was observed at 0.05 level of significance.

The second hypothesis stated earlier in the introductory chapter regarding the existence of no significant difference in coordinative abilities of Male and Female soccer players respectively in the age category of 14-18 years between Rural and Urban areas was hereby rejected as significant difference in coordinative abilities (except Adaptation Ability, Audio, Visual & Tactile reaction time) of urban and rural boys soccer players and {except Differentiation Ability, Dynamic Balance (Right Leg), Rhythm Ability, Coupling Ability, Audio, Visual & Tactile reaction time} urban and rural girls soccer players for age group (14-18 years) was observed at 0.05 level of significance.

CHAPTER – V

SUMMARY, CONCLUSION & RECOMMENDATION

SUMMARY

Soccer coordination is one of the most important skills to possess during a soccer game. Coordination is the base upon which many essential soccer skills are built. It is required for skills like agility, dribbling, accurate passes, heading the ball and many others. Coordination in soccer is important for performing many core soccer skills. It's like the backbone of many major soccer skills. If one wants to become a professional soccer player, practicing coordination should be on priorities list **(Sannan, 2021).** Coordinative abilities are primarily dependent on motor control and regulation process of central nervous system. For each coordinative abilities the motor control and regulation process function in a definite pattern when a particular aspect of these functions is improved then the sports person is in a better position to do a certain group of movements which for their execution depends on the Central Nervous System function pattern" **(Singh,1991).** Every country has two different areas in the society, one is urban area and other is rural area. Rural area is brought in the open natural space and outdoor setting of dynamic life. There are body surface areas, food habit, and exercise, social, cultural and genetic components which in turn prompt the sports performance **(Rampotti, 1960).** Urban areas are having excellent level of soccer skills and techniques because they get to chance practice under better coach with trainer. But in the rural areas, the players are facing problem to get good skills and techniques of playing soccer and lack of better coach or field infrastructure. So researcher thought to find out whether there is any difference in soccer skill mainly coordinative ability between rural and urban Soccer players. There are lot of differences between rural and urban in every aspects of life i.e. customs, rituals of living etc. Therefore, it is possible that there may be greater differences in body composition, hemoglobin content, blood pressure etc between rural and urban peoples **(Rowney, 1974).**

In spite of many studies, there are many gaps in this field yet to exist established. Researcher has selected this topic with a view to establishing the thesis title "comparative study of coordinative abilities of soccer players in relation to age sex of rural and urban population". Therefore, the aim of the study was to find out the

difference in coordinative abilities of different ages male and female soccer players of urban and rural areas. To accomplish the purpose of the study two hundred (n=200) out of three hundred male and two hundred female (n=200) out of three hundred, age ranging between 9 to 13 years (100 each) and 14 to 18 years (100 each) for Male and Female, Rural and Urban soccer players selected as subjects. In each age group there were 50 subjects. The subjects were randomly selected from different districts of South 24 Parganas, North 24 Parganas, Hooghly, Kolkata, Bankura and Purulia in West Bengal. The subjects were homogeneous in respect of socioeconomic status and cultural background.

keeping in mind the specific purpose of the study to compare the coordinative abilities of soccer players in relation to age sex of rural and urban population, the variables were Coordinative Variables (Reaction Ability, Orientation Ability, Differentiation Ability, Balance Ability, Rhythm Ability, Coupling Ability and Adaptation Ability) and Reaction Variables (Audio Reaction Time, Visual Reaction Time and Tactile Reaction Time) selected for the study. The necessary data on selected coordinative abilities was collected by administering various coordinative ability tests. Reaction ability was measured by the ball reaction exercises test and was recorded in centimeters. Orientation ability was measured by using numbered medicine ball run test and was recorded in seconds. Differentiation ability was measured by using backward medicine ball throw test was recorded in numbers of points. Balance ability was measured by using Bass stick test (Static balance) was recorded in seconds and Star Excurtion Balance test (Dynamic balance) was recorded in Centimeters. Rhythm ability was measured by using sprint at given rhythm test and was recorded in seconds. Coupling ability was measured by using Burpee test and was record in number. Adaptation ability was measured by using Alternate hand wall toss test and was record in number. Also Audio Raction Time, Visual Resction Time and Tactile reaction time was measured by using Multipurpose Reaction Time Apparatus and was record in Seconds.

The data was collected from a few districts of West Bengal including both male and female football players from rural and urban areas, after obtaining permission from the managers and coaches of different soccer clubs. The managers and coaches allowed their players to serve as subjects for the study and encouraged them to cooperate in the process of data collection for the study. A comparative statistical group design was prepared to compare the soccer players of two groups (under 9-13 years & under 14-18

years) on the specific coordinative abilities. To compare the coordinative abilities of soccer players in relation to age, sex of rural and urban population, descriptive statistics and 't' test was used and the level of significance was set at 0.05.

The results of the present study showed that the rural soccer players had performed significantly better in Reaction ability, Differentiation Ability, Rhythm Ability, Orientation Ability, Coupling Ability, Balance ability and Adaptation ability as compared to urban soccer players. The result of the study also reveals that the rural soccer players of both sexes (male and female) and both age groups (9-13 years and 14-18 years) are significantly better except Differentiation ability, Rhythm ability and coupling ability of 14-18 years and Adaptation ability of 9-13 years girls soccer players and Adaptation ability of 14-18 years boys soccer players . Also in Static balance and Dynamic balance both legs than the rural soccer players of both sexes (male and female) and both age groups (9-13 years and 14-18 years) except for Dynamic balance (Right leg) of 14-18 years girls soccer players. Further the result also shows that there is no significant difference between the urban and rural boys and girls both age groups soccer players in Audio reaction time, Visual reaction time and Tactile reaction time.

CONCLUSION:

1. It shows that the rural soccer players are better in Reaction ability than the urban soccer players.
2. The results of presents study showed that the rural soccer players had performed significantly better in Differentiation Ability, as compared to urban soccer players.
3. The result of the study reveals that the rural soccer players both sexes and both age groups are significantly better in Static balance and Dynamic balance both legs than the rural soccer players both sexes and both age groups except for Dynamic balance (Right leg) of 14-18 years girls soccer players.
4. The result of the study reveals that the rural soccer players are significantly better in Rhythm Ability than the urban soccer players.
5. The rural soccer players had performed significantly better in Orientation Ability, as compared to urban soccer players.

6. The results of presents study reveals that the rural soccer players are significantly better in Coupling Ability than the urban soccer players.
7. The result of the study reveals that the rural soccer players are significantly better in Adaptation ability than the urban soccer players.
8. Further the result shows that there is no significant difference between the urban and rural boys and girls both age groups soccer players in Audio reaction time, Visual reaction time and Tactile reaction time.

RECOMMENDATIONS:

In light of conclusions drawn, the following recommendations were made:

1) Longitudinal study should be undertaken to relate physiological fitness with health-related fitness of obese population.
2) Comparative study of physiological fitness of school children may be undertaken belonging to different geographical areas.
3) Similar study may be undertaken by employing subjects of different age and sex groups.
4) The study may be conducted on to compare the other states children.
5) To make study more authentic and valid, the study may be repeated in large sample.
6) This study can be conducted for other relevant physical fitness variables, skill related to variables and other psychological variables.

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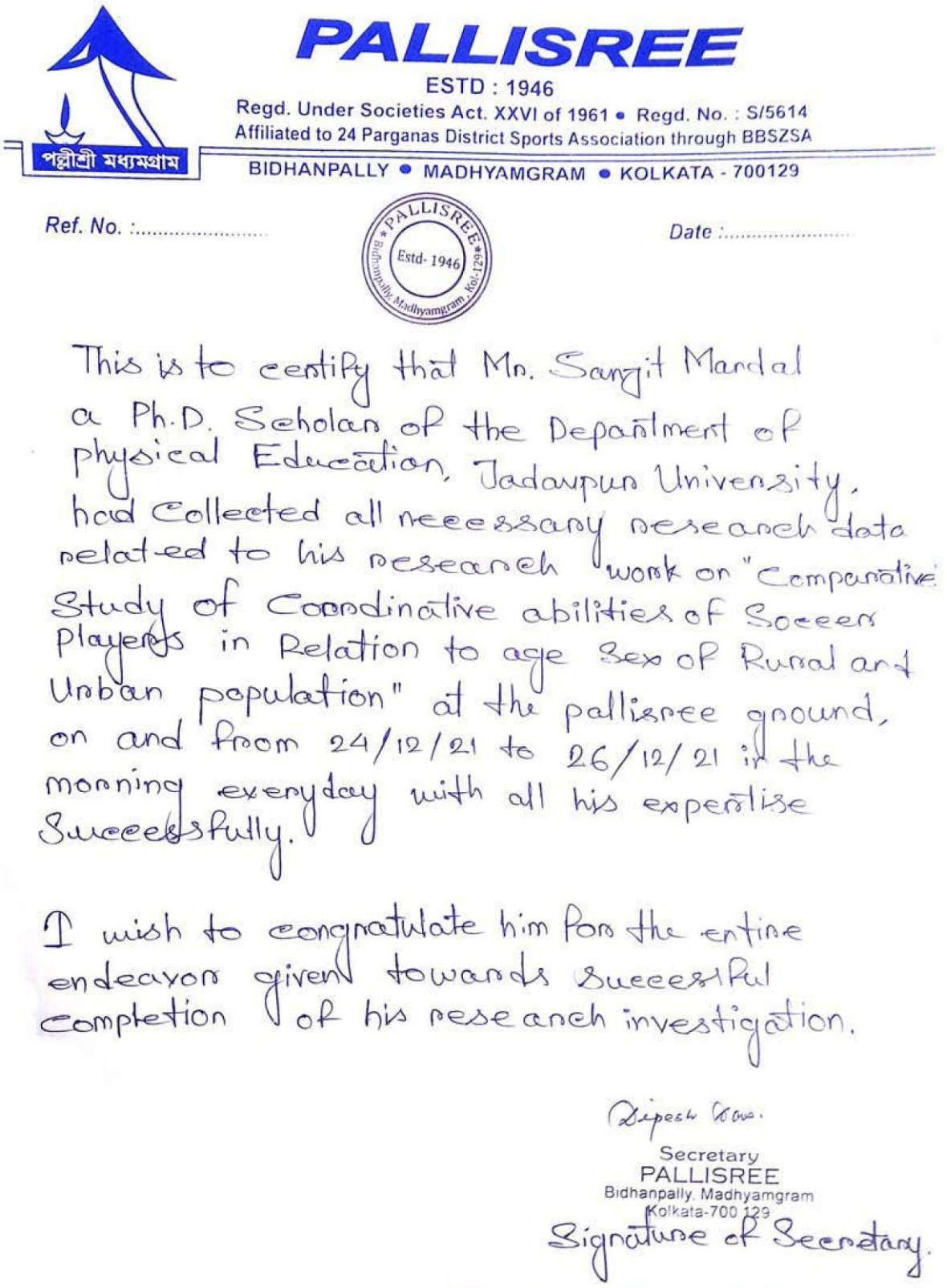
DATA COLLECTION CERTIFICATES



PALLISREE
ESTD : 1946
Regd. Under Societies Act. XXVI of 1961 • Regd. No. : S/5614
Affiliated to 24 Parganas District Sports Association through BBSZSA
BIDHANPALLY • MADHYAMGRAM • KOLKATA - 700129

Ref. No. :.....

PALLISREE Estd- 1946 Bidhanpally, Madhyamgram, Kol-129

Date :.....

This is to certify that Mr. Sanjit Mandal a Ph.D. Scholar of the Department of physical Education, Jadavpur University, had Collected all neeessary research data related to his research work on "Comparative Study of Coordinative abilities of Soccer Players in Relation to age Sex of Rural and Urban population" at the pallisree ground, on and from 24/12/21 to 26/12/21 in the morning everyday with all his expertise Successfully.

I wish to congratulate him for the entire endeavor given towards Sucessful completion of his research investigation.

Dipesh Kumar.
Secretary
PALLISREE
Bidhanpally, Madhyamgram
Kolkata-700 129
Signature of Secretary.

SRIRAMPUR PROVATI SANGHA

Estd.-1977

Regd.No. S/2L/37856

Vill.- Srirampur, P.O.- Taragunia, P.S.- Baduria, Dist.- North 24 Parganas, 743401.

Ref.No.....

Date.....

TO WHOME IT MAY CONCERN

This is to certify that Mr. Sanjit Mandal, a Ph.D. Scholar of the Department of Physical Education, Jadavpur University, had collected all necessary research data related to his research work on "COMPARATIVE STUDY OF COORDINATIVE ABILITIES OF SOCCER PLAYERS IN RELATION TO AGE SEX OF RURAL AND URBAN POPULATION" at the Srirampur Provati Sangha Football ground, on and from 15/10/21 to 17/10/21 in the morning everyday with all his expertise Successfully.

I wish to congratulate him for the entire endeavor given towards successful completion of his research investigation.

Tapash Mondal
Secretary 17/10/21
SRIRAMPUR PROVATI SANGHA

RUDRAPUR SOCCER ASSOCIATION

ESTD: 2021

PLACE- RUDRAPUR SCHOOL GROUND

RUDRAPUR, BADURIA, NORTH 24 PGS,743401

To Whom It May Concern

This is to certify that Mr. Sanjit Mandal, a Ph.D. Scholar of the Department of Physical Education, Jadavpur University, had collected all necessary research data related to his research work on "Comparative Study of Coordinative Abilities of Soccer Players in Relation to Age Sex of Rural and Urban Population" at the Rudrapur School ground, on and from 26/11/21 to 28/11/21 in the morning everyday with all his expertise successfully.

I Wish to congratulated him for the entire endeavor given towards successful completion of his research investigation.

Raj Kumar Karmakar
28.11.21
Signature of Secretary

TO WHOM IT MAY CONCERN

This is to certify that Mr. Sanjit Mandal, a Ph.D. Scholar of the Department of Physical Education, Jadavpur University, had collected all necessary research data related to his research work on "Comparative Study of Coordinative Abilities of Soccer Players in Relation to Age Sex of Rural and Urban Population" at the Bangabari Football ground, on and from 18/02/22 to 24/02/22 in the morning everyday with all his expertise successfully.

I Wish to congratulated him for the entire endeavour given towards successful completion of his research investigation.

Dej Kr. Bauri
24/02/22

Signature of Secretary

Kalikapur Nabo Milan Sangha

ESTD.- 2004

Regd. No. S/1L-89891

VILL. : KALIKAPUR ❋ P.O. + P.S. : SONARPUR,
KOLKATA - 700 150

TO WHOM IT MAY CONCERN

This is to certify that Mr. Sanjit Mandal, a Ph.D. Scholar of the Department of Physical Education, Jadavpur University, had collected all necessary research data related to his research work on "Comparative Study of Coordinative Abilities of Soccer Players in Relation to Age Sex of Rural and Urban Population" at the ***Kalikapur Nabo Milan Sangha Football ground***, on and from 10/12/21 to 12/12/21 in the morning everyday with all his expertise successfully.

I Wish to congratulated him for the entire endeavour given towards successful completion of his research investigation.

Apurba Mondal 12/12/2021
Signature of Secretary

BIKRAMPUR BISHALAXMI MATA SPORTS AND GAMES WELFARE ASSOCIATION

BIKRAMPUR :: ARAMBAGH :: HOOGHLY

Govt Registered No - S0012490 of 2020 – 2021

Phone No – 7001440346 / 9434116192/ 9734204461

Ref. No. .....

Date .....

TO WHOME IT MAY CONCERN

This is to certify that Mr. Sanjit Mandal, a Ph.D. Scholar of the Department of Physical Education, Jadavpur University, had collected all necessary research data related to his research work on "COMPARATIVE STUDY OF COORDINATIVE ABILITIES OF SOCCER PLAYERS IN RELATION TO AGE SEX OF RURAL AND URBAN POPULATION" at the Bishalaxmi Mata Sports ground, on and from 14/1/22 to 16/1/22 in the morning everyday with all his expertise Successfully.

I wish to congratulate him for the entire endeavor given towards successful completion of his research investigation.

Signature of Secretary

Bikrampur Bishalaxmi Mata Sports and Games Welfare Association

Tarak nath Ghosh.

President

16/1/22

বসিরহাট

প্রান্তিক স্পোর্টিং ক্লাব

স্থাপিত ঃ ১৯৪৬

রেজিঃ- S/1L/52057

কলেজপাড়া ❖ পোঃ- বসিরহাট কলেজ ❖ বসিরহাট ❖ উত্তর ২৪ পরগণা ❖ পিন- ৭৪৩৪১২

To Whom It May Concern

This is to certify that Mr. Sanjit Mandal, a Ph.D. Scholar of the Department of Physical Education, Jadavpur University, had collected all necessary research data related to his research work on "Comparative Study of Coordinative Abilities of Soccer Players in Relation to Age Sex of Rural and Urban Population" at the Prantik Sporting Club ground, on and from 12/11/21 to 14/11/21 in the morning everyday with all his expertise successfully.

I Wish to congratulated him for the entire endeavour given towards successful completion of his research investigation.

Surajit Mitra 14/11/21

Signature of Secretary

NARAYANPUR PAL FOOTBALL ACADEMY

Reg No- S0023264

NARAYANPUR * MUNINAGAR * BISHNUPUR * BANKURA * PIN 722122

Ref No..... *Date.....*

President

Biren Chandra Pal

Vice President

Nitai Pal

Secretary

Gour Pal

Co-Secretary

Smt. Fuleshwari Pal

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Ananda Pal

Members

Baren Pal

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Smt. Amita Pal

TO WHOME IT MAY CONCERN

This is to certify that Mr. Sanjit Mandal, a Ph.D. Scholar of the Department of Physical Education, Jadavpur University, had collected all necessary research data related to his research work on "COMPARATIVE STUDY OF COORDINATIVE ABILITIES OF SOCCER PLAYERS IN RELATION TO AGE SEX OF RURAL AND URBAN POPULATION" at the 'NARAYANPUR PAL FOOTBALL ACADAMY' ground, on and from 21/01/22 to 23/01/22 in the morning everyday with all his expertise Successfully.

I wish to congratulate him for the entire endeavor given towards successful completion of his research investigation.

Narayanpur Pal Football Academy * Reg.No.- S0023264 Narayanpur Muninagar * Bishnupur, Bankura, Pin-722122 *

Biren Ch. Pal
President 23/01/22
Narayanpur Pal Football Academy
Narayanpur, Muninagar, Bishnupur, Bankura

Signature of President/Secretary