RELATIONSHIP OF MOTOR FITNESS COMPONENTS WITH SKILL PERFORMANCE OF VOLLEYBALL PLAYERS OF VALSAD DISTRICTS

वलसाड जिले के वॉलीबॉल खिलाड़ियों के कौशल प्रदर्शन के साथ मोटर फिटनेस घटकों का संबंध

A

Thesis

Submitted for the Award of the Ph.D. degree of

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DEDICATED TO
MY FAMILY, FRIENDS
AND WELL-WISHERS

PREFACE

The purpose of the study was to find out the relationship of motor fitness components with skill performance of volleyball players. The study was delimited to Veer Narmad South Gujarat University, Surat, 180 boys' volleyball players. The study was delimited to male players who were between the ages of 17 and 25. When discussing the components of physical fitness, one must prioritize developing the following: skill-related components: agility, coordination, reaction time, balance, power, and speed; health-related components: strength, cardiovascular fitness, flexibility, body composition, and muscular endurance; and to achieve the desired performance, one must develop each component equally and to its fullest. The motor fitness components were speed, agility, flexibility, explosive power and Cardio – vascular endurance. The volleyball skill performance were measured with the AAHPER Volleyball Skill Test. The analysis of the statistical parameters, such as descriptive statistics like mean, standard deviation, minimum value, maximum value, etc., was most relevant to the study's primary goals. Karl Pearson's product moment coefficient of correlation was used to evaluate the connection between volleyball players' skill performance and physical fitness components. Multiple regression analysis was used to predict the skill performance in volleyball from physical fitness components. A significance threshold of $p<0.05$ was used. The level of significance to ascertain the relationship obtained by Karl Pearson's product moment correlation was set at 0.05 level of confidence, which was considered adequate for the purpose of this study. All analyses were conducted using SPSS version 14.0, the Statistical Package for the Social Sciences. One-way Analysis of Variance (ANOVA) was used to examine the significance of differences in the means of each group for each selected

variable. In all analyses, the 5% critical threshold ($P<0.05$) was deemed to indicate statistical significance. The positive but not statistically significant correlation between agility, cardio vascular endurance. And speed, flexibility and explosive power negative but not statistically significant correlation between left side set-up ability. When discussing the components of physical fitness, one must prioritize developing the following: skill-related components: agility, coordination, reaction time, balance, power, and speed; health-related components: strength, cardiovascular fitness, flexibility, body composition, and muscular endurance; and to achieve the desired performance, one must develop each component equally and to its fullest.

Key Words: Speed . Agility . Flexibility . Explosive power . Cardio – vascular endurance

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INTRODUCTION

1.1 Introduction

As a vital component of society, sport has a significant and positive impact on a variety of social life domains. Physical activity is referred to as sport, and development is any positive impact on one's health, social standing, or finances. Players that participate in sports develop life skills and strive for academic excellence. Better cognitive functioning, as well as better grades and test scores, school satisfaction, school dedication, university aspirations, and reduced dropout rates, were all associated with sports participation.

For all humans, physical activity is essential. It is divided into two sections: competitiveness and recreation. At present competitive sprit and team have gained more popularity as they are highly rewarding. It unites the entire planet under one roof except from this. There is growing evidence that physically fit people live longer and perform better than physically unfit people. A completely fit person possesses the strength, power, speed, agility, endurance, and social and emotional maturity that come with being in his prime. Assessing physical fitness is becoming more and more crucial for organizing and evaluating training programs for athletes as well as helping with sportsmen selection. For improved performance and efficiency, it is crucial that athletes in India have their whole physical fitness level professionally evaluated.

Sports and games are crucial for success in many facets of our lives, not just academic accomplishment. All forms of athletics as well as indoor and outdoor games are considered games and sports. They constituted the core of education in classical Greece. In the developed world of today, they are also a standard part of the curricula at schools and universities. Sports and games play a crucial role in a student's life. It takes a lot of study to do well on competitive tests. But in order to experience life's vitality and health, you also need to play sports constantly.

Sports and games help us stay fit and healthy for work. Sports and games play a vital role in our lives. Sports and games keep us healthy, energetic, lively, and sociable. They impart to us a lesson in discipline and cooperation. They impart to us a lesson in patriotism and fraternity. Sports and games are very valuable for the physical and mental growth of the player. A healthy body is home to a healthy mind. Playing games keeps the body active and fit.

Sports and games are crucial for success in many facets of our lives, not just academic accomplishment. In the modern developed world, they are also a standard part of the curricula at schools and universities. Sports and games play a vital role in a student's life. To succeed in competitive tests, a student needs to put in a lot of study time. But to experience life's vitality and health, you also need to exercise and participate in sports. Sports and games have existed for as long as human civilization and have gained a collective status in contemporary culture. It is now more popular than any other kind of social interaction. Since physical education and sports are now part of the regular curriculum, it has become an essential component of the educational process. Different sports and games are taught to students in a methodical, scientific manner. Apart from instruction, pupils undergo performance evaluations. Engaging in sports and games for enjoyment and to reap the benefits on a physical, mental, social, emotional, and physiological level.

Within the hierarchy of human values, sports conquest occupies a special place. It combines triumph, achievement, and certain people's dominance over their friends and teammates. The loser's applause for the winners, along with their genial and shrugging demean or, shows the sublimity of competition.

A multitude of milestones have been reached in the gaming and sports industries thanks to various advancements in general and their use in the sports sector specifically. Achieving greatness in performance across several sports has become more and more dependent on scientific research into athlete performance. The use of new, scientifically verified training techniques and means of carrying out physical activity, such as sports tactics and techniques, equipment advancements, better sports fields, and other elements and conditions of the sports training system, has allowed athletes to perform at an exceptionally high level **(Powel 1983).**

In today's world, sport is significant. It matters to everyone on the planet, whether they are individuals, a group, or a country. Sport is an institutionalized form of competitive physical exercise in which participants use relatively complex physical skills or intense physical exertion. Their motivation to participate comes from both the intrinsic rewards of the activity and the external rewards they receive from it. The dedication to achieving a defined objective, or competition, is the fundamental element

of sport. Standardized guidelines and regulations must apply to this competition **(Howell et al. 1994).**

In our social lives today, sports have become an integral aspect. The heyday of human civilization has been ushered in by its process, competitive event, and progressively improved nature. The saturation phase of new knowledge acquisition for the purpose of improving human performance with respect to physical, motor, and psychological attributes has been reached. For sports experts, identifying a skills barrier is a million dollar question. In the process, they also discuss various psychological factors that affect sports performance and examine the area of psychology.

Sport has a global popularity in the current era and is as old as human civilization. It is currently more popular than any other kind of social interaction. It now forms a crucial component of the learning process. Around the world, millions of sports enthusiasts watch different events with a level of enthusiasm that borders on devotion. Many people do sports for enjoyment or to improve their strength, health, and fitness. For individuals with high talent levels, it is becoming a career with significant financial rewards associated with a high level of popularity.

As defined, sports require participants to exert a great deal of physical effort or use comparatively complex physical and physical abilities. Sport suggests a structured competitive physical activity from a sociological perspective. Model or collection of institutionalized behaviors supported over time in varying circumstances. Consequently, when competitive physical activity is institutionalized, it can be categorized as sport. According to **Wuest and Bucher (1992),** institutionalization happens when regulations are standardized and applied, the technical and organizational components of the activity are prioritized, and skill development is approached formally.

Everybody's life has involved some sort of physical activity. Movement was crucial to the evolution of Homo sapiens, and the function of muscles was critical to their development. It is necessary to speculate that the primary purpose of physical exercise in prehistoric times was survival—the constant hunt for clothing, food, shelter, and defense against the harsh environment. Second, because games were adapted from real-world activities and became a recognized way to enhance strength, speed, skill,

and other survival-related abilities, it started to serve as a means of preparing young people for adulthood **(Barrow & Brown 1983).**

Being physically active is a natural characteristic of human beings. It naturally develops on its own. To achieve the desired result, it becomes absolutely necessary to determine the nature and extent of this innate skill and to develop, adjust, and polish it **(Fleishman, 1964).**

Men's health and fitness have played a significant role in their lives since the beginning of humanity. It is in our hands to build the country and produce physically fit and well-nourished citizens. Everyone aspired to achieve fitness and a happy, productive life. To engage in physical activities, one must be physically fit. A child's overall development is influenced by a variety of factors, including physical function, mental and physical health, social and spiritual components, and the opportunities that come with growth that are contingent on the child's personality development.

Physical Fitness

Fitness: What is it? Being physically healthy is just one aspect of physical fitness; another is a person's mental health. Fitness is the capacity of an individual to lead a contented and well-rounded life. The state of being physically fit is defined as having the highest possible level of heart, blood vessel, lung, and muscular function.

Fitness is a physiological state of well-being that lowers the likelihood of hypokinetic disorders, or conditions linked to physical inactivity and misuse. It also serves as a prerequisite for engaging in sports and maintaining good health, both of which allow a person to perform daily duties.

Strong bones and muscles come from physical fitness, which also promotes improved health and wellbeing, lowers the risk of numerous diseases including blood pressure, diabetes, cancer, etc., and enhances quality of life. Being physically healthy improves your mood and lowers stress, tension, and likelihood of depression. By eating a healthy diet and getting regular aerobic and anaerobic exercise, you can enhance your physical fitness and body composition.

Physical fitness is described as "the ability to perform daily activities vigorously and quickly without undue effort, with enough energy to enjoy leisure activities and deal

with unforeseen emergencies" by the Council of the President of the United States on Physical Fitness and Sports **(Clarke, 1971).**

Serving in almost any armed force requires having a certain level of physical fitness. General fitness, which is a state of health and wellbeing, and specialized fitness, which is a task-oriented definition based on the capacity to execute particular sports or job-related tasks, are the two linked notions that make up physical fitness. Generally speaking, maintaining physical fitness requires regular exercise, a healthy diet, and adequate sleep. It is a crucial aspect of existence. Fitness used to be widely understood to be the ability to complete daily tasks without experiencing undue weariness. But as free time grew due to automation, post-industrial lifestyle changes made this definition inadequate **(Kumar et al., 2012).**

In current world, being physically healthy is a prerequisite for all activities. A person's lifestyle choices, such as their daily physical activity levels, are the primary determinants of their physical fitness. The capacity to engage in physical activity in a variety of environmental settings is another measure of physical fitness **(Basak & Dutta, 2016).** A child's or adolescent's physical fitness is a crucial sign of their health and a reliable determinant of their future health. Because of the effects of globalization and technology advancements that result in better lifestyles, it is more important in today's society **(Shivakumar et al., 2014).** Maintaining physical fitness helps us not only become more skilled but also healthier and happier. The country will gain from this since it will also contribute to the development of a healthy environment and community. We can enhance our physical condition, overall wellbeing, and health by participating in physical conditioning programs **(Kundra, 2009).** Humans are performance-driven beings by nature; they have always strived to run faster, jump higher, and demonstrate greater strength and skill. An increasing number of activities are emphasized by physical fitness **(Uppal, 1992).** To carry out daily tasks and engage in different activities efficiently, it is imperative for every person to maintain physical fitness. To improve the many aspects of physical fitness, everyone should be able to engage in physical activity **Safrit (1986). Nelson and Johnson (1979).** Everyone can agree without a doubt that being physically healthy is essential for doing activities that are assigned to them. Nonetheless, there has never been a universal agreement on the

definition of "physical fitness." Several batteries have been created for physical fitness exams overseas, particularly in India.

Motor Fitness

Everyone needs to be physically fit in order to keep their bodies. General motor fitness contributes to the maintenance of excellent physical and psychological health.

The neuromuscular aspects of fitness that allow an individual to excel in a given game, activity, or motor skill. A few examples of specific motor fitness components are power, agility, balance, coordination, speed, and reaction time. Skill-related fitness is another name for motor fitness. Also see physical well-being.

The most valuable thing a person can own is motor fitness, which must be acquired via regular motor training regimen. It goes without saying that healthy folks are a country's greatest assets and unhealthy citizens its liabilities. Since motor fitness is a prerequisite for the majority of the tasks that a man must perform in his everyday life, it is the duty of every nation to promote motor fitness among its population. A person's ability to think and work, which are crucial for both one's personal life and society in a welfare state, is compromised if his body is underdeveloped or sedentary and if he fails to develop motor prowess.

The **American Alliance for Health**, Motor Education and Recreation highlights the need for customized training with the goal of helping learners discover their own level of motor fitness. Every person has to be in good motor function in order to carry out their daily tasks and engage in a variety of activities.

The neuromuscular aspects of fitness that allow an individual to excel in a given game, activity, or motor skill. A few examples of specific motor fitness components are power, agility, balance, coordination, speed, and reaction time. Skill-related fitness is another name for motor fitness. Also see physical well-being.

Variables related to fitness aid in improving abilities at the peak of athletic performance. Based on the assertion that the researcher was enthusiastic about and engaged in the investigation of the connection between motor fitness and skill performance, the technical and motor skills of the engine are consistent.

Power, agility, speed, and balance are among the elements that make up motor fitness, which is defined as the ability to accomplish basic tasks like running, leaping, dodging, falling, climbing, and swimming with prolonged effort in a range of situations. "Motor fitness is the final criterion through which all other elements of physical fitness or total fitness are seen and measured in man" **(Book in 1952).**

Components of Physical Fitness

Physical components: the most valuable asset is physical fitness, which is acquired via regular exercise and cannot be purchased **(Uppal, 1992).**

The contemporary era has produced competition. It's a challenge that pushes, encourages, and inspires the person to run faster, jump higher, throw farther, and generally aim to outperform himself in addition to demonstrating increased strength, stamina, and skill to dominate others. Due to a significant shift in the attitude around game and sport participation, contestants in today's sports place a higher value on winning **(Melville & de Mellow, 1974).**

The elements of health-related fitness serve as a benchmark for gauging our overall wellbeing. Enhancing our abilities in each of these domains is the aim of this activity. While some sports will require more physical preparation than others, athletes generally aim to reach a reasonable level of fitness for overall health in each domain. A balanced goal should be to reach a balanced level of performance on each of these fitness components, unless you concentrate on fine-tuning your body's performance for an exceptionally demanding sport. Activities and exercises that support each of these health-related fitness components should be a part of your fitness regimen.

- **Muscle strength:** The strongest possible force against resistance is known as muscle strength. The biggest body that can push or pull something can be used to quantify it, as can the maximum weight a person can lift.
- **Muscular endurance:** This type of endurance assesses an individual's capacity to apply their maximal force over time, which sets it apart from muscular strength.

- **Cardiovascular Endurance:** Also referred to as aerobic fitness, cardiovascular endurance is a gauge of an athlete's capacity to engage in prolonged exercise that strains the respiratory and circulatory systems.
- **Flexibility:** a person's ability to move their joints freely is measured by their flexibility.
- **Body composition:** A person's percentage of body fat is typically used to determine their body composition.

The fundamental abilities used in an activity, as opposed to those specific to a certain sport, such running, fishing, surfing, or kicking, are what make up skill-related fitness. These are crucial elements of physical fitness for everyday use as well as sports- related abilities. These elements frequently characterize our deteriorating lives and become less prevalent as we age or get ill. For this reason, physical activity and other pursuits that enhance physical fitness are crucial for people of all ages.

- **Power:** The capacity to contract muscles quickly and forcefully in an explosive motion is known as muscular power.
- **Balance:** The capacity to keep one's equilibrium when moving or standing.
- **Speed:** The capacity to move all or a portion of the body as quickly as feasible is measured by speed.
- **Agility:** The capacity to rapidly and precisely shift a body's direction at a high speed is known as agility. It calls for a blend of power, speed, balance, and coordination.
- **Coordination:** The capacity to carry out a sequence of motions or motor activities with efficiency and fluidity.
- **Reaction time:** The capacity to react swiftly to an external stimulus.

An exhaustive inventory of physical fitness requirements for engaging in a variety of physical activities, such as sports: cardiovascular endurance, muscular strength, muscular power, agility, speed, balance, flexibility, response time, and coordination (eye-foot, eye-hand, whole-body coordination). In addition, traces like reflexes, simple motor response, sensory data, and spatial and temporal awareness are thought to be significant in motor performance skills, particularly in the early stages of physical development. Numerous researchers from the military, sports groups,

government offices, and universities have created hundreds of motor performance skills assessments, accounting for the previously described variable components of motor performance.

Performance is enhanced by competition, and competition can be used to attain, maintain, or improve performance. Because sports have evolved into a prominent arena where people can showcase their supremacy over one another, performance is the central theme of all sports.

The way to gauge participation in sports is by sports performance. A complex fusion of biomechanical processes, psychological variables, and training methods goes into sports performance. In the context of sports, performance is commonly understood to signify the quest of perfection, whereby an athlete evaluates his performance as a step toward success or excellence. It is well known in sports that athletes who are motivated by performance are typically elite or competitive; athletes who are motivated by simple participation, for more general goals like weight management or fitness, are frequently recreational athletes who do not have performance targets in mind.

Sports performance will be impacted by the training in two separate ways, both positively and negatively. An athlete's primary source of guidance regarding training, strategies, diet, and sports technique is their coach. The coach is responsible for staying current with all sports-related advancements. The athlete won't be able to achieve the greatest outcome if one of these areas is not properly trained in. Because of the closeness and intensity of the relationship, a coach is also one of the athlete's primary emotional supports.

Agility, quickness, responsiveness, and explosive movements are the foundation of sports performance. The focus of conventional training is typically more on muscular growth and body transformation. It is necessary to create a program with sports performance training tailored to that particular sport.

In order for athletes to compete at the greatest levels, gifted kids must be identified early on and given the best scientific instruction possible. It is becoming clear that children who possess skill in a given activity or sport are the only ones who can attain truly exceptional sporting performances. Anyone can learn how to paint, dance, and sing. However, very few people ever achieve a high degree of proficiency.

Consequently, in sports as in the arts. The most gifted kids should be recognized as soon as possible and included in a structured training program to help them into exceptional athletes. As a result, one of the most crucial issues facing modern sports is how to find the most gifted youngsters.

Specific hereditary traits, robust physiological qualities, and the lifter's psychological makeup were all necessary for optimal performance in sports. However, it is also clear that not all lifters who possess the innate prerequisites will be successful in their athletic endeavors. Further important aspects that impact the development of hereditary performance attributes are proper coaching, diet, training facilities, dedication, and a hardworking nature. On the other hand, it might be argued that, under all other conditions, the innate performance capacities directly influence how one's sporting potential develops.

Specialized biological profiles of individuals with exceptional motor skills and robust physiological and psychological characteristics are required for high performance sports. The state of a person's physical development and maturity must be taken into account when estimating their potential for motor talents at a particular age. Understanding normal growth encompasses not only the typical rate of growth at a specific age but also the typical range of growth. The guidelines specify the range that a person's measurements should fall into when their body is growing normally at a particular age. It is crucial to understand that physical maturity and size have an impact on how well a person performs motely. Although size and maturity tend to rise with age, each person experiences this growth at a different rate. With the degree of physical maturity in mind, an individual's capabilities can therefore be more accurately appraised, allowing expectations to be established and physical activities to be scheduled appropriately.

Background of Volleyball

Volleyball is a great game that offers many benefits. It is an intense and quick- paced game that demands skill, strength, agility, teamwork, and intelligence from its players due to its intense competitive nature. At its most basic, it's a simple, enjoyable game that anyone, even small children and novices, can easily pick up and enjoy. Boys and girls, as well as men and women, can play together for enjoyment.

One of the most prosperous, well-liked, competitive, and leisurely sports in the world is volleyball. It moves quickly, is thrilling, and features explosive action. However, volleyball is distinct from other rally games due to a number of important overlapping aspects that work in concert with one another. Rivalry reveals hidden talents. It demonstrates the highest level of talent, spirit, originality, and beauty. All players in volleyball, with a few exceptions, are able to attack and block at the net as well as defend or serve from the back court.

One of the most popular team sports in the world is volleyball. Volleyball is the most popular indoor competitive sport in numerous countries. In terms of participation worldwide, it comes in third place **(Welch, 1966).**

In volleyball, players from two teams—typically consisting of six players each—use their hands to bat the ball back and forth over a tall net in an attempt to get it into the opponent's end of the court before they can return it. Before the ball touches the court, a player on the other team bats it up and toward a teammate. That teammate can then volley it back across the net or bat it to a third teammate, who will also volley it across the net, to prevent this from happening. The ball must be returned over the net after a team's three allotted touches.

Like all team sports, volleyball necessitates frequent, intense workouts. In order to succeed in competition, a volleyball player needs to be able to quickly produce force while performing accurate sport-specific abilities like blocking and spiking. Furthermore, it goes without saying that maintaining a high enough power production during a game is essential to winning sports. The length and intensity of the previous exercise session, the person's nutritional state, and the amount of time allotted for metabolic recovery all affect how quickly and to what extent an individual recovers after exercise.

Volleyball players have to execute many maximal effort jumps and rapid sprints, with varying intervals of lower intensity training or short rest intervals in between. The majority of the energy required during high-intensity play comes from anaerobic metabolism. But as the game progresses, aerobic metabolism contributes more to meet the overall energy expenditure. The patterns of play, which differ significantly between

players and between matches, impose cycles of action and rest. The strategies and skill of the opponent also affect the demands placed on each player.

The amount of energy used in games with complicated movement patterns has received comparatively less attention than in continuous exercise activities like cycling and running. The absence of suitable experimental models to examine these processes in the lab could be the cause of this. Nonetheless, a few standardized models of intermittent exercise that mimic the activity patterns seen in team sports have recently been created. This chapter explains how these protocols have provided some insight into the metabolic processes that take place during match-play activity and their significance for reaching peak performance, together with measures taken during the competition itself.

Volleyball Demands:

When played correctly, volleyball is a team sport that demands a high level of ability and can be immensely gratifying. It is undoubtedly regarded as a recreational and competitive sport that may be practiced by families spending a day at the beach, professional players, and school teams.

Good speed, power, and agility are essential for success in volleyball, in addition to a high degree of skill! Which of these, though, is more significant? The explanation of volleyball's fitness requirements that follows can be useful in creating training plans, analyzing the findings of fitness tests, and assessing a player's relative strengths and weaknesses.

We are conducting a survey to determine which aspect of fitness is most critical to volleyball performance. The factors that readers of this site deem most important are power, agility, speed, flexibility, balance and coordination, and cardiovascular endurance, among the other options that include body size and composition, muscle strength, muscular endurance, power, speed / quickness, agility, and balance / coordination. You can view the most recent results and add your vote.

We asked respondents to a similar survey to rank the 12 sports success elements. Each of these elements has been ranked by site visitors for the sport of indoor volleyball, and they have determined that skill, balance/coordination, agility, reaction time, and

speed/quickness are the most crucial. Along with seeing the most recent outcomes, you can also rate What Qualifies Successful Indoor Volleyball Players.

Volleyball is an intense and energetic game. The game is unpredictable due to the fast-paced play, constantly-changing circumstances, and the athletes' need to perform intricate and frequently stunning moves on both offense and defense. Three main elements have an impact on volleyball performance:

- Cue reading: The capacity to recognize and interpret pertinent information while it is being played. Play also necessitates a variety of motor skills and physical athleticism, which allow the player to perform motions with the needed degree of force, speed, amplitude, and precision.
- Decision-making: The capacity to quickly and accurately select the appropriate course of action (what, where, when, and how). Making a decision is the mental process that leads to choosing one course of action from a range of other options. It is the player's responsibility to select the appropriate course of action and to do so quickly in a gaming scenario. Making decisions is critical in volleyball. A player's skill level can be very ineffective and have less of an influence if they are unable to make fast decisions and decide what to do in a particular set of game conditions.
- Skill execution: The capacity to use the different tactics and actions that the game requires of you. A range of motor skills and physical athletic prowess are also required for play, enabling the player to execute movements with the necessary level of precision, force, speed, and amplitude of movement.

Physical educators and coaches with a greater scientific understanding of sports are finding it more and more vital to understand physical attributes and the dynamics of motor fitness. Sportspeople find that trial and error and guesswork are insufficient strategies to prepare them for elite contests. It is therefore possible to forecast the players' playing capacity thanks to the professional knowledge of scientists, coaches, physical educators. Technique may be constrained at the higher skill level by performance traits, physical attributes, and physical fitness. Volleyball programs can efficiently utilize players' physical fitness qualities and volleyball talents. Because of this, the researcher wants to determine how several aspects of physical fitness relate to

volleyball players' skill performance. Thus, the current investigation has been conducted.

1.2 Statement of the Problem

The purpose of the study was to find out the relationship of motor fitness components with skill performance of volleyball players.

1.3 Objectives of the Study

- To determine how certain aspects of motor fitness relate to volleyball players' skill performance.
- To determine how much each component of motor fitness contributes overall to volleyball players' skill performance.
- To identify the most adaptable motor fitness component factors that might be used to assess volleyball players' skill performance?
- To formulate the regression equation for estimating their output.

1.4 Delimitation

- The study was delimited to Veer Narmad South Gujarat University, Surat, 180 boys' volleyball players.
- The study was delimited to male players who were between the ages of 17 and 25.
- Players who participated in intercollegiate competition at least once were taken into consideration for the study.
- Libero players weren't taken into consideration for the study.
- The study was further delimited to the following motor fitness components and AAHPER volleyball Skill Test of volleyball players.

Motor Fitness Components:

1. Speed
2. Agility
3. Flexibility
4. Explosive power
5. Cardio – vascular endurance

AAHPER Volleyball Skill Test:

1. Volleying Ability
2. Service ability
3. Passing ability
4. Set-up ability

1.5 Limitation

- A number of variables, including the respondents' daily schedules, eating habits, physical and social settings, motivational factors, and other uncontrolled variables, are regarded as study limitations.
- It was acknowledged as a restriction that the influence of the aforementioned elements on performance and physical attributes could not be evaluated.
- The fact that the subjects' volleyball playing performance could be influenced by the training facility, student competition, and coach's expertise was also taken as a limitation.
- Fitness and psychological factors that may have affected volleyball playing performance were also considered as a limitation.

1.6 Hypothesis

- There would be significant relationship between selected motor fitness components with the volleyball skill test.
- There would be significant contribution of selected motor fitness components to the volleyball skill test.

1.7 Definition and Explanation of the Terms

Motor Fitness:

The neuromuscular components of fitness that allow an individual to excel at a specific motor skill, game, or activity. Agility, balance, coordination, power, speed, response time, and balance are examples of specific motor fitness components. Sometimes, skill-related fitness is used to refer to motor fitness.

Speed:

The ability to move one's body fast, in whole or in part. Examples: When a player must move fast from the baseline to reach a drop shot near to the net, such as in tennis, sprinting, speed skating, and sprint cycling, speed is crucial.

Agility:

The capacity of body parts to alter direction quickly and precisely is known as agility.

Flexibility:

The capacity to move the body and its parts through the greatest range of motion without putting undue strain on articulations and muscle attachments was referred to as flexibility.

Explosive Power:

It involves the capacity to exert maximum force in a short period of time, improving an athlete's performance in their particular sport.

Cardiovascular Endurance:

The capacity of your heart and lungs to provide the necessary oxygen to your body during medium-to high-intensity activity is known as cardiovascular endurance or aerobic fitness. You can exercise at medium effort for a long period (and high intensity for a short while) before becoming exhausted if you have good cardiovascular endurance.

Skill:

The word "skill" indicates that there has been some learning, that there has been a smoothing or integrating of behavior, that unnecessary motions have been eliminated, and that the performance is carried out with increasing speed and accuracy, a reduction in errors, or possibly the capacity to apply more force."

Volleying:

Contact styles like volleying assist you in preparing your teammates to attack and smash the ball over the net. Similar to bumping, establishing is a hand skill that unexpectedly depends on force from the lower body.

Service:

If a player wants the ball to land inside the court's lines, they must strike it with their hand over the net. Players can serve overarm or underarm, though very few top players would ever offer an underarm serve.

Passing:

An opponent's attack ends with a volleyball pass. Additionally, passing signals the start of the volleyball attack for your team. Volleyball players should try to successfully pass the ball to a teammate on the court after fending off an opponent's attack.

Set-up:

The second pass is called setting, and it can be used to dump the ball over into an open area or to "set" it so that the batter can spike it over. A high ball that is only inches from the net constitutes the ideal set.

1.8 Significance of the study

When discussing the components of physical fitness, one must prioritize developing the following: skill-related components: agility, coordination, reaction time, balance, power, and speed; health-related components: strength, cardiovascular fitness, flexibility, body composition, and muscular endurance; and to achieve the desired performance, one must develop each component equally and to its fullest.

- This study will make it easier to find out which factor significantly affects volleyball game performance.
- The study's findings and substance are rather beneficial for collegiate volleyball players looking to increase their performance and level of fitness.
- The study's findings are crucial because they will help coaches and physical education teachers create a customized program to find skills that are directly linked to a batter's volleyball success.
- The study could be useful in developing the training program.
- Young scholars working in related fields and disciplines can benefit from the study's findings.

CHAPTER – II

REVIEW OF LITERATURE

A review of relevant and related literature is an essential first step in order to have a comprehensive understanding of what has been done and proposed with reference to the subject under study. A review like this leads to a better understanding and perspective of the field as a whole. The researcher has given a quick synopsis of the research articles that have been published in relation to the current investigation.

Chahal et. al. (2023) study set intended to determine the "relationship between the performance of a volleyball player and their speed, agility, muscular strength, explosive strength, and muscular endurance." Twenty Chhatrapati Sambhaji Nagar intercollegiate volleyball players who were taking part in an intercollegiate volleyball competition were chosen as study subjects. Their ages fell between twenty and twenty- five. statistics for examination, The relationship between volleyball performance and a few other factors, such as speed, agility, muscular strength, explosive strength, and muscular endurance, was calculated using zero order correlation. The findings demonstrated the maximum correlation between an individual's physical fitness components—speed, agility, explosive strength, muscular strength, and muscular endurance—and volleyball performance. At the 0.05 level of confidence, the coefficients of association between volleyball players' performance and speed (r=-0.668), agility (r =- 0.81), explosive strength (r = 0.52), muscular strength (r = 0.65), and muscular endurance (r = 0.72) were found to be significant. The results suggest that crucial factors for improved volleyball play were muscular endurance, strength, speed, and agility.

Ayat (2022), study was to determine the association between the motor reaction speed and the performance level of volleyball defensive and receiving skills in order to establish a training program. Data was gathered from 28 volleyball players at the Sport School in Hadayek al-Qubba, Cairo, in 2021–2022, using the experimental method employed by the researcher. The research's findings showed that the suggested training program helps volleyball players improve their motor response speed. It also showed a strong relationship between the players' ability to receive and defend the ball and their motor response speed.

Kaur (2022) the objectives of the current study are to determine the intracorrelation between certain volleyball playing abilities and the link between the motor skills and

playing abilities of female volleyball players in secondary schools. A sample of one hundred eighty (180) female secondary school volleyball players from the state of Punjab, ages 14 to 19, were examined. Players who took part in district and interdistrict tournaments are included in the sample. To assess their performance in the game, five playing ability tests were chosen, including the wall volley test (AAHPER1969), target pass, upper hand pass, underhand pass, and service (Singh 1990). The majority of motor skills are found to be associated to each volleyball playing skill, and all volleyball playing skills are shown to be related to each other, but three skills exhibited lesser relationships. Based on the link found between volleyball players' performances, it can be inferred that volleyball players can enhance their performance by developing their strength, explosive power, speed, and agility.

S. Trecroci (2021), study was to look at the connection between young volleyball players' physical performance and fundamental cognitive processes. A total of forty-three female volleyball players, ages 11.2 ± 0.8 years, underwent cognitive performance tests that included the visual search task, the flanker task, which measures executive control, perceptual quickness, and simple response time (clinical reaction time). Additionally, a battery of tests was utilized to evaluate motor skills (change of direction, vertical jump, and balance) and volleyball-specific skills (precision of setup, passing, and serving). A significant positive connection ($r = 0.45$, d-value = 1.01) was observed between the cumulative score that summarizes cognitive functions and the cumulative score that summarizes physical performance unique to a given sport, according to Pearson's r correlation analysis. Moreover, there were discovered to be small-to-medium associations (d-values ranging from 0.63 to 0.73) between motor and cognitive abilities. These results imply that volleyball players with higher basic cognitive functions also have better physical performance tailored to the sport, based on the cumulative scores. Our results support further research into the relationships between cognitive and motor abilities in the context of athletic performance.

Uslu et. al. (2021) study's objective was to investigate how teenage volleyball players' motor skills and volleyball-specific technical skills relate to one another. Eighty volleyball players (40 male and 40 female, ages = 16, 70, 1, 09) freely took part in this study. Tests of motor function (dynamic equilibrium, grip strength, and back

strength, leg strength, vertical jump, flexibility, agility, medicine ball throw, nelson hand reaction, and nelson movement speed in addition to volleyball skill assessments (service, bump, and finger passing hit rate). Using the SPSS 23 package application, the Spearman correlation test was utilized to ascertain the association between the study's data. The volleyball skill tests of both male and female volleyball players show a positive correlation with the averages of shoulder ankle flexibility, dynamic balance of the right and left feet, claw strength (right-left), vertical jump, medicine ball throw, back and leg strength ($p<0.05$). Agility, hand reaction, and arm movement speed rates showed a highly significant negative correlation ($p<0.05$). Nevertheless, no statistically significant correlation was seen between the rates of bump passing hits and the vertical jump, claw strength, right- left, and hand reaction speeds ($p>0.05$). The study's findings show that, among both male and female volleyball players, there is a highly substantial correlation between a few key motor skills and volleyball-specific technical skills.

Budhe (2020), this study is to compare the motor fitness components of various athletes. In the highly competitive sports environment of today, motor fitness components are essential to success. The researcher chose thirty-eight (N = 38) male individuals, ages 18 to 28, with the following characteristics: mean ± SD: age 20.31 ± 1.82 years, body height 160.62 ± 7.61 m, body mass 55.07 ± 8.13 kg. All analyses were conducted using SPSS version 14.0, the Statistical Package for the Social Sciences. One-way Analysis of Variance (ANOVA) was used to examine the significance of differences in the means of each group for each selected variable. In all analyses, the 5% critical threshold ($P<0.05$) was deemed to indicate statistical significance. To put it briefly, the results showed that there were negligible differences between inter-varsity handball, volley ball, and basketball players on the sub-variables of motor fitness components, such as flexibility, balance, agility, and speed.

Kumar and Sharma (2020) the research is to determine how male intercollegiate volleyball players' playing skill is correlated with their motor fitness and psychological factors. Thirty outside hitters who competed at the intercollegiate level in volleyball for various colleges at Punjab University and represented their schools in intercollegiate competitions were specifically chosen as study participants; their ages

ranged from 18 to 23. Three psychological variables—cognitive anxiety, somatic anxiety, and self-confidence—as well as four motor fitness variables—speed, agility, strength, endurance, and flexibility—were taken into account as independent variables. The relationships between the chosen dependent and independent variables were ascertained using the data that was gathered. The relationship between the chosen variables was ascertained using the Karl Pearson's Product Moment Coefficient of Correlation. A fixed significance level of 0.05 was applied. The findings indicated that agility, cognitive anxiety, and self-confidence were positively correlated with male volleyball players' playing ability, whereas no significant link was found between the remaining variables and playing ability. The two most important factors for improving volleyball players' playing abilities are psychological and motor fitness.

Govindaiah et. al. (2019), the aim of the study is to determine how university men's volleyball players' playing ability and various motor fitness metrics relate to one another. Thirty-five university-level volleyball players, ranging in age from 18 to 25, who had represented their respective universities in the South Zone Volleyball Tournament 2018 were chosen at random to serve as study participants. In terms of the motor fitness variables, the independent variables included muscular strength, explosive power, speed, agility, flexibility, and endurance. The Coaches Rated Scale, which uses a 10-point rating system, was used to evaluate playing skill, which was seen as a dependent variable. The relationships between the chosen dependent and independent variables were ascertained using the data that was gathered. The relationship between the chosen variables was ascertained using the Karl Pearson's Product Moment Coefficient of Correlation. The significance threshold was set at 0.01 and 0.05. The findings showed a positive association between men's volleyball players' playing ability and the following characteristics: flexibility, muscular strength, explosive power, agility, and cardiovascular endurance. For volleyball players to advance in their playing abilities, motor fitness is paramount.

S. Kumar et. al. (2019), the current study was to evaluate the connection between cricket players' sports performance and motor fitness. The subjects of the current study were sixty-four (N=64) cricket players who placed in Punjab University's Chandigarh intercollege championship. Tests for shoulder strength, abdominal

strength endurance, agility, explosive leg power, speed, and cardiovascular endurance were used to assess the motor fitness variables. These tests included pull-ups, sit-ups, shuttle runs (4 x 10 m), standing wide jump, 50-yard dash, and 600-yard run/walk. Cricket players' sports performance was examined in connection to motor fitness characteristics using Pearson's Product-Movement Correlation Test. The current study's findings showed that motor fitness factors are positively correlated with improved sports performance in cricket players.

Sudhakara (2018) the purpose of the study was to determine how specific motor fitness affected men's collegiate volleyball players' skill performance.Techniques: For the goal of this study, forty (40) male intercollegiate volleyball players were chosen to serve as subjects. At the Davangere University intercollegiate tournament, information about motor performance was gathered from the following tests: the modified sit and reach test was used to assess flexibility; the medicine ball throw test was used to assess shoulder strength; the vertical jump test was used to assess leg explosive power; the volleying test was used to assess skill performance; and the 50-meter dash test was used to assess speed. The statistical approach of coefficient of correlation was employed to test the acquired data in order to verify the study's hypothesis. According to the statistical analysis, there is a correlation between a certain motor fitness level and skill performance among collegiate volleyball players. Physical attributes such flexibility, speed, endurance, strength, and leg power are favorably connected with the ability to play volleyball, taking into account the study's limitations and findings. The study's findings indicate that certain physical attributes have an impact on volleyball players' performance.

Mroczek, et. al. (2017) this research is to identify synergistic motor outcomes, which are sets of mutually dependent players' motor skills that influence how well young volleyball players perform. The study was conducted among 150 boys between the ages of 14 and 15 during a national volleyball competition. Two cameras, positioned 1.6 meters above the floor and 10 meters behind the end line, were used to record the matches. The efficaciousness of the assault, block, and serve characteristics were evaluated. The players' serves, blocks, and attacks—the acts that had the biggest impact on the predetermined result—were the initial dependent variables. With the exception of ineffective serves, players' serve results showed the biggest variations,

with the index of variability ranging from v = 67.14 (counter-effective serve) to v = 80.23 (effective serve). The results of the study demonstrated that while blocking efficacy is influenced by the height of the running vertical jump, serving and attacking effectiveness is directly correlated with standing jumping ability.

Vileep and Virupaksha (2017) study was to know the role of selected Motor Fitness in Skill performance among Intercollegiate Volleyball Players. Methodology: In order to achieve the purpose of the study forty (40) inter-collegiate volleyball male players were selected as the subjects. During inter collegiate tournament of Kuvempu University from the data pertaining to the motor performances such as flexibility was assessed with the help of modified sit and reach test, speed was assessed with the help of 30 meter fly start, endurance was assessed with the help of 30 second Burpee test, strength was assessed with the help of medicine ball throw test, leg power was assessed with the help of standing broad jump, skill performance was assessed with volleying test, Service test, passing test, set- up test. The data collected was tested with coefficient of correlation statistical technique to test the hypothesis of the study. Results: The statistical analysis shows coefficient of correlation in role of selected Motor Fitness in Skill performance among Intercollegiate Volleyball Players. Conclusion: In view of the finding and limitation of the study, the physical qualities such as flexibility, speed, endurance, strength, and leg power are positively correlated with volleyball playing ability. The result of the study shows that the selected physical qualities contribute in performance of volleyball players.

Yadav (2017) Finding the correlation between motor fitness factors and badminton players' performance was the aim of this study. Twenty (20) male badminton players from Pt. Ravi Shankar Shukla University in Raipur and Guru Ghasidas Vishwavidyalaya in Bilaspur were chosen as study subjects. The subjects' ages were limited to 20 to 28 years old. For the objective of this study, a variety of motor fitness measures, including flexibility, leg strength, and speed, was chosen. At the 0.05 level of significance, the correlation between badminton performance and the chosen variables was calculated using zero order correlation. According to the study's findings, flexibility was considered significant at the 0.05 level of significance. Furthermore, based on the study's findings, the following conclusion was reached: respondents' flexibility was a key factor in their improved badminton performance.

Gangey and Kerketta (2016) study was to examine the relationship between selected motor fitness and volleyball playing ability for which 30 volleyball players were selected from Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) and their age ranged from 18-28 years. The selected motor fitness: agility, coordination and reaction time test were measured by conducting side step test, eye-hand coordination (ball transfer) test and nelson finger reaction test. Brady's volleyball skill test was used to assess the volleyball playing abilities of the selected subjects. Mean and Standard deviation were used as descriptive statistics. Pearson Product Moment Coefficient of correlation with significant level at 0.05 was used to examine the correlations between volleyball playing ability with agility, balance, coordination and reaction time. The statistical analysed was carried out using MS Excel and SPSS 16.0 version. The findings of the present study showed that there was significant relationship found in agility, coordination and reaction time in correlation between volleyball playing ability of Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.).

Naidu (2016) study's goal was to determine how certain aspects of physical fitness for performance related to jumpers' abilities. Fifty male athletes representing the state of Andhra Pradesh at the junior national level provided data for this study. The individuals' ages ranged from eighteen to twenty years old. Locomotor speed, leg explosive strength, agility, flexibility, and orientation coordinate ability (orientation test) are the chosen performance physical fitness components. Pearson's Product Moment Correlation was used for the analysis, with a significance level of 0.05. The results demonstrated that there was a substantial correlation between long jump ability and explosive strength, locomotor speed, and agility. Conversely, there was no discernible correlation found between flexibility and orientation coordinate ability.

Sing and Sing (2016) study's objective is to evaluate the association between psychomotor capacities and particular sports skills in volleyball. To achieve the study's goals, a sample of One Hundred Twenty (N=120) male intercollegiate volleyball players from the northern part of India were purposefully chosen. After each participant was made aware of the agreed to participate in the study, understood its purpose and methodology, and offered their time. A data analysis tool is the Pearson Correlation Coefficient Calculator available online. The Pearson's product moment correlation coefficient approach was utilized to determine the association

between specific psychomotor skills, coordination abilities, and skill-related fitness components and volleyball skills. A significance threshold of $p \leq 0.05$ was deemed appropriate. In summary, the aforementioned research indicates that volleyball players' serve, setup, and receive performances are highly influenced by their psychomotor skills, specifically their kinesthetic perception and speed of movement.

N. Rama Chandra Rao and R.V.L.N. Ratnakara Rao (2015) study was to examine the influence of selected physical fitness components at different temperatures for spiking. Ten collegiate level male Volleyball players of VITAM College of engineering, Visakhapatnam, participated in this study as subjects and they have undergone in speed and explosive strength training for seven days. The subjects were selected in the age group of 18-21. The collected data was analyzed by using t-test. The findings of this study revealed that there is a significant difference in speed and explosive strength after training.

Yadav and Malik (2015) study was to determine the physical fitness of the volley ball players and their performance related to their volley ball game. The various factors which influence the power game, especially the physical fitness variables pertinent to speed, endurance and even overall performance of volley ball players between University Players and National Players at Delhi University. The national players have scientifically proved better than university players in majority of Physical fitness variables speed, endurance, from university volley ball players. In the present scenario the academic standards in volley ball game have been playing a significant role in the creeping performance of the game. Hence it is concluded that the physical fitness plays a vital role on the performance of the players. The physical activity can act as an antidote to some kinds of fatigue; youngsters will be harmed through sustained exercise- if they are fit, their physical endurance is great, and the exercise will be conductive to good health.

Devi (2014) the study was to determine how different playing strategies affected certain motor fitness components in collegiate female volleyball players. Thirty female volleyball players from Sports University College in Chennai were chosen as participants for the current study in order to fulfill its objectives throughout the academic year 2012– 2013. The selection of the subjects was done at random. The

individuals' ages ranged from 18 to 25 years old. The obtained data were subjected to statistical analysis employing test means on particular dependent variables independently and analysis of Pearson correlations to ascertain the difference. The significance level was tested in each case using a constant 0.05 level of confidence. The study's findings show that there were notable differences in the speed and agility of female volleyball players.

Sahin (2014) study was to determine the relationships between acceleration, agility, and jumping ability in female volleyball players. A total of 12 female collegiate volleyball players were examined. The mean (SD) age was 20, 10±1.197 years, height was 1.74±0.057 m, and weight was 61, 30±4, 244 kg for the 12 volleyball players. In this study, the T test for agility, acceleration test, and vertical jump test were used. A significant negative correlation existed between vertical jump with acceleration and agility ($P<0.01$). Vertical jump was highly correlated with acceleration and agility ($r = - 0.799, -0.777$, respectively). In conclusion, the present research showed vertical jump performance for collegiate female volleyball players that positively affected acceleration and agility. Also, relationship between jump performance and acceleration, agility in volleyball is very important to produce high force and rapid stretch shortening cycle movements and high-speed whole body movements. Vertical jump performance, working with volleyball teams, need to be able to administer efficient, but relationship between vertical jump and acceleration, agility needs to be determined in longitudinal training investigations. Vertical jump and agility, acceleration development program can be designed with minimal cost and equipment. The results of this investigation show that coaches can utilize agility and acceleration training for vertical jump development.

Cox (2013) this research was to investigate the relationship between team performance in volleyball and the skill components of serving, service reception, setting, spiking, spike defense, and free ball passing as measured by adapted charting procedures. A purposive sample of 107 games between the best “AA” teams in each of 9 Northwest volleyball tournaments was charted. The results of the study indicated that, considered together, the volleyball skills studied were significantly related to team performance. Further analysis of the nature of the relationship revealed that the order of volleyball skills most influential in predicting team success was spiking,

followed by spike defence, service reception, setting, serving, and free ball passing, respectively.

Taware et al. (2013) study was aimed to assess flexibility, muscular endurance, power and cardio-respiratory endurance of volleyball players and to compare the results with age matched controls. Also, to compare the findings of the volleyball players with that of the international norms from the available literature and to make some suggestions for the improvement in their performance level. Material and Methods: The study was carried out in 40 male volleyball players aged between 17 to 26 years and 40 ages matched male controls. Physical fitness parameters namely flexibility, muscular endurance, power and cardio-respiratory endurance were measured; data was analyzed using unpaired t-test. Results: It was ob-served that all physical fitness parameters were significantly more in players as compared to their aged-matched controls but when values of the subjects were compared to international standards; our subjects were behind the recommended norms for the elite volleyball players. Conclusion: The volleyball players have more advantage of flexibility muscular endurance, power and cardio-respiratory endurance..

Xavier Maria Raj (2013) study was to assesses to know the certain variables, which are innate in a player that would contribute for the development of volleyball performance. To achieve the purpose of the study ten D.D.U. Gorakhpur male university players (group I) and ten intercollegiate male players from St. Andrew‟s P.G. College (group II) was selected as subjects. Random group design was employed. The best timing of the two trials was selected to collect the data unselected skill test (Brady volleyball skill test and Russell Lange serving skill test) and motor Fitness components (explosive power, agility, flexibility and speed).To analyze the selected motor fitness components and skill performances of university represented and non-represented volleyball players, Pearson product moment correlation and ‘t’ test was employed; the proposed hypothesis was tested at .05 level of confidence. The results indicates that the correlation coefficient between explosive power with agility, explosive power with flexibility, explosive power with speed, flexibility with speed and inter correlation between Brady volleyball test with flexibility were significant. The result also reveals that the performance of university represented and non-

represented volleyball players on both the skill test were differs significantly at .05 level of confidence.

Sing (2012) study's objective was to measure the correlation between chosen biomechanical component to the Set Shot performance. The study was restricted to Lucknow University's male basketball players. Only the 11 patients who were right-handed shooters were included in the study. Basketball's set shot was biomechanically analyzed using Silicon Coach Pro 7. A high-speed Casio Exilim F-1 camera. The participants were forced to take just three shots. The body's angular kinematical variables were computed at the time of execution. To examine the data, person's product moment correlation was used. 0.05 was selected as the significance threshold at which to test the hypothesis. The individuals' performance was found to have no significant link with the Ankle, Knee, Elbow, and Hip joints, but the Shoulder and Wrist joints demonstrated a significant relationship.

Kalepwar (2011) studied of effect of general physical fitness on the sport performance of volley ball players. The objectives of the study were to measure the physical fitness level of volleyball players. To delineate the relationship between physical fitness and the sport performance of volley ball players. The study was conducted in Nanded district of Marathwada region. Ninety six (96) volley ball players who represents different volleyball tournament at college and inter college level have been selected. The components of general physical fitness finalized by the coaches in charge of Netaji Subash National Institute of Sports (NSNIS), Patiala having poor, satisfactory, good, very good and excellent grading and scoring have been selected. The performance of volleyball players have been judge and classified. The data have been collected with the help of well structured questionnaire by survey method. Growth and development are the manifestations of life and their rate and quality indirectly reflects the general health of an individual. Health of an individual is determined through the study of somatometric variables and body components. Many hereditary and environmental factors are responsible for influencing the health of an individual. The health, the physical endurance, the agility and tenacity are usually different.

Tiwari et. al. (2011) study was to determine how a badminton player's performance was correlated with their speed, agility, shoulder strength, explosive strength, and muscular endurance. Thirty state-level badminton players from Lucknow who were competing in state championships were chosen as study participants. Their ages fell between twenty and twenty-five. The following tests were used to estimate badminton performance, speed, agility, shoulder strength, explosive strength, muscular endurance, and- A panel of experts graded the badminton. To analyze the relationship between badminton performance and particular characteristics, such as speed, agility, shoulder strength, explosive strength, and muscular endurance, zero order correlation was used. The outcome demonstrated that an individual's badminton performance is most correlated with all of the motor fitness components (speed, agility, explosive strength, shoulder strength, and muscular endurance). At the 0.05 level of confidence, the coefficients of association between badminton players' performance and speed (r = - 0.667), agility (r = -0.83), explosive strength (r = 0.55), shoulder strength (r = 0.69), and muscular endurance (r = 0.75) were found to be significant. The results show that key elements for improved badminton performance were muscular endurance, speed, agility, explosive strength, and shoulder strength.

Marques and Marinho (2009) study was to investigate the anthropometric and strength characteristics of elite male volleyball athletes and determines if differences exist in these characteristics between starters (S) and non-starters players (NS). A group of 22 professional male team volleyball players participated in the study and the players were categorized as S (n= 13) and NS (n= 9). Anthropometric characteristics, countermovement jump, overhead medicine ball throwing and maximal dynamic strength were evaluated in all the subjects. Significant differences in age, height and weight were noticed between S and NS. There were no significant differences between the two groups in strength and power values, except for squat performance, where S were significant strong than NS. These findings provide normative data for elite male volleyball players competing in specific playing status. From a practical perspective, sport scientists and conditioning professionals should take specific lower body strength characteristics of volleyball players into account when designing individualized training status specific training programmes.

Bhadoria (2003) examined the relationship of agility, strength and flexibility to playing ability in volleyball. For this purpose twenty four-volleyball player of the Lakshmibai National Institute of Physical Education, Gwalior was selected as the subjects. By administering the tests for arm strength, abdominal strength, leg strength, agility, wrist flexibility, and ankle flexibility collected data was statistically treated by using Product moment correlation (Zero). The finding of the study revealed that strength measures of leg, arm, abdomen and agility contributed significantly to the playing ability of volleyball with leg strength dominating the arm and abdomen strength.

Sheela (1994) studied to determine the relationship of power, agility, flexibility, muscular endurance and cardio respiratory endurance to measure playing ability in volleyball. Thirty volleyball players of Lakshmibai National College of Physical Education, Gwalior acted as subjects. Power was measured by sergeant jump, and agility by side step test, flexibility by trunk flexion test, muscular endurance by pull ups and bent knee sit-ups and cardio respiratory endurance by one minute lateral jump test. The playing ability was the subjective judgment of a panel of three experts for each subject. Product moment correlation was used to statically analyze the data. On the basis of the significance motor fitness component underlying performance in the game of volleyball. Muscular endurance, cardio respiratory endurance and flexibility also contributed to the volleyball playing ability. Agility showed an in significant relation to playing ability in volleyball.

CHAPTER – III

RESEARCH METHODOLOGY

This chapter discusses the process, methodology, and instruments used in research to produce findings. The procedure adopted by the investigator in making selection of subjects, selection of variables, administration of the test, reliability of data, collection of the data and statistical techniques for analysis the data have been described in this chapter.

3.1 Selection of Subjects

For the present study the selection of the sampling was based on Veer Narmad South Gujarat University, Surat Volleyball intercollege tournament. Here for this said tournament participating colleges were divided into four zones, Surat city, Surat Rural, Bharuch and Valsad district respectively. Out of these zones the four semi-finalists team of each zone means sixteen best teams, four from each zone having 192 male best players based on their performance, select total 180 subjects out of 192 for the present study. The subjects selected was in the age range of 17 -25 years.

After being informed of the study's requirements, each participant willingly consented to participate in the testing program. The research scholar met and had a special conversation to orient the subjects on the research study. A detailed explanation of the testing, experimental process, and exercise schedules was provided so that the subjects would know exactly what to expect and how much effort would be required of them.

3.2 Selection of Variables

In order to determine the optimal factors, the researcher conferred with volleyball coaches and studied a number of scientific journals. Furthermore, drawing from their expertise and background in the field, the researchers selected the following variables for the current study: Motor fitness components (independent variables) and skill test (dependent variables) of volleyball players.

Motor Fitness Components:

1. Speed
2. Agility
3. Flexibility
4. Explosive power
5. Cardio – vascular endurance

AAHPER Volleyball Skill Test:

1. Volleying Ability
2. Service ability
3. Passing ability
4. Set-up ability

3.3 Tools and Techniques of research

Technique and measuring tool for this study as are followed:

Table 3.1 :Motor Fitness Components

Sr. No.	Motor Fitness Components	Methods	Unit/Measures
1.	Speed	50 Yards Dash	Second 1/100
2.	Agility	4 X 10 m shuttle run	Second 1/100
3.	Flexibility	Seat and Reach	Centimetres
4.	Explosive power	Sargent jump	Centimetres
5.	Cardio – vascular endurance	Cooper's 12 minutes ran/walk	Distance Covered

Table 3.2 : Skill Test Administration (AAHER Volleyball Test)

Sr. No.	Skill	Unit / Measures
1	Volleying Ability	AAHER Volleyball Test
2	Service ability	AAHER Volleyball Test
3	Passing Ability	AAHER Volleyball Test
4	Set-up Ability	AAHER Volleyball Test

3.4 Reliability of the Data

By determining the instrument reliability, tester competency, test reliability, and subject reliability, the data reliability was guaranteed.

Instrument Reliability:

Stopwatch, measuring tape, starting clapper, seat and reach box, marking cones, chock powder, volleyball net and volleyball etc., were reliable and available at R.K. Desai College, Valsad.

The manufacturers made sure that instruments were calibrated and reliable. The study employed highly dependable and exact tools to measure the subjects' performance on several criteria. The fact that the same tester used them again on the same subject in comparable circumstances served as additional confirmation of their reliability.

Tester competency and Reliability of the tests:

The investigator underwent several practice sessions in testing procedure under the knowledgeable supervision of professionals to make sure they were well- versed in the methods of carrying out the tests. Together with the test dependability, the testers' competency was assessed. Test-retest scores were obtained by randomly selecting 20 male volleyball players and measuring their performance twice in order to assess the reliability of the tests. Each measurement and test had a Pearson's Product Moment Correlation calculated, which is shown in Table 3.3.

Table 3.3 : Motor Fitness Components Test Reliability Coefficients on Retest Scores

S. No.	Test	R Value
1	Speed - 50 Yards Dash	0.86*
2	Agility - 4 X 10 m shuttle run	0.88*
3	Flexibility - Sit and Reach	0.84*
4	Explosive power – Standing Broad jump	0.83*
5	Cardio – vascular endurance - Cooper's 12 minutes run/walk	0.82*

***Significant (p < 0.01), N-20, r – 0.01 (18) = 0.562**

Table 3.4 : Test Reliability Coefficients and the Skill Test's ((AAHER Volleyball Test) Retest Score

S. No.	Test	R Value
1.	AAHER Volleying Ability	0.94*
2.	AAHER Service ability	0.92*
3.	AAHER Passing Ability	0.86*
4.	AAHER Set-up Ability	0.88*

*Significant (p < 0.01), N-20, r – 0.01 (18) = 0.562

In terms of the instrument, tester, and subjects, the data were deemed credible since the acquired 'r' values were more than the necessary values.

Subject Reliability:

The test-retest correlation method's above coefficient of correlation also demonstrated that subjects' reliability was significant at the 0.01 level of confidence because the same subjects were used by the same tester in similar circumstances without the use of a motivational device or training.

3.5 Administration of the Test

- **Speed**

  Test: 50 Yards Dash

  Objective: To measure the speed of the subject.

  Equipments: Track, measuring tape, clapper, and stop watches

  Procedure: The participant was instructed to start in a standing position and asked to stay behind the starting line. The athlete had to run the requisite separation as hard as possible when the clapper sound was heard. The individual's score was determined by recording their best time from two trials.

  Scoring: The time was recorded in seconds.

- **Agility:**

  Test: Shuttle Run (4x10 m)

  Purpose: The test had the purpose to measure the participants' level of agility.

  Equipments: White powder, stop watches, whistles, and measuring tapes.

  Procedure: Ten meters separated the markings of two parallel lines. The subject was positioned behind the line of commencement. He ran to the other line, touched with his hand, and then came back to the starting line as the signal came on. He then moved to another line and touched with his hand once more, repeating the process six times in all. There were two trails provided, and the best one was chosen.

  Scoring: For the better of two tries, the elapsed time expressed in seconds and one tenth of a second was used to calculate the score.

- **Flexibility**

  Test: Sit and Reach

  Purpose: The test was designed to measure each subject's level of flexibility.

  Equipments: Sit and Reach Box**,** Score Sheet

  Procedure: For this test, you must sit on the floor with your legs extended straight ahead. You should take off your shoes. The feet are positioned with their soles flat against the box. The tester may help by holding down both knees as they should be locked and pressed flat to the floor. The individual reaches forward as far as they can along the measuring line, palms down, hands on top of each other or side by side. Make sure both hands stay level, with neither reaching farther forward than the other. The patient reaches out and maintains that posture for one to two seconds while the distance is recorded, following some practice reaching. Verify that there aren't any abrupt motions.

  Scoring: A score of centimetres was assigned to the measurement.

- **Explosive power**

  Test: Standing Broad jump

  Purpose: The purpose of the test was to measure explosive power.

  Equipments: The test was administered using an outdoor broad jump, measuring tape, lime powder, thread, score sheet, and pen.

  Procedure: Before leaping, the participant was instructed to perform a warm-up motion by flexing his knee and swinging his arms as much as possible. The participant was asked to stand with his feet apart, parallel to each other, and his toes just beyond the takeoff line. The participant made an effort to leap as far as they could and land on both feet without falling backward. The Standing Broad Jump exam allowed three attempts for each topic.

  Scoring: The Dimensions of the jump was made from the outermost point of the take- off line to the closest point where his body made touch with the landing surface. The score was determined by recording the longest distance

jumped out of the best three attempts. The meter was used to take the measurement.

- **Cardio – vascular endurance**

  Test: Cooper's 12 minutes run/walk test

  Purpose: To measure Cardio Respiratory Endurance

  Equipment: Ground, stop watch, marking cones and score sheet.

  Procedure: Markings for the 200-meter track were spaced 10 meters apart. The individuals were told to position themselves behind the starting line, and when they heard the words "set, go," they started to run. The participants were told to run as far as they could in 12 minutes in order to cover the greatest feasible distance. The subjects were told there was one minute remaining after the eleventh minute during the test. The participants stopped long enough for the researcher or her assistant to measure the distance traveled when the whistle blew to indicate that the twelve minutes had come to an end.

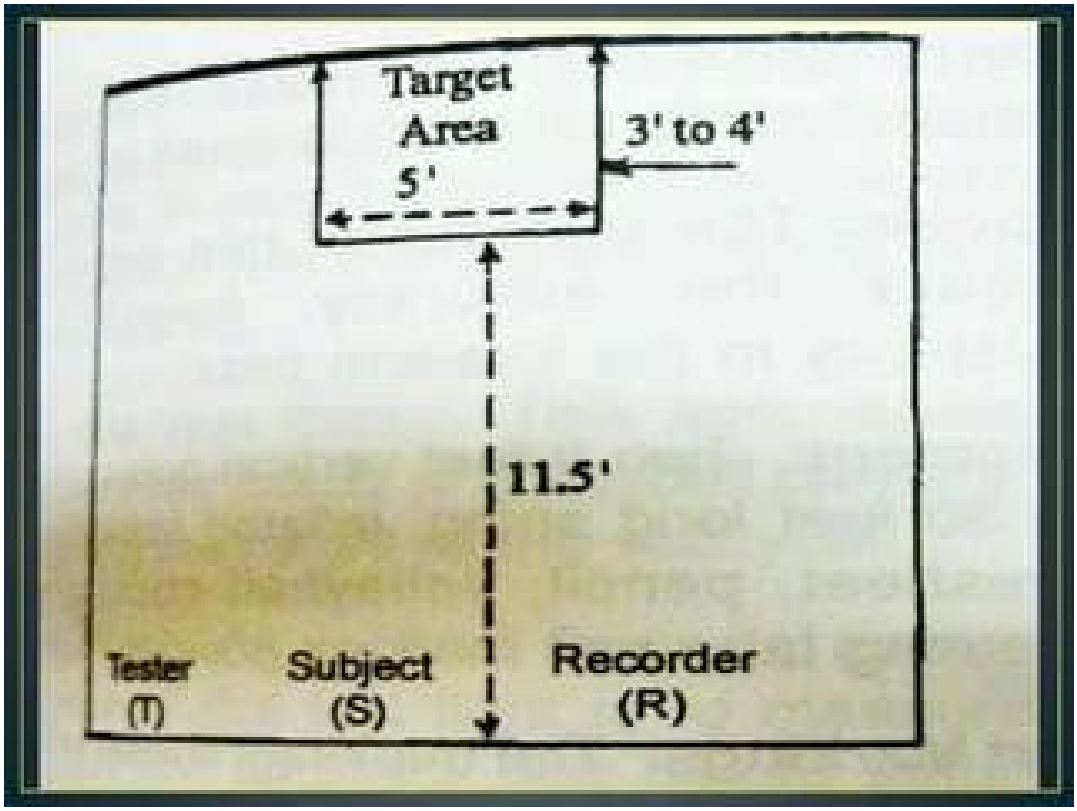
  Scoring: The overall distance covered was expressed in meters.

- **AAHER Volleying Ability Test**

  Volleying: Volleying is a sort of contact that facilitates the attack and ball-slamming over the net by your teammates. Similar to bumping, establishing is a hand skill that unexpectedly depends on force from the lower body.

  Equipment: Volleyball, wall, measuring tape, whistle, stop-watch, marking chalk, and lime powder.

  Dimensions: A high-quality marking chalk was used to mark a target on the wall. A five-foot-long horizontal line that was 11.5 feet above the ground surrounded the target. The horizontal line's two ends are stretched upward to a height of three to four feet above the ceiling.



Test Administration: The subject was asked to perform a maximum standing volley at any point in front of the target in one minute. The subject was asked to perform an actual volley i.e. the ball thrown for the volley should hit the wall above a fixed boundary. A restart was given if the ball was caught or out of control. Two trials may be given and considered the best. On-going to the signal the ball was thrown over the wall at the target area and a stop watch was started and the ball was volleyed in to mark the target continuously for one minute until the stop signal was given. The number of actual volleys per minute gives the test score.

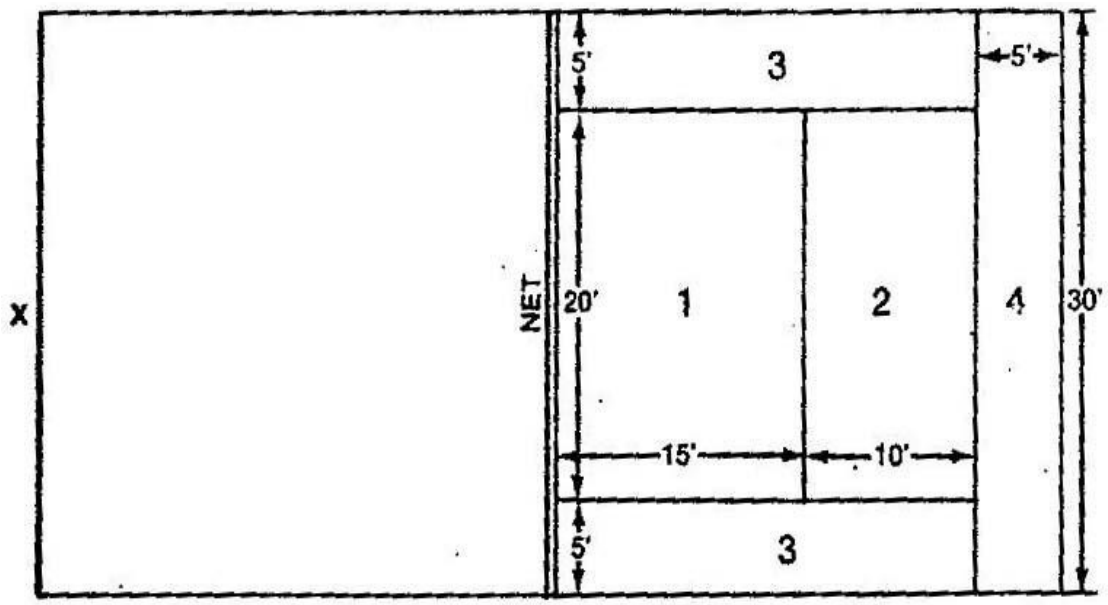
Scoring: The number of volleying in which an action would have occurred based on a correct one-minute volley was taken into account for the multiplier.

- **AAHER Service Ability Test**

  Service: The act of placing the ball into play by the server, who may use any part of their hand, involved hitting the ball from the court's end line into the opponent court and sending it over the net and between the antennae.

  Equipment: Volleyball, net, polls, measuring tape, whistle, and lime powder.

Field Marking: Marking one side of the volleyball court as shown in the figure below.



Test Administration: The test was conducted on a standard volleyball court. The test taker was asked to serve as per the rules by standing in a place suitable for service outside the court in front of the marked court. The served ball will be scored according to the number of the zone in which it falls. Each examiner was given ten tucks.

Scoring: The 10 service balls correctly placed in the zone in which they fall will be considered for multiplying the total number of points scored for that zone.

Passing: Handling the ball deceptively. Sending the ball to the intended location after it has been received is known as a pass. With the forearms separated from the body, a surface will be created on which the pass can be made. When the oncoming ball has enough force, it should be employed.

Equipment: volleyball, lime powder, measuring tape, polls, net, rope, whistle etc.

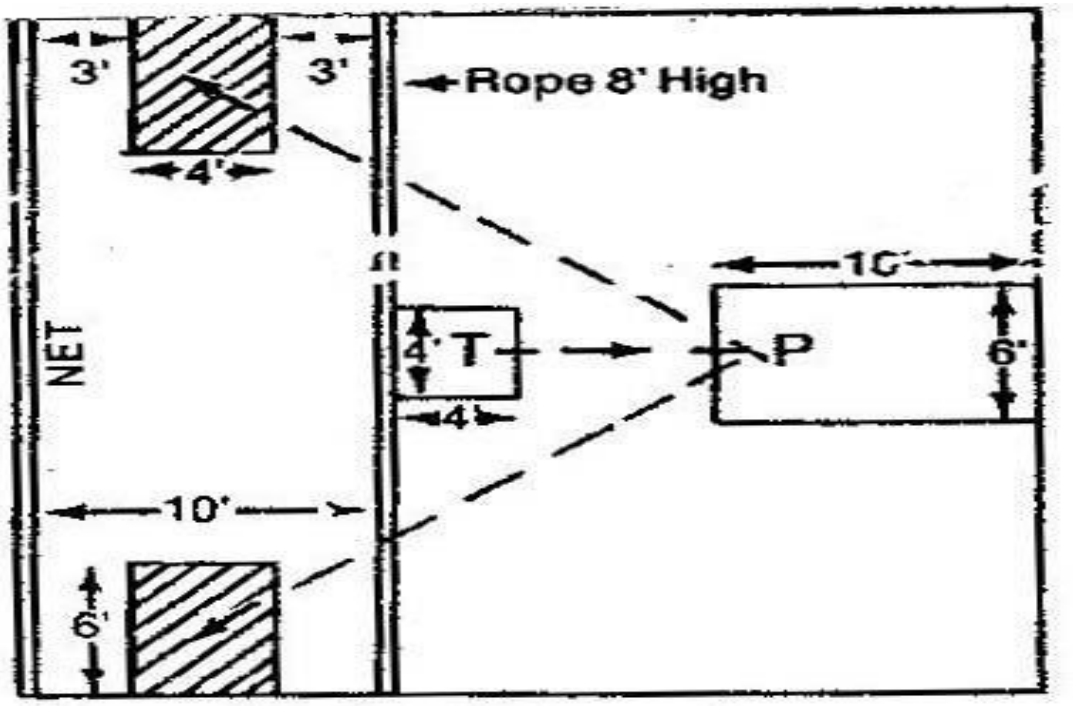
- **AAHER Passing Ability**

  Passing: An opponent's attack ends with a volleyball pass. Additionally, passing signals the start of the volleyball attack for your team. Volleyball

players should try to successfully pass the ball to a teammate on the court after fending off an opponent's attack. A pass crosses the net first.

Equipment: Volleyball, net, polls, measuring tape, whistle, and lime powder.

Field Marking: For this test, a rope will be tied 10’ away from the net on one side of the volleyball court and 8’ above the ground.



Test Administration: The test is also conducted on a volleyball court. The participant is instructed to take up center back on the court, receive a high throw from the thrower, and pass the ball over an eight-foot-tall rope and onto the regions of the court that have been marked out. The participant is required to execute passes to the left and right in turn during 20 trails.

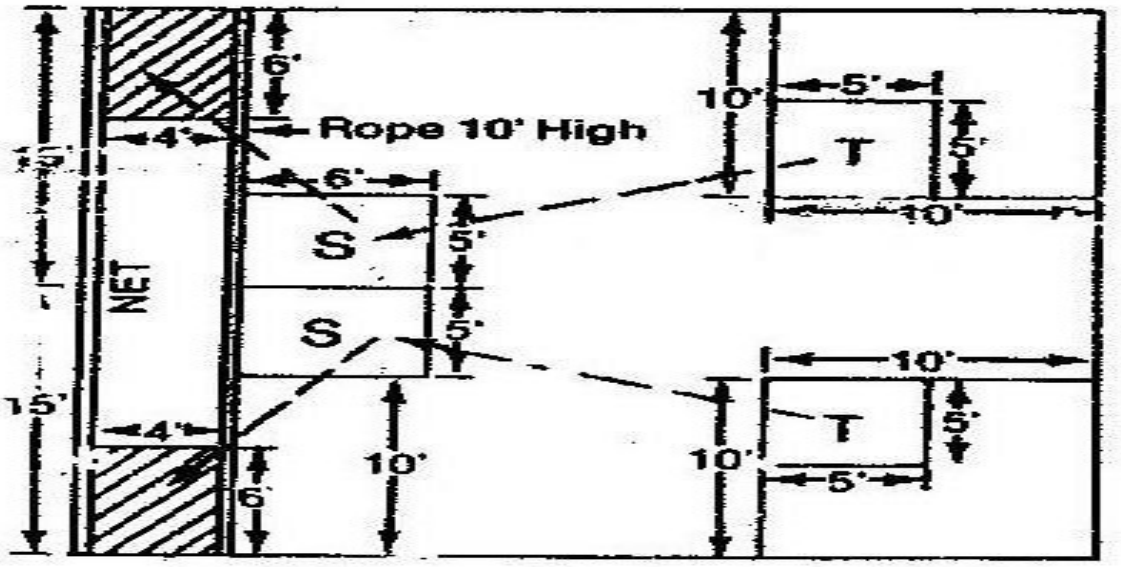
Scoring: For each correct pass, i.e. making the ball to go over the rope and land on to the marked area, the subject is awarded one point, while the wrong passes count out of his chances but without any point being awarded.

- **AAHER Set-up Ability**

Setting: The second pass is called setting, and it can be used to dump the ball over into an open area or to "set" it so that the batter can spike it over. A high ball that is only inches from the net constitutes the ideal set.

Equipment: Volleyball, line powder, tape, polls, net, rope, whistle etc.

Field Marking: For this test, a 4' x 30' rectangle 4' x 6' will be drawn at both corners 4' from the center line, in which zone the taker must drop the set-up ball.



Test Administration: For measuring the set-up ability of the volleyball, the subject is asked to stand in midcourt position within the 6 feet by 5 feet area marked near a 10 feet high rope tied in the volleyball court. The set up person receives a high throw from the thrower and executes a set-up so that the ball goes over a 30 feet long rope tied at a height of 10 feet for boys and lands onto the marked area between the rope and the usual volleyball net.

Scoring: The examinee is given 10 correct throws for set-up to the left and 10 correct throws for set-up to the right side. One points is awarded for each set-up that goes over the rope (without touching rope and the net) and lands over the correct marked area.

3.6 Collection of Data

To ensure that his subjects were making serious attempts, the research scholar met with experts and other physical education technical staff prior to the delivery of tests for collecting data. He gave them an explanation of the aim and importance of the research he was conducting. To dispel any doubt or uncertainty regarding the efforts and labor they had to put in for the effective conclusion of this inquiry, the test technique was also thoroughly explained to them. The researcher completely persuaded

and reassured the subjects of their heartfelt and true support. In the interest of this scientific endeavor, the professionals and other qualified officials in the field freely offered to offer their complete support and sincere assistance.

The test was arranged over two days to allow the subjects to perform at their best and they were given enough time between tests. Not only this but uniform status was also ensured for all the subjects. No special techniques were used to encourage subjects to do their best

The experts were completely independent of each other in assessing the subject's skill performance and submitted their scores based on the test's measurement standards. This assessment of the subject's ability to play volleyball was taken as a criterion for the purpose of this study.

3.7 Statistical Procedure

1. In order to investigate the motor fitness components and skill performance of volleyball players, descriptive analysis statistics; such as mean, standard deviation, minimum value, maximum value was applied.
2. The relationship of motor fitness components and skill performance of volleyball players, was established by computing Karl Pearson's Product Moment Co-relation was used.
3. The combined contribution of separately considered motor fitness components to skill performance was obtained through multiple correlations.
4. Further in order to find out which aspect has the maximum impact on the skill performance score of volleyball players, multiple regression analysis was applied.
5. For testing the hypothesis, the levels of confidence were set at $p<0.05$.

CHAPTER – IV

ANALYSIS OF DATA AND FINDING OF THE STUDY

4.1 Overview

This chapter presents the statistical analysis of data collected on 180 inter collegiate volleyball players. Data on volleyball skill tests and motor fitness components were gathered.

Descriptive analysis was used to highlight the prominence and dominance of specific variables in the given context. To examine the significant relationship of selected motor fitness components with the subjects' volleyball skill performance scores, Karl Pearson's product moment correlation statistical technique was applied.

Multiple correlation analysis was used to predict volleyball skill test performance scores based on motor fitness components.

In order to determine which factors had the biggest influence on the performance scores of intercollegiate volleyball players, multiple regression analysis was also used.

4.2 Level of Significance

The level of significance to ascertain the relationship obtained by Karl Pearson's product moment correlation was set at 0.05 level of confidence, which was considered adequate for the purpose of this study.

Table 4.1 : Male Volleyball Players' Descriptive Statistics in Relation to their Motor Fitness Components and Volleyball Skill Performance

No.	Variable	Mean	S.D.	Variance	Minimum	Maximum	Skewness	Kurtosis
1.	Speed	7.23	0.61	0.37	6.00	9.10	0.30	0.11
2.	Agility	13.22	0.85	0.72	6.78	13.22	0.10	2.02
3.	Flexibility	25.59	6.21	39.00	11.00	45.00	0.07	0.05
4.	Explosive Power	44.98	7.05	49.74	29.00	67.00	0.21	0.27
5.	Cardio-vascular Endurance	3014.00	360.82	130189.56	1270.00	3014.00	0.75	0.70
6.	Volleying Ability	30.00	3.62	14.00	8.00	30.00	0.07	0.41
7	Service	18.72	3.13	9.82	10.00	28.00	0.07	0.38

No.	Variable	Mean	S.D.	Variance	Minimum	Maximum	Skewness	Kurtosis
	Ability							
8	Right Passing Ability	2.93	1.22	0.97	1.00	7.00	0.20	- 0.41
9	Left Passing Ability	2.41	0.98	1.49	1.00	7.00	0.70	1.73
10	Right Set-Up Ability	3.32	1.22	1.60	1.00	7.00	0.43	0.39
11	Left Set-Up Ability	2.89	1.27	1.47	1.00	6.00	0.60	- 0.19

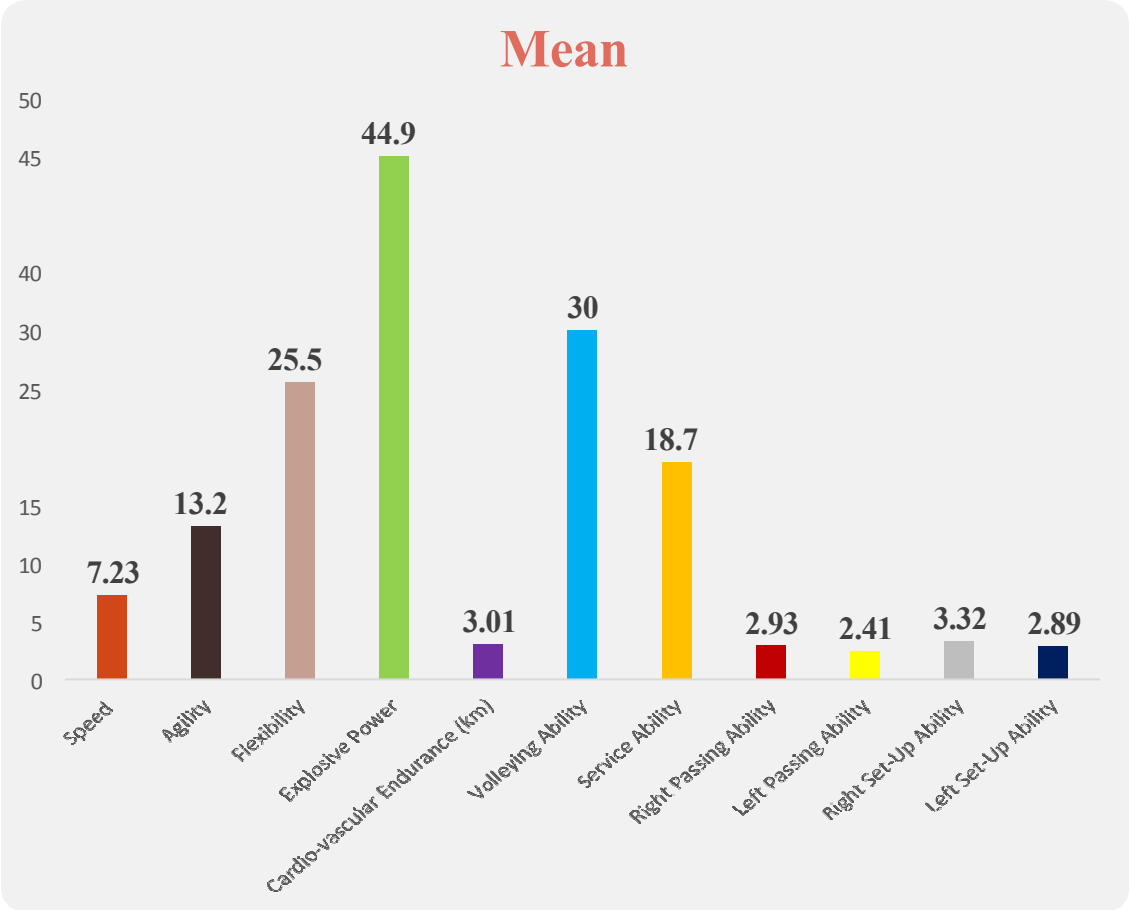


Fig 4.1: Graphical Presentation of Mean Value of Male Volleyball Players of Motor Fitness Components and Volleyball Skill Performanc

Table 4.1 clearly illustrates the speed at which male volleyball players can be found. Its mean value and standard deviation were 7.23 ± 0.61, variance was 0.37, minimum was 6.00, maximum was 9.10, skewness was 0.30 and kurtosis was 0.11, respectively.

The mean and standard deviation of agility were 13.22 ± 0.85, variance was 0.72, minimum was 6.78, maximum was 13.22, skewness was 0.10, and kurtosis was 2.02.

The mean and standard deviation of flexibility were 25.59 ± 6.21, variance was 39.00, minimum was 11.00, maximum was 45.00, skewness was 0.07, and kurtosis was 0.05.

The mean and standard deviation of explosive power were 44.98 ± 7.05, variance was 49.74, minimum was 29.00, maximum was 67.00, skewness was 0.21, and kurtosis was 0.27.

The mean and standard deviation of cardio-vascular endurance were 3014.00 ± 360.82, variance was 130189.56, minimum was 1270.00, maximum was 3014.00, skewness was 0.75, and kurtosis was 0.70.

Table 4.1 also demonstrates the volleying ability of male volleyball players. The variance was 14.00, the minimum was 8.00, the maximum was 30.00, the skewness was 0.07, and the kurtosis was 0.41, respectively. The mean value and standard deviation were 30.00 ± 3.62.

The mean value and standard deviation of service ability were found to be 18.72 ± 3.13, while the variance was 9.82, minimum 10.00, maximum 28.00, skewness 0.07, and kurtosis -0.41, in that order.

The mean value and standard deviation of right side passing ability were found to be 2.93 ± 1.22, while the variance was 0.97, minimum 1.00, maximum 7.00, skewness 0.20, and kurtosis - 0.40, in that order.

The mean value and standard deviation of left side passing ability were found to be 2.41 ± 0.98, while the variance was 1.49, minimum 01.00, maximum 07.00, skewness 0.70, and kurtosis 1.73, in that order.

The mean value and standard deviation of right side set-up ability were found to be 3.32 ± 1.22, while the variance was 1.60, minimum 01.00, maximum 07.00, skewness 0.43, and kurtosis 0.39, in that order.

The mean value and standard deviation of left side set-up ability were found to be 2.89 ± 1.27, while the variance was 1.47, minimum 01.00, maximum 06.00, skewness 0.60, and kurtosis - 0.19, in that order.

VOLLEYING ABILITY:

Table 4.2 : Relationship of Motor Fitness Components with Volleying Ability of Volleyball Players

Sr. No	Motor Fitness Components	Volleyball Skill	Correlation Co-efficient	Sig. (2-tailed)
1	Speed	Volleying Ability	0.150	0.04
2	Agility		- 0.160	0.03
3	Flexibility		- 0.159	0.03
4	Explosive Power		- 0.086	0.25
5	Cardio-vascular Endurance		- 0.037	0.62

***Statistical significant at 0.05 level**

The correlation coefficient between the volleying ability and motor fitness components of the volleyball players was presents in table 4.2. The statistical findings demonstrated that the speed **(r = 0.150, p<0.05)** significantly positive and agility **(r = - 0.160, p<0.05)** and flexibility **(r = - 0.159, p<0.05)** significantly negative correlation with the volleying ability. Regarding the other variables, there was a negative but not statistically significant correlation between explosive power **(r = - 0.086, p>0.05)** and cardio-vascular endurance **(r = - 0.037, p>0.05)** and volleying ability.

The graphs illustrate has been presented relationship of selected motor fitness components to volleying ability of volleyball players.

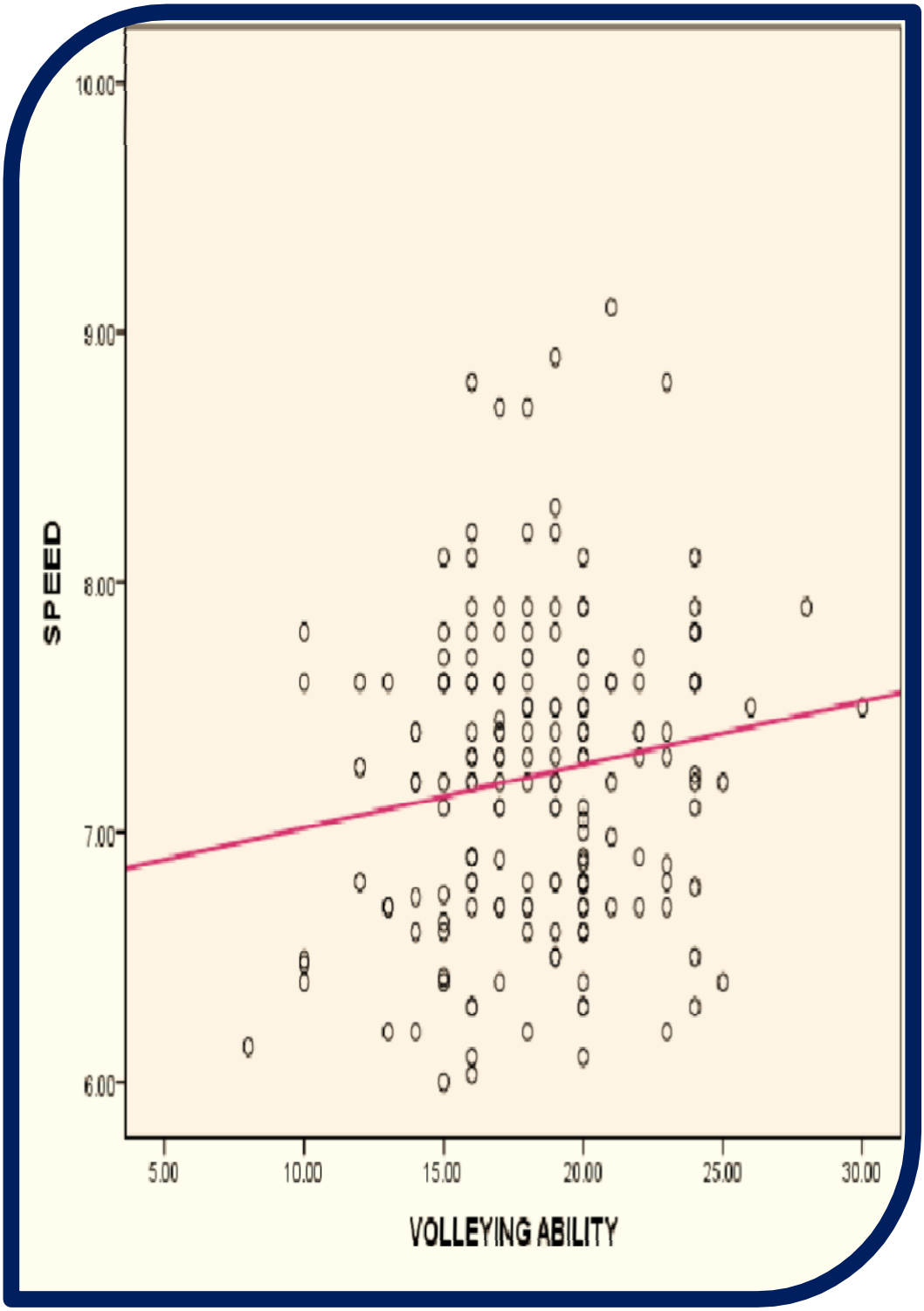


Fig. 1 : Volleying Ability and Speed Relationship

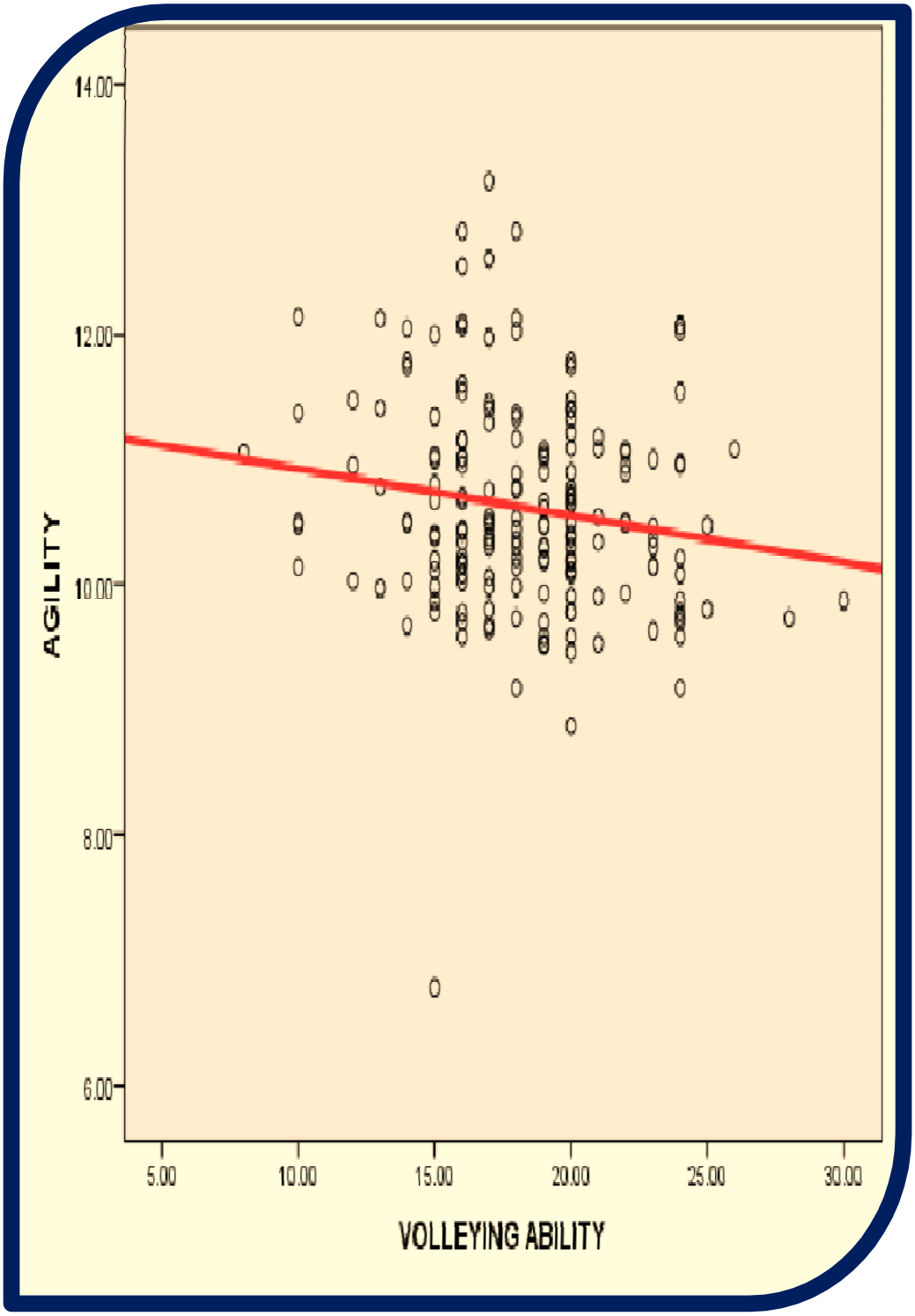


Fig. 2 : Volleying Ability and Agility Relationship

Fig. 3 : Volleying Ability and Flexibility Relationship

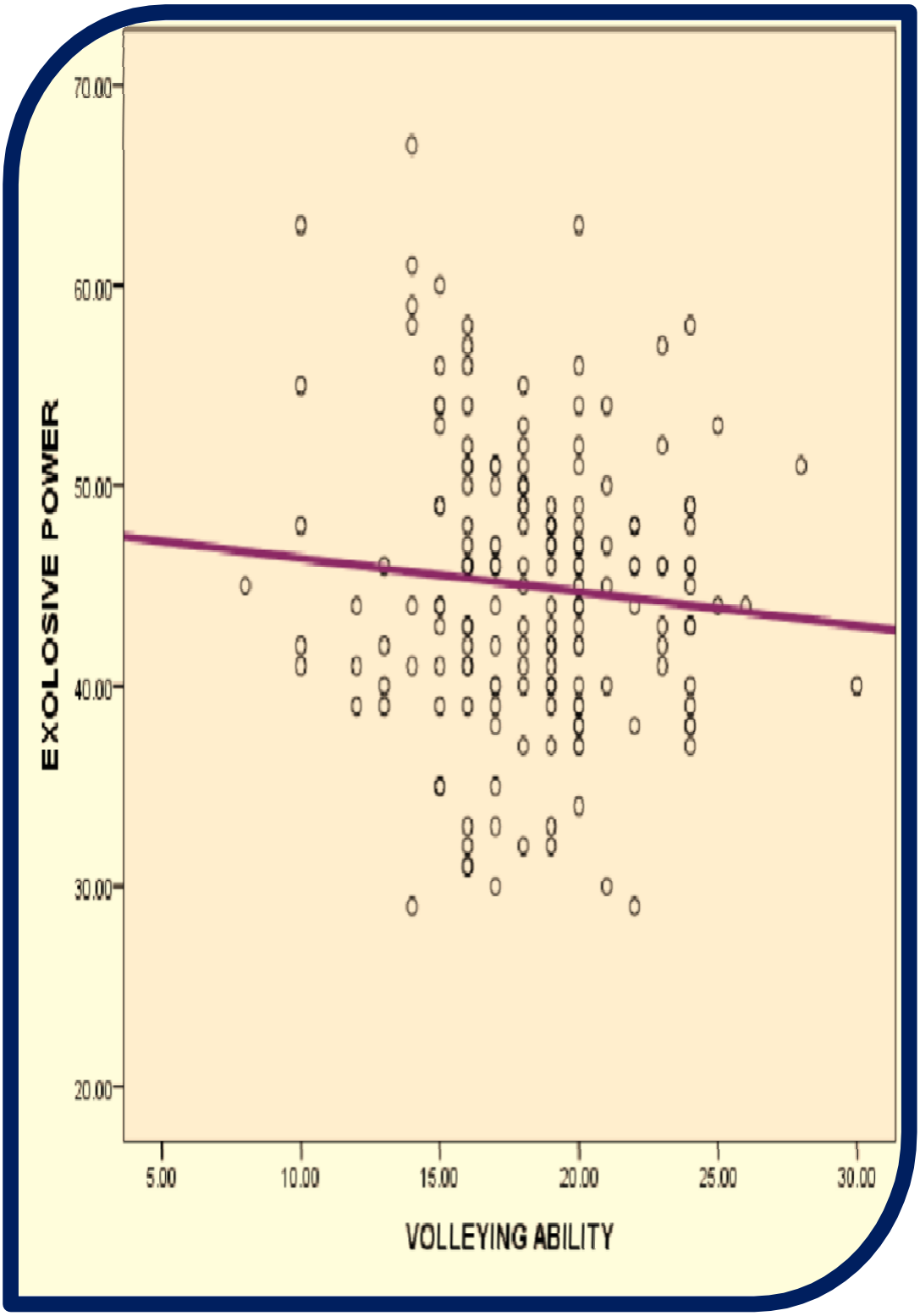


Fig. 4 : Volleying Ability and Explosive Power Relationship

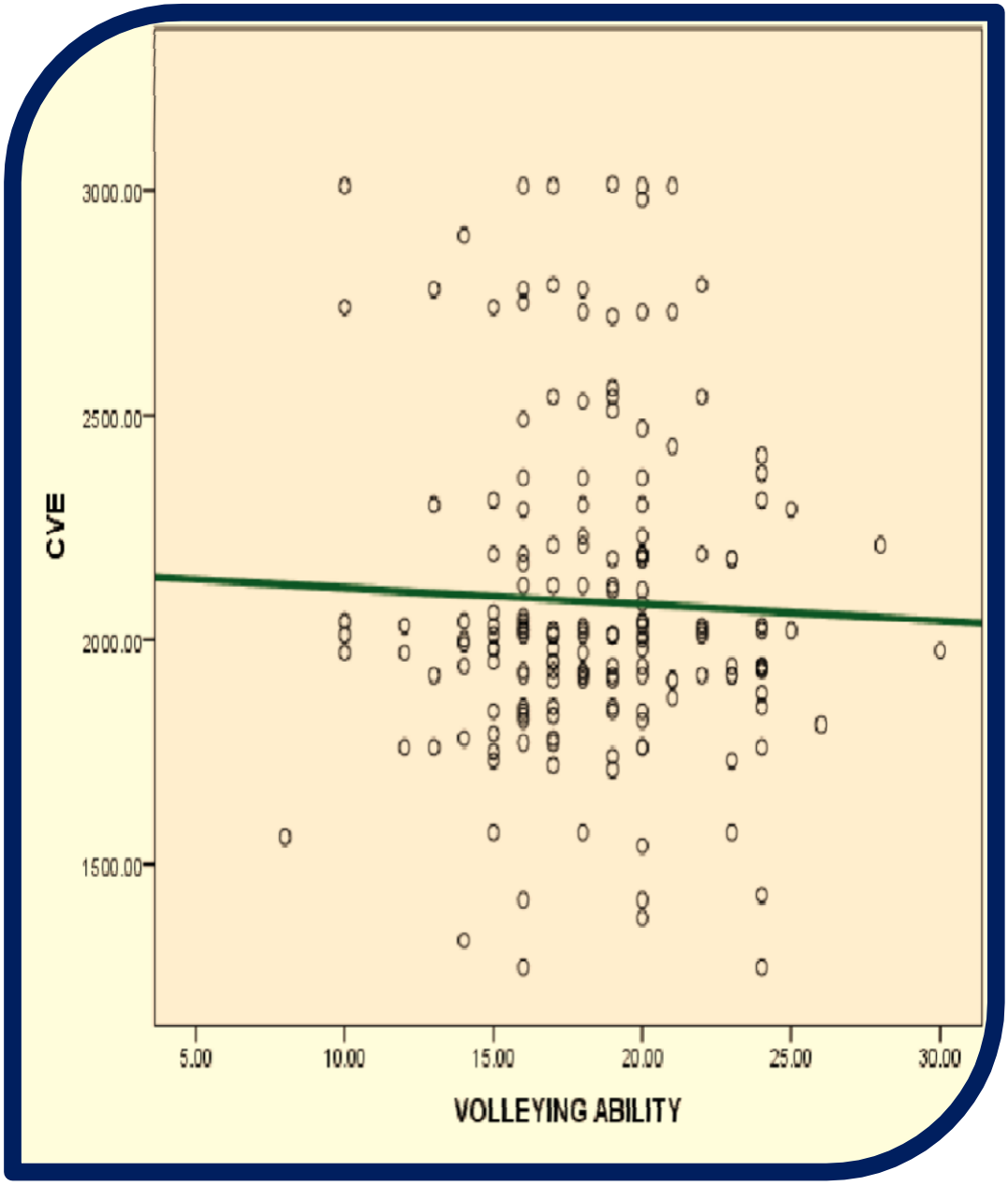


Fig. 5 : Volleying Ability and Cardio-vascular Endurance (CVE) Relationship

The multiple correlation method yields correlations between a volleying ability (dependent variable) and the combined effect of the motor fitness components (independent variable), which are weighted to give maximum correlation. This allowed researchers to ascertain the combined contributions of specific motor fitness components (speed, agility, flexibility, explosive power and cardiovascular endurance) to volleying ability of volleyball players.

Table 4.3 displays the multiple coefficients of correlation that were calculated between the independent and dependent variables.

Table 4.3 : Multiple Correlation between Volleyball Players' Volleying Ability and Motor Fitness Components

Dependent Variables	Independent Variable	Multiple Coefficient of Correlation (r)	Multiple Correlation ANOVA F	Sig.
Volleying Ability	Speed	0.089	3.42*	0.00
	Agility			
	Flexibility			
	Explosive Power			
	Cardio-vascular Endurance			

***Statistical significant at 0.05 level**

According to Table 4.3, volleyball players' combined contribution volleying ability to motor fitness components has been determined to be statistically significant at r = 0.089 (F = 3.42, p<0.05).

The step-wise regression technique was used to determine which factor has the biggest influence on volleyball players' volleying ability, taking into account the motor fitness components that were previously described and selected. The results are shown in Table 4.4.

Table 4.4 : Regression Prediction of Volleying Ability with selected Motor Fitness Components of Volleyball Players

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.160[a]	0.026	0.020	3.582
2	0.240[b]	0.058	0.047	3.532
3	0.293[c]	0.086	0.071	3.49

a. **Predictors: (Constant), Agility**

b. **Predictors: (Constant), Agility, Flexibility**

c. **Predictors: (Constant), Agility, Flexibility, Speed**

d. **Depended Variable Volleying Ability**

Table 4.5 : Regression Coefficients Estimating Volleying Ability Using selected Motor Fitness Components of Players in Volleyball

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
1.	(Constant)	25.58	3.37	- 0.16	7.60*	0.00
	Agility	- 0.68	0.32		- 2.16*	0.03
2.	(Constant)	29.26	3.62	- 0.18	8.04*	0.00
	Agility	- 0.78	0.31	- 0.18	- 2.47*	0.01
	Flexibility	- 0.11	0.04		- 2.46*	0.01
3.	(Constant)	22.82	4.53	- 0.20	5.04*	0.00
	Agility	-0.86	0.31	- 0.18	- 2.74*	0.00
	Flexibility	-0.11	0.04	0.17	- 2.49*	0.01
	Speed	1.01	0.43		2.34*	0.02

e. **Dependent Variable: Volleying Ability**

Table 4.4 displays the regression models that are available. Since the Adjusted R^2 value in the third model is 0.071, the regression equation was developed using the second model.

Furthermore, table 4.4 shows that three independent variables—agility, flexibility, and speed—have been found in the second model. As a result, the regression equation will only be developed using these three variables. These three independent factors explained 7.1 % variability in the volleyball players' volleying ability, as indicated by the model's adjusted R^2 value of 0.071. As a result, this model is ideal for creating the regression equations.

All of the models' regression coefficients are displayed in table 4.5. All three of the regression coefficients in the thread model ‘t’ value have significant since their p-values, or significant values, are less than 0.05. Thus, it was said that the factors of agility, flexibility and speed account for a large portion of the variances in volleying ability.

The regression equation was created using the regression coefficients (Beta) of the third model, which are displayed in Table 4.5. It is as follows:

Volleying Ability = 22.82 – 0.20 (Agility) – 0.18 (Flexibility) + 0.17 (Speed)

SERVICE ABILITY:

Table 4.6 : Relationship of Motor Fitness Components with Service Ability of Volleyball Players

Sr. No	Motor Fitness Components	Volleyball Skill	Correlation Co-efficient	Sig. (2-tailed)
1	Speed	Service Ability	0.013	0.86
2	Agility		-0.021	0.78
3	Flexibility		0.041	0.58
4	Explosive Power		-0.150*	0.04
5	Cardio-vascular Endurance		-0.034	0.64

***Statistical significant at 0.05 level**

The correlation coefficient between the service ability and motor fitness components of the volleyball players was presents in table 4.6. The statistical findings demonstrated that the explosive power **(r = - 0.150, p<0.05)** significantly negative correlation with the service ability. Regarding the other variables, there was a positive but not statistically significant correlation between speed **(r = 0.013, p>0.05)**, flexibility **(r = 0.041, p>0.05)** and agility **(r = -0.021, p>0.05)**, cardio-vascular endurance **(r = -0.034, p>0.05)** negative not statistically significant correlation with the service ability.

The graphs illustrate has been presented relationship of selected motor fitness components to service ability of volleyball players.

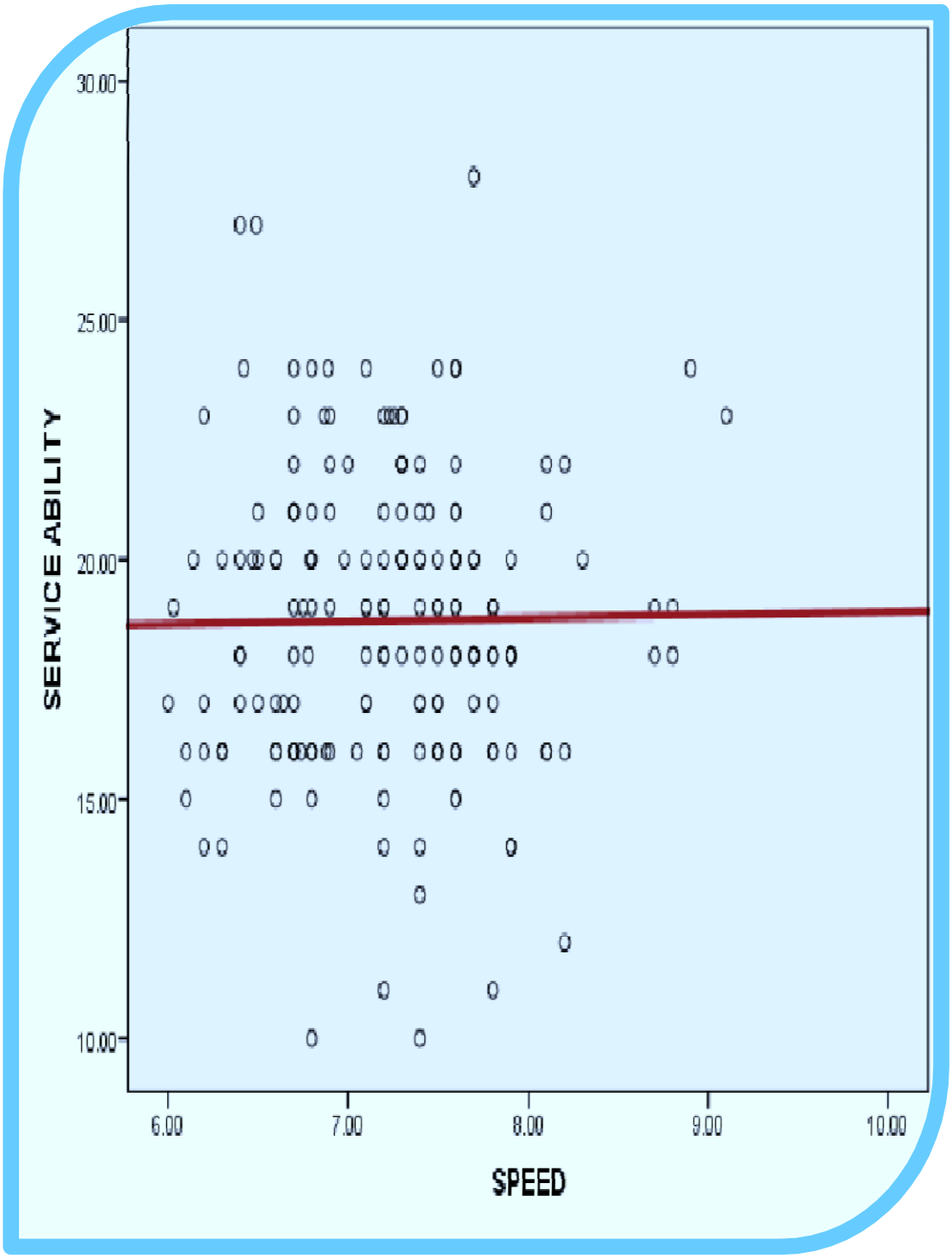


Fig. 6 : Service Ability and Speed Relationship

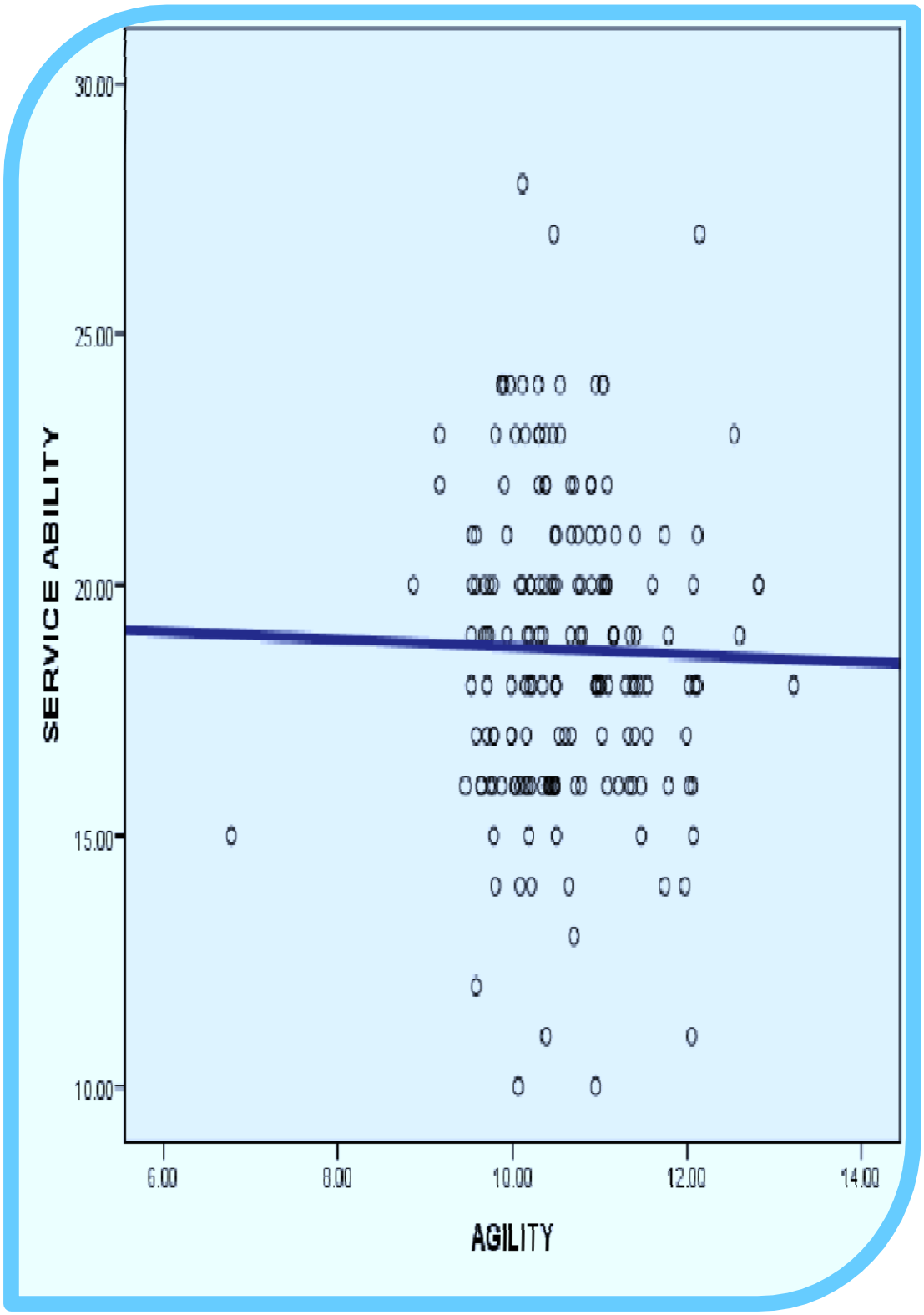


Fig. 7 : Service Ability and Agility Relationship

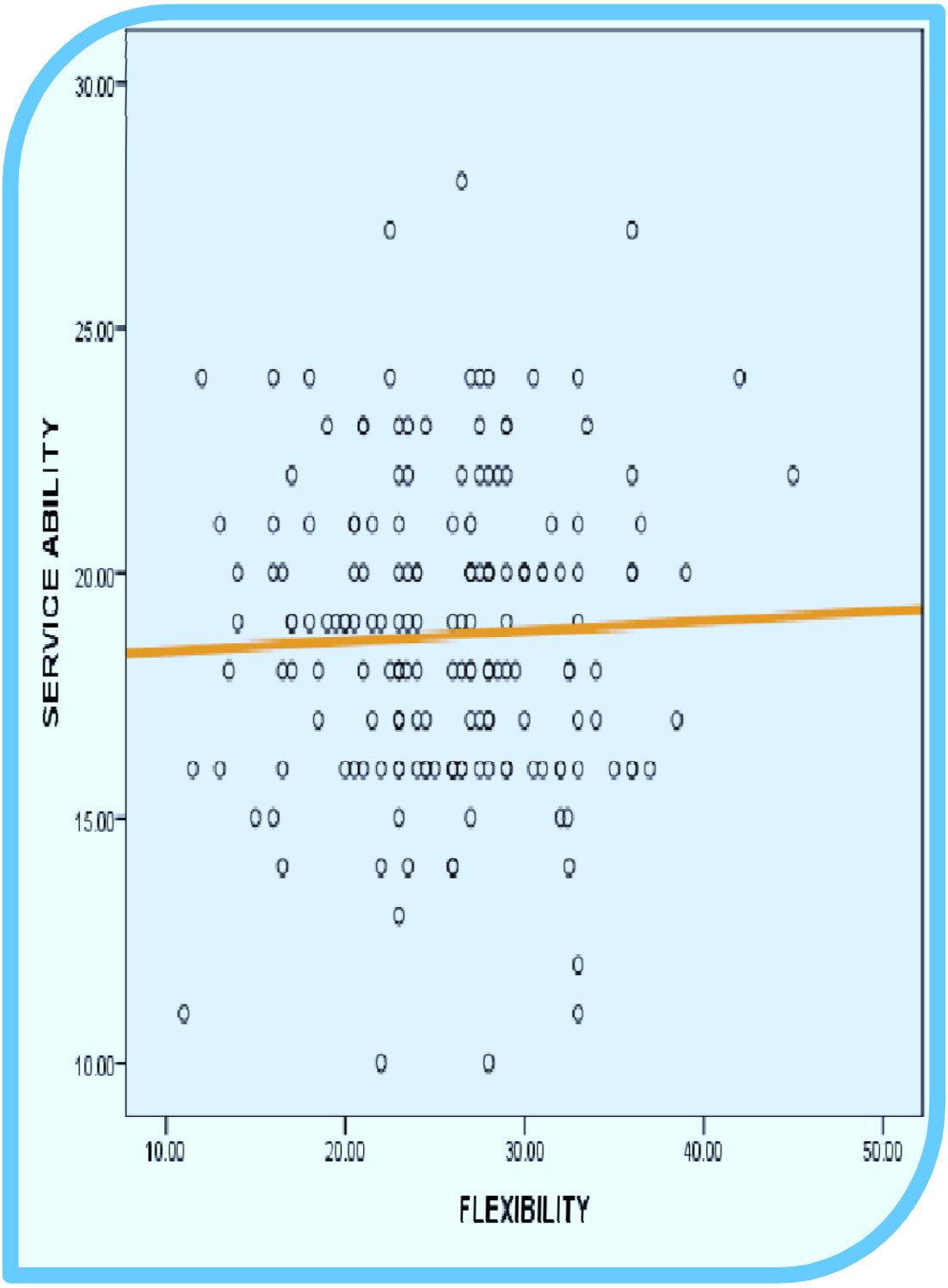


Fig. 8 : Service Ability and Flexibility Relationship

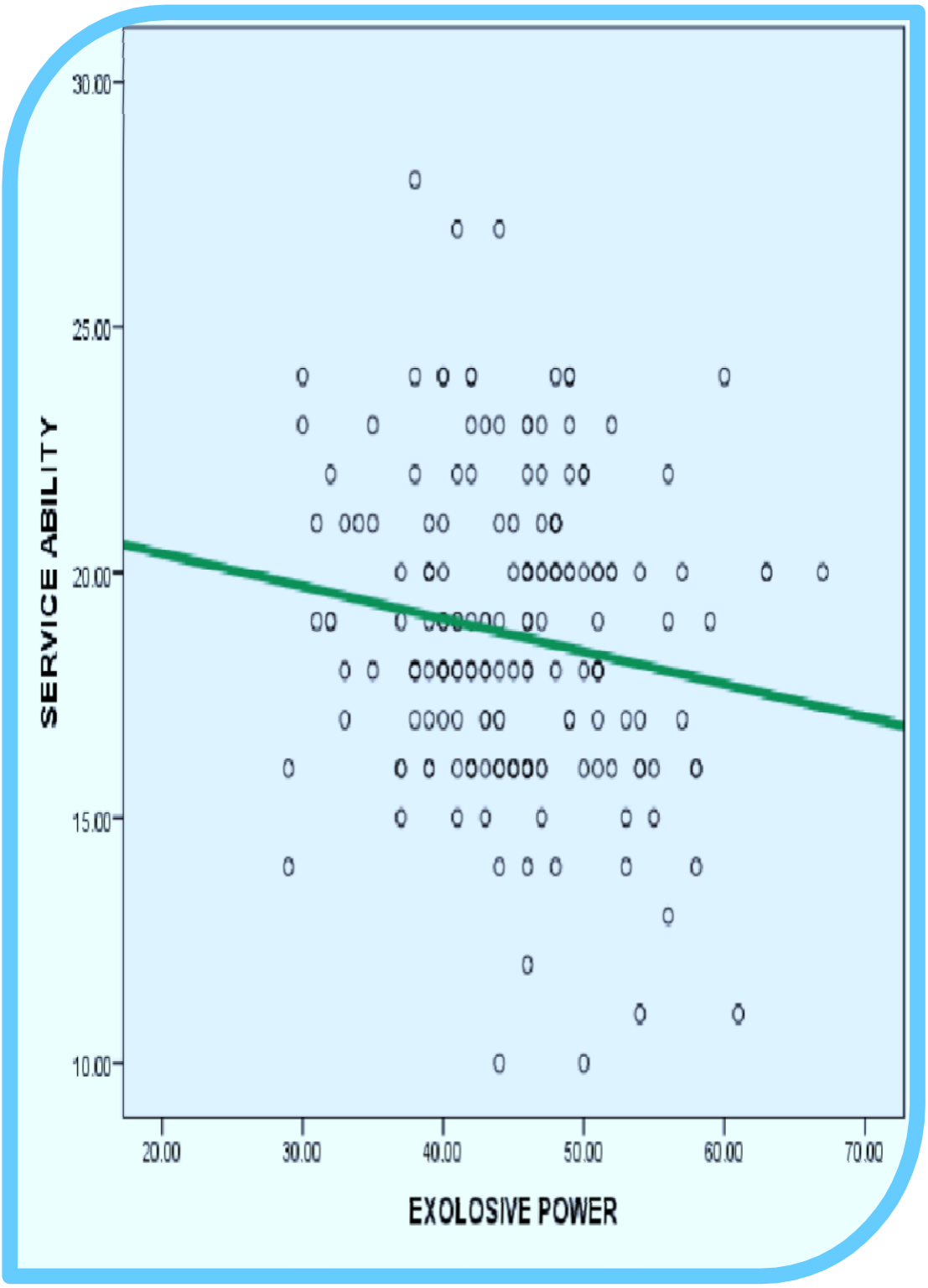


Fig. 9 : Service Ability and Explosive Power Relationship

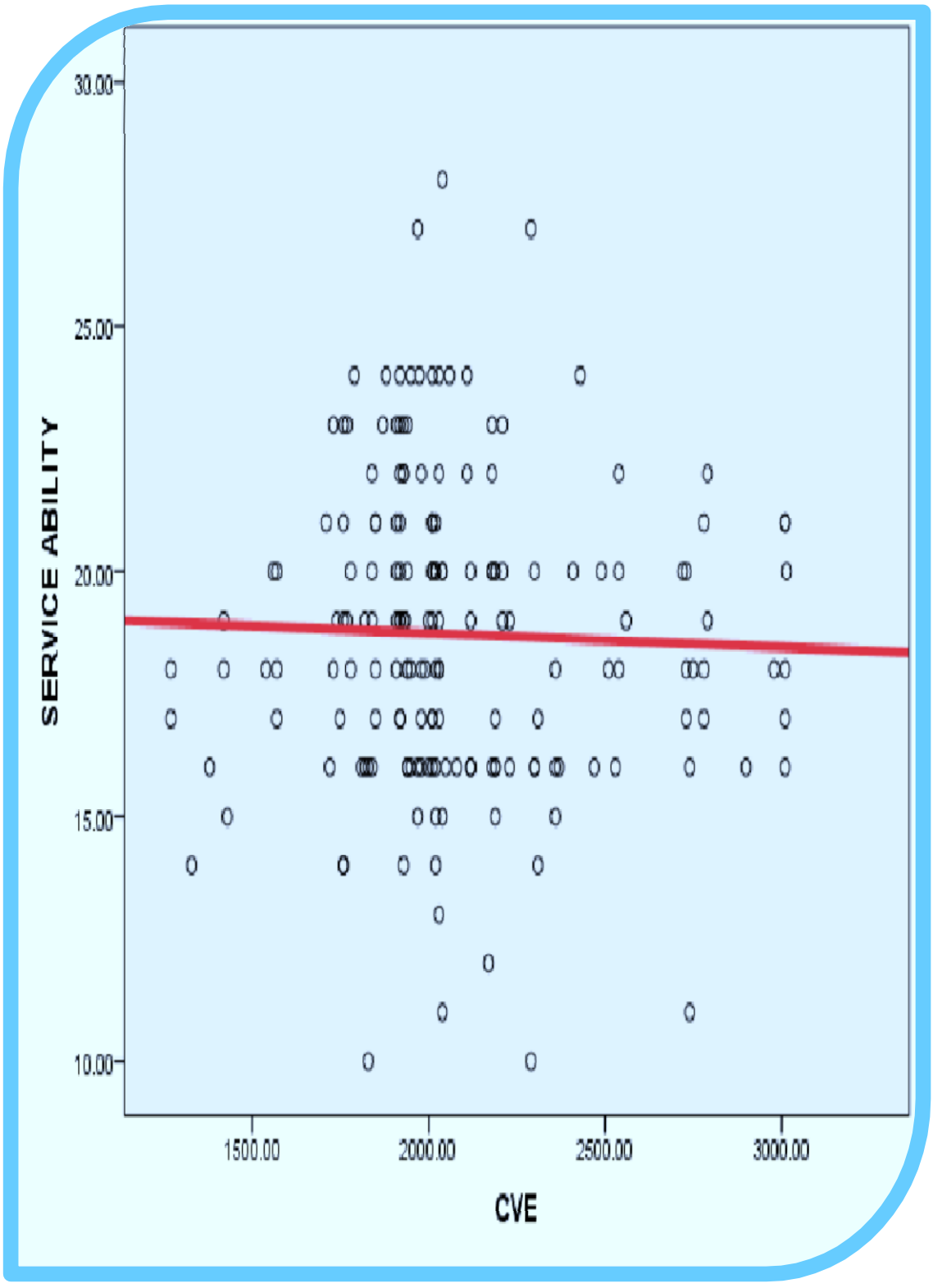


Fig. 10 : Service Ability and Cardio-vascular Endurance Relationship

The multiple correlation method yields correlations between a service ability (dependent variable) and the combined effect of the motor fitness components (independent variable), which are weighted to give maximum correlation. This allowed researchers to ascertain the combined contributions of specific motor fitness components (speed, agility, flexibility, explosive power and cardiovascular endurance) to service ability of volleyball players.

Table 4.7 displays the multiple coefficients of correlation that were calculated between the independent and dependent variables.

Table 4.7 : Multiple Correlation between Volleyball Players' Service Ability and Motor Fitness Components

Dependent Variables	Independent Variable	Multiple Coefficient of Correlation (r)	Multiple Correlation ANOVA F	Sig.
Service Ability	Speed	0.028	1.023	0.40
	Agility			
	Flexibility			
	Explosive Power			
	Cardio-vascular Endurance			

***Statistical significant at 0.05 level**

According to Table 4.7, it has been shown that the combined effect of motor fitness components on volleyball players' service ability is statistically not significant **(r = 0.028; F = 1.023; p>0.05).** Therefore, it can be concluded from the research above that the selected motor fitness components listed above when combined do not affect a player's ability to serve in volleyball.

PASSING ABILITY:

Right Side Passing Ability:

Table 4.8 : Relationship of Motor Fitness Components with Right Side Passing Ability of Volleyball Players

Sr. No	Motor Fitness Components	Volleyball Skill	Correlation Co-efficient	Sig. (2-tailed)
1	Speed	Right Side Passing Ability	0.092	0.22
2	Agility		0.175*	0.01
3	Flexibility		0.104	0.16
4	Explosive Power		-0.018	0.81
5	Cardio-vascular Endurance		0.056	0.45

***Statistical significant at 0.05 level**

The correlation coefficient between the right side passing ability and motor fitness components of the volleyball players was presents in table 4.8. The statistical findings demonstrated that the agility **(r = 0.175, p<0.05)** significantly positive correlation with the right side passing ability. Regarding the other variables, there was a positive but not statistically significant correlation between speed **(r = 0.092, p>0.05)**, flexibility **(r = 0.104, p>0.05)** and cardio-vascular endurance **(r = 0.056, p>0.05).** And explosive power **(r = - 0.018, p<0.05)** negative but not statistically significant correlation between right side passing ability.

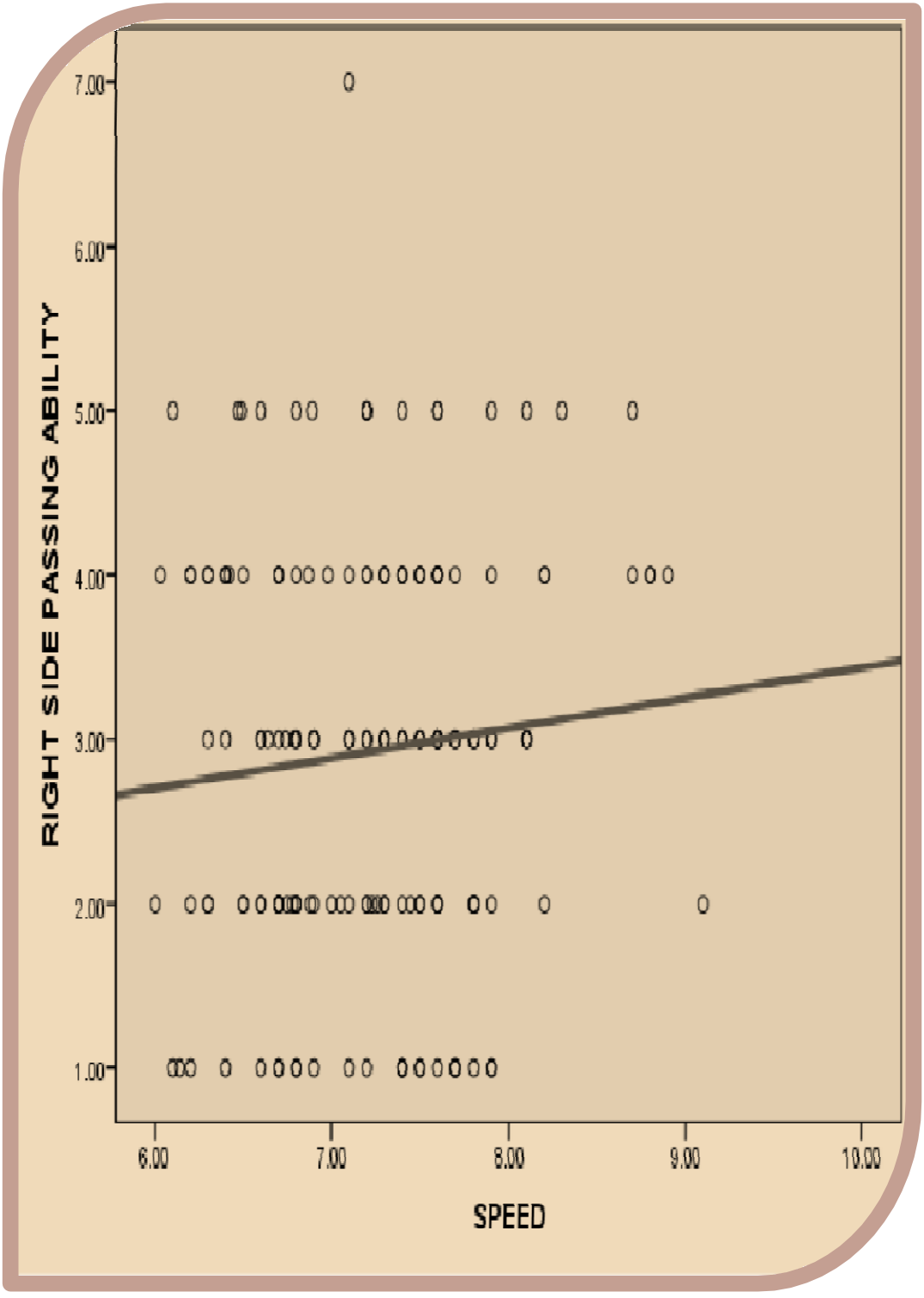


Fig. 11 : Right Side Passing Ability and Speed Relationship

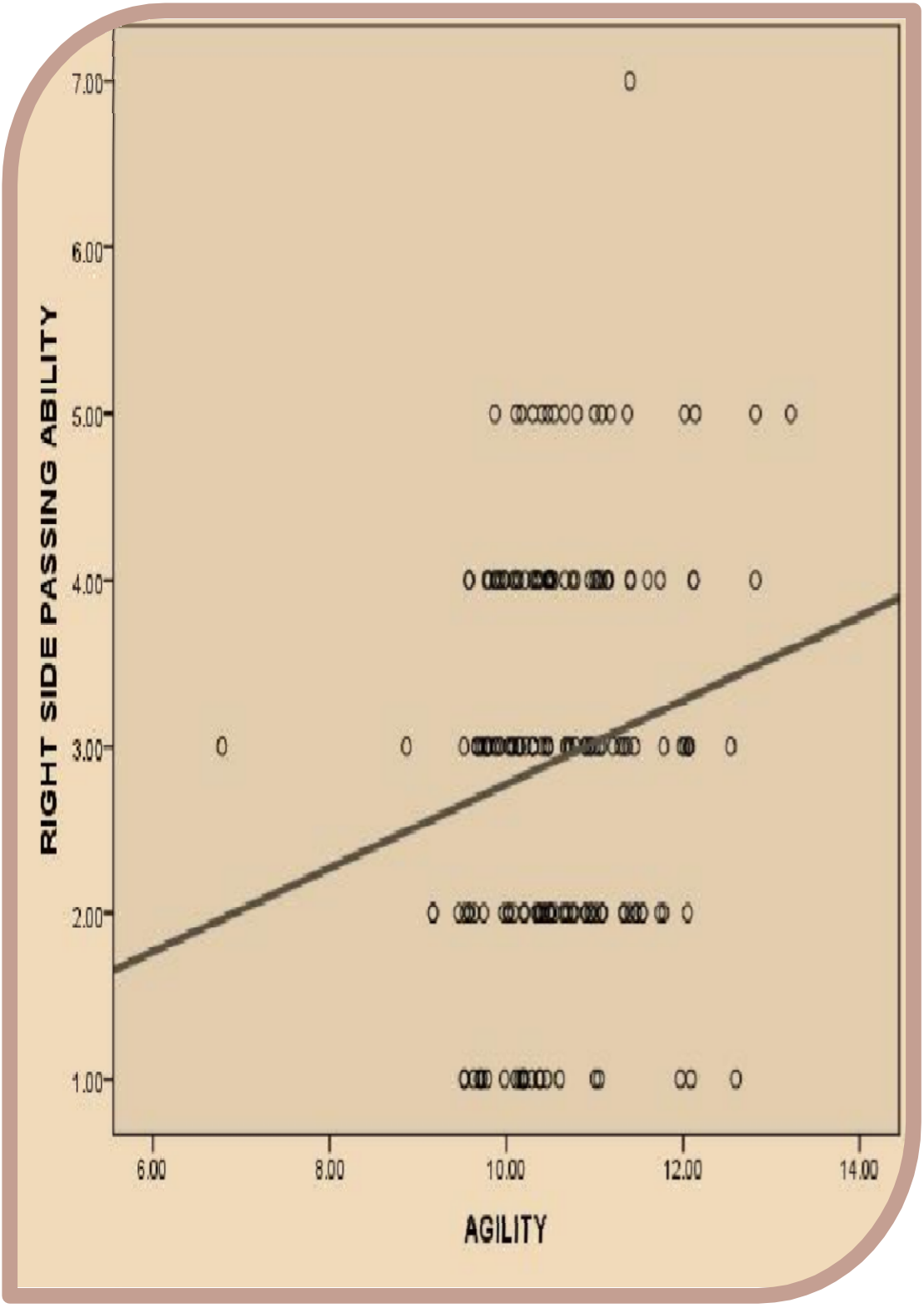


Fig. 12 : Right Side Passing Ability and Agility Relationship

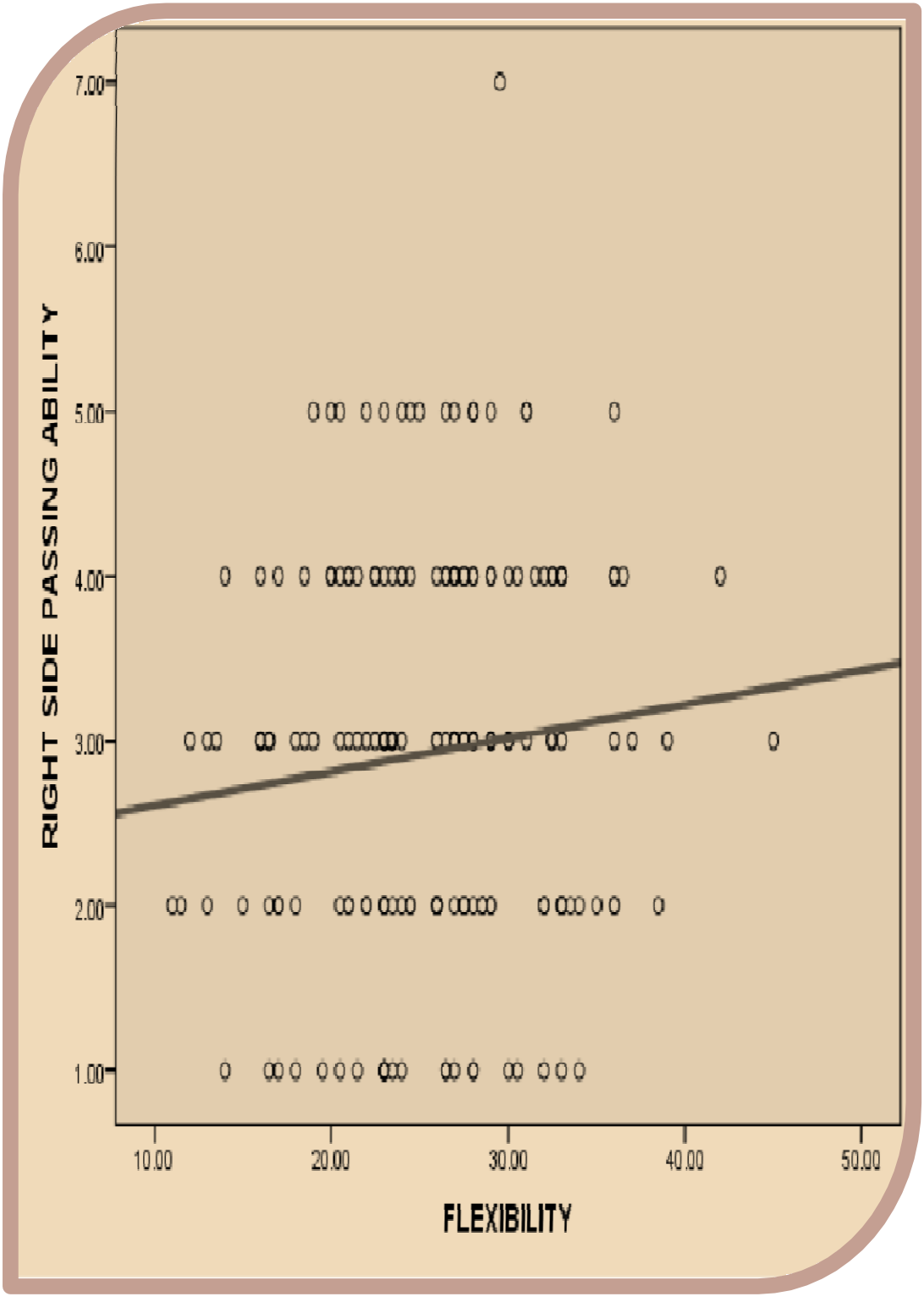


Fig. 13 : Right Side Passing Ability and Flexibility Relationship

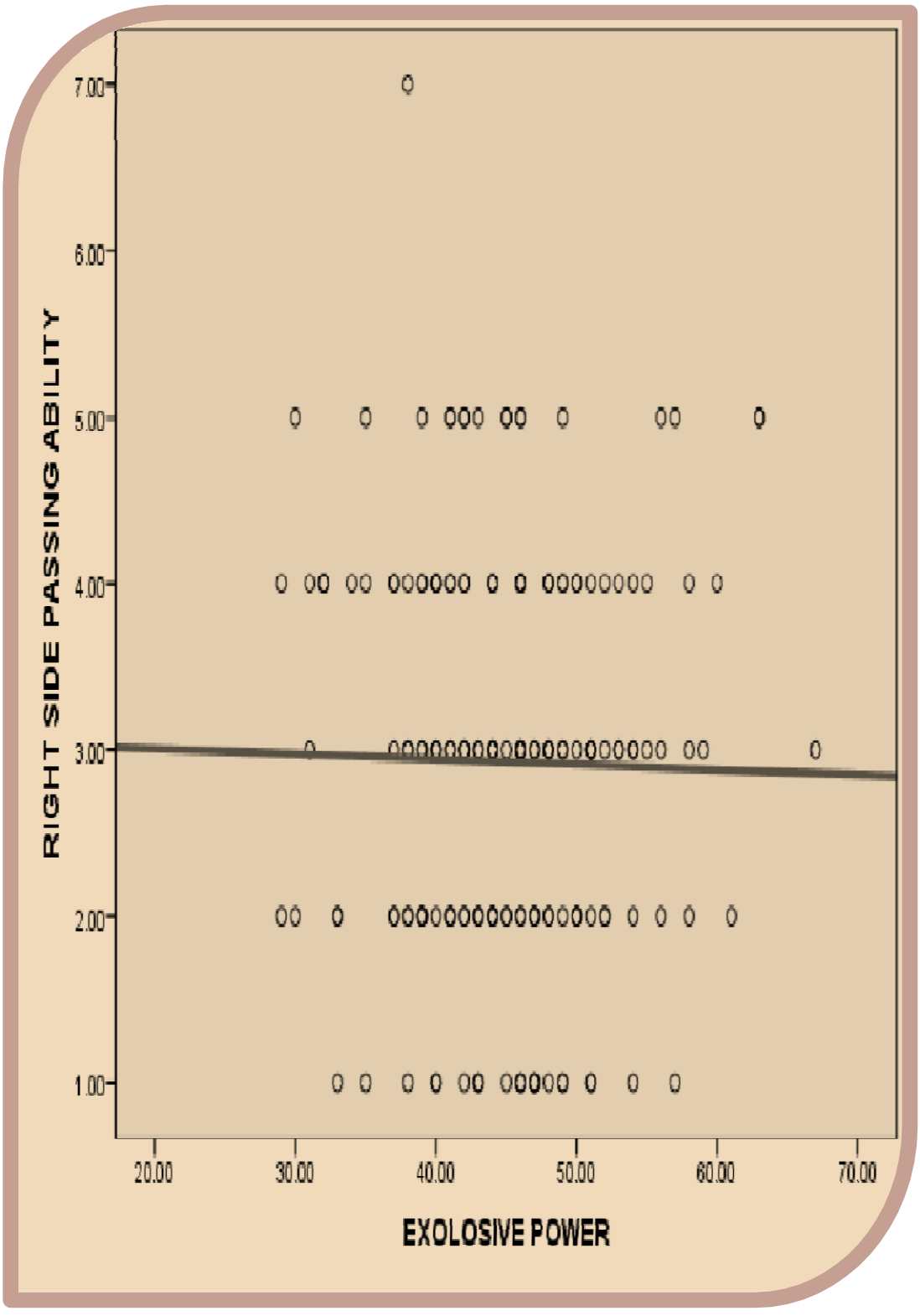


Fig. 14 : Right Side Passing Ability and Explosive Power Relationship

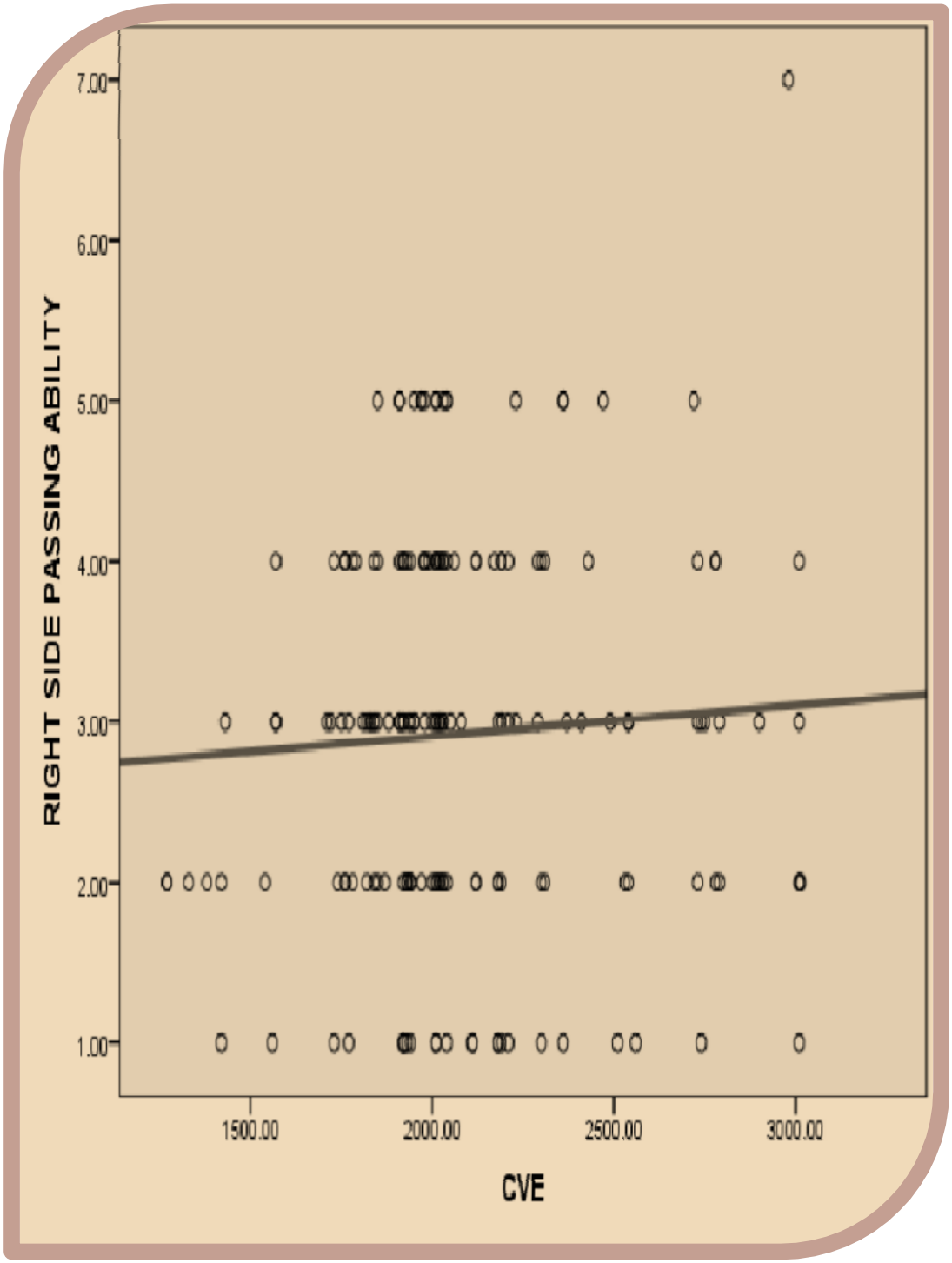


Fig. 15 : Right Side Passing Ability and Cardio – vascular endurance Relationship

The multiple correlation method yields correlations between a right side passing ability (dependent variable) and the combined effect of the motor fitness components (independent variable), which are weighted to give maximum correlation. This allowed researchers to ascertain the combined contributions of specific motor fitness components (speed, agility, flexibility, explosive power and cardiovascular endurance) to right side passing ability of volleyball players.

Table 4.9 displays the multiple coefficients of correlation that were calculated between the independent and dependent variables.

Table 4.9 : Multiple Correlation between Volleyball Players' Right Side Passing Ability and Motor Fitness Components

Dependent Variables	Independent Variable	Multiple Coefficient of Correlation (r)	Multiple Correlation ANOVA F	Sig.
Right Side Passing Ability	Speed	0.056	2.067	0.07
	Agility			
	Flexibility			
	Explosive Power			
	Cardio-vascular Endurance			

***Statistical significant at 0.05 level**

According to Table 4.9, it has been shown that the combined effect of motor fitness components on volleyball players' right side passing ability is statistically not significant **(r = 0.056; F = 2.067; p>0.05).** Therefore, it can be concluded from the research above that the selected motor fitness components listed above when combined do not affect a player's ability to right side passing in volleyball.

Left Side Passing Ability:

Table 4.10 : Relationship of Motor Fitness Components with Left Side Passing Ability of Volleyball Players

Sr. No	Motor Fitness Components	Volleyball Skill	Correlation Co-efficient	Sig. (2-tailed)
1	Speed	Left Side Passing Ability	0.095	0.20
2	Agility		0.054	0.47
3	Flexibility		0.151*	0.04
4	Explosive Power		-0.044	0.56
5	Cardio-vascular Endurance		-0.033	0.66

***Statistical significant at 0.05 level**

The correlation coefficient between the left side passing ability and motor fitness components of the volleyball players was presents in table 4.10. The statistical findings demonstrated that the flexibility **(r = 0.151, p<0.05)** significantly positive correlation with the left side passing ability. Regarding the other variables, there was a positive but not statistically significant correlation between speed **(r = 0.095, p>0.05)** and agility **(r = 0.054, p>0.05).** And explosive power **(r = -0.044, p>0.05)** and cardio-vascular endurance **(r = -0.033, p>0.05)** negative but not statistically significant correlation between left side passing ability.

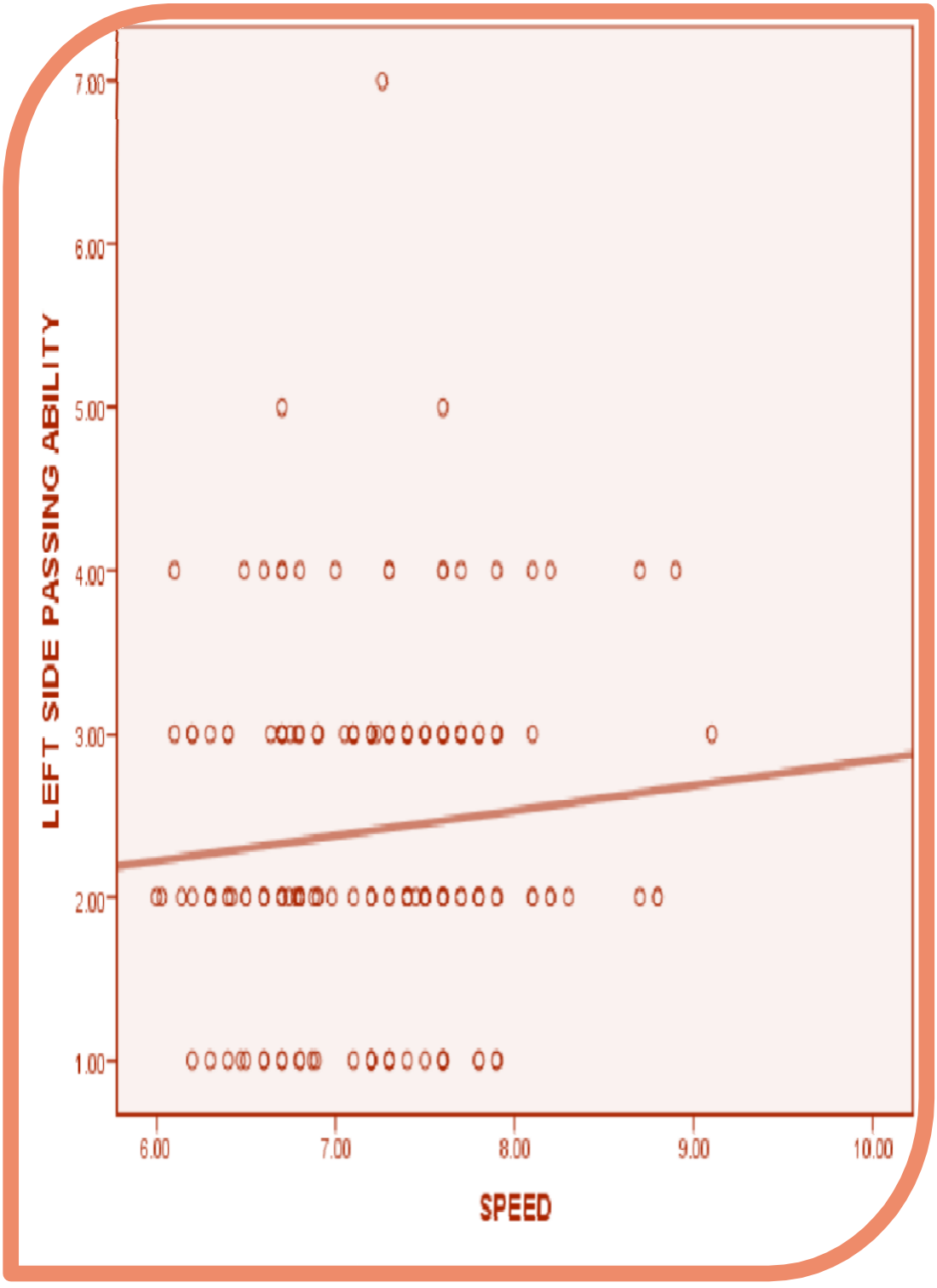


Fig. 16 : Right Side Passing Ability and Speed Relationship

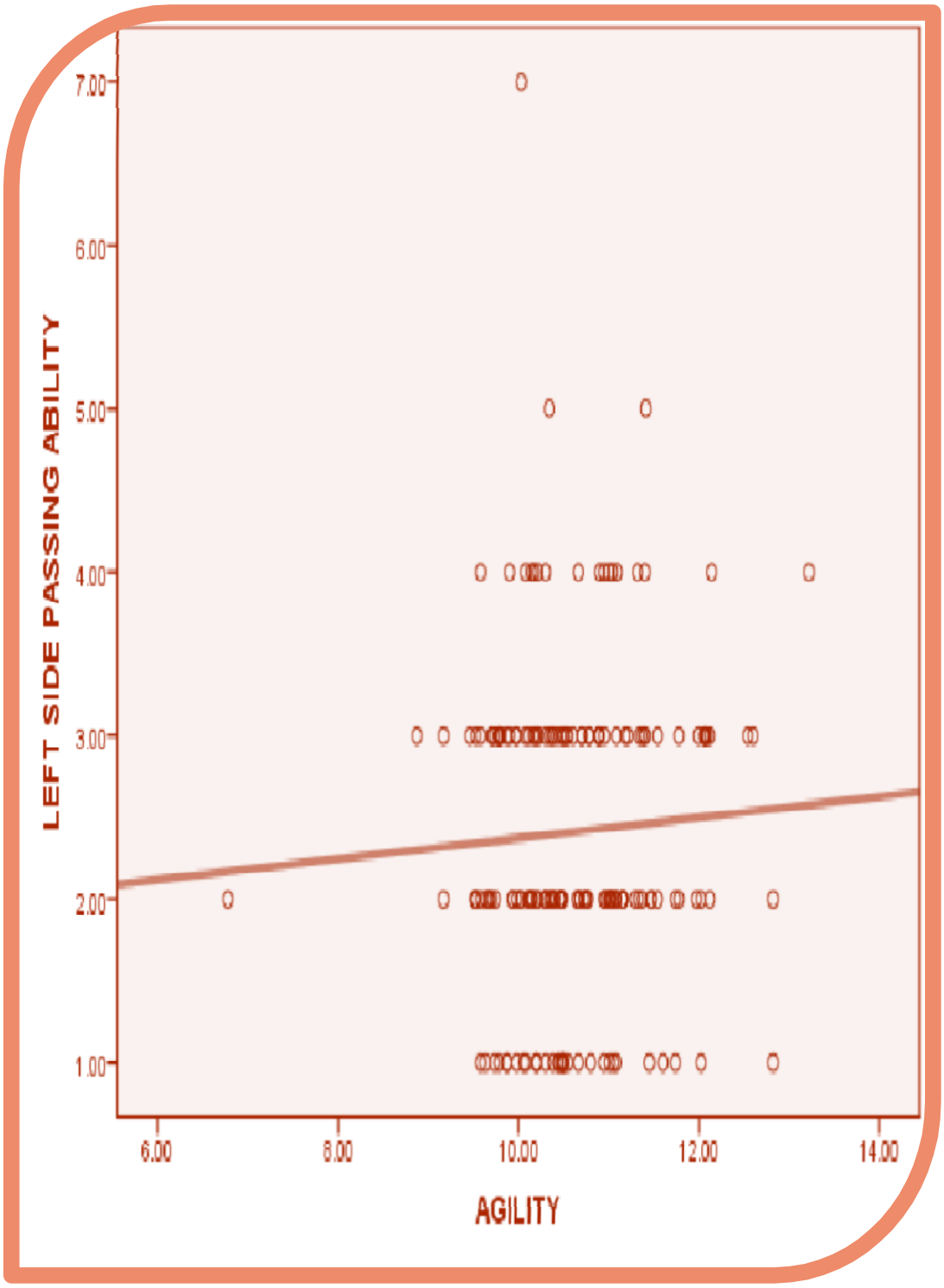


Fig. 17 : Right Side Passing Ability and Agility Relationship

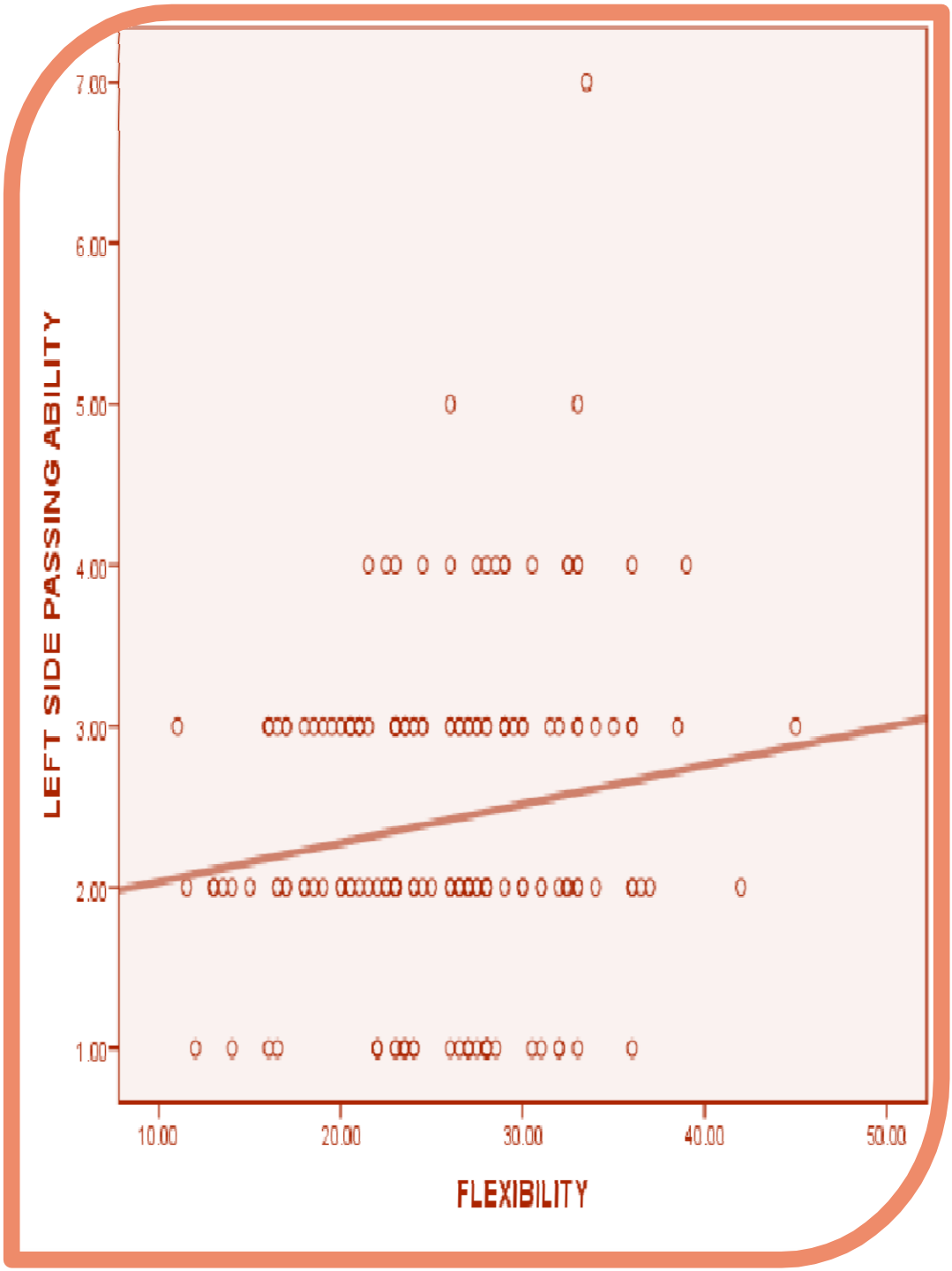


Fig. 18 : Right Side Passing Ability and Flexibility Relationship

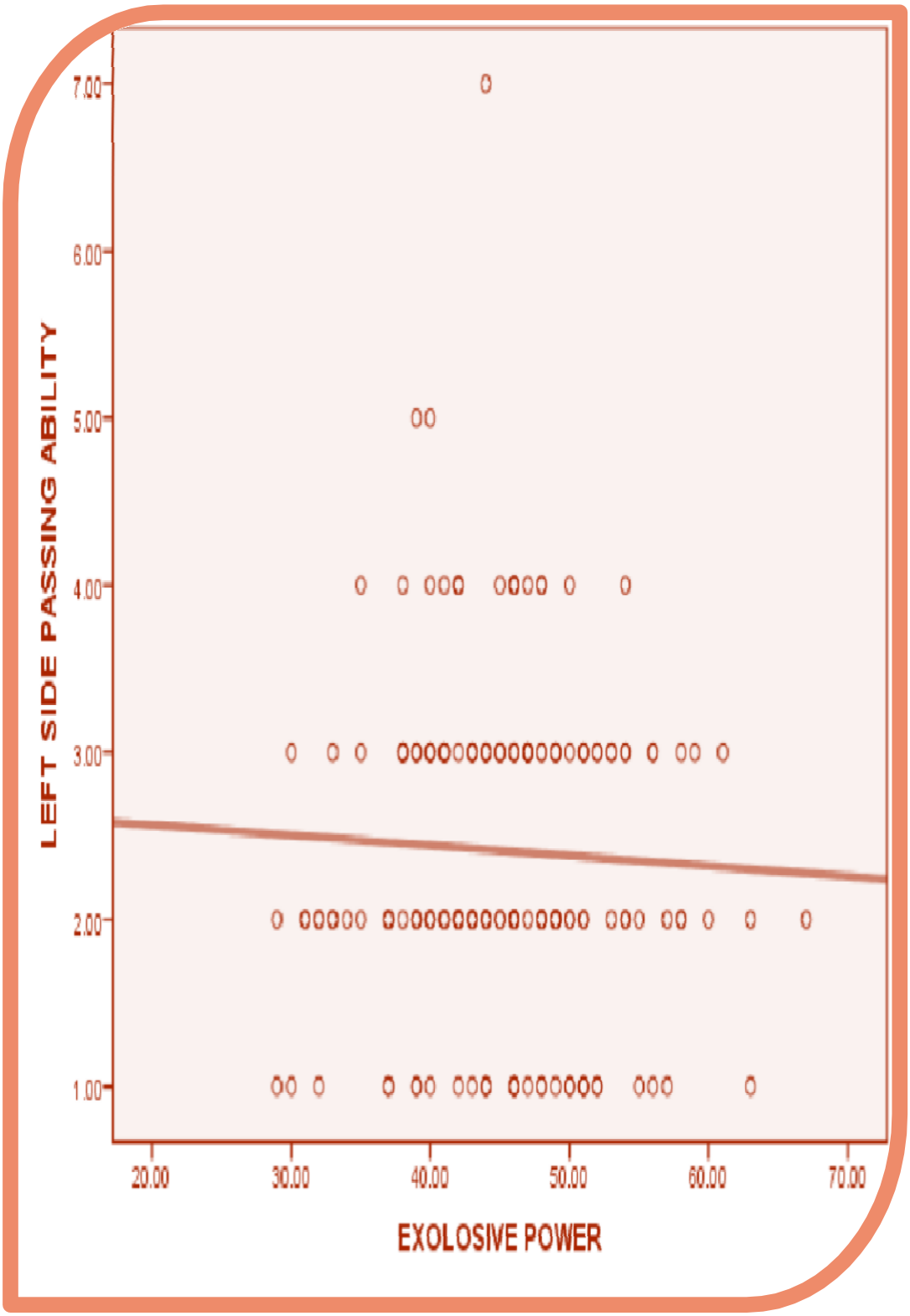


Fig. 19 : Right Side Passing Ability and Explosive Power Relationship

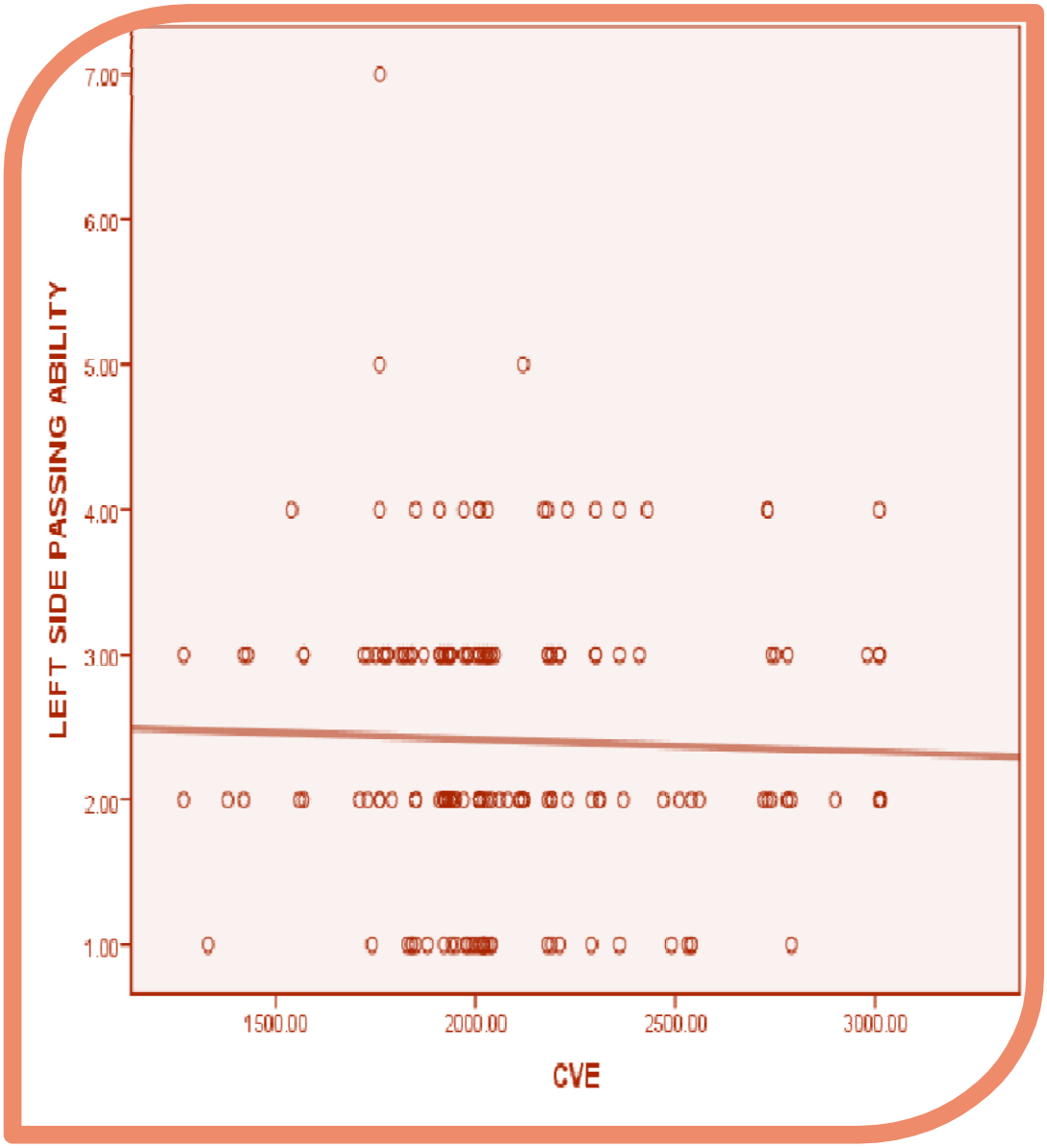


Fig. 20 : Right Side Passing Ability and Cardio-vascular Endurance Relationship

The multiple correlation method yields correlations between a left side passing ability (dependent variable) and the combined effect of the motor fitness components (independent variable), which are weighted to give maximum correlation. This allowed researchers to ascertain the combined contributions of specific motor fitness components (speed, agility, flexibility, explosive power and cardiovascular endurance) to left side passing ability of volleyball players.

Table 4.11 displays the multiple coefficients of correlation that were calculated between the independent and dependent variables.

Table 4.11 : Multiple Correlation between Volleyball Players' Left Side Passing Ability and Motor Fitness Components

Dependent Variables	Independent Variable	Multiple Coefficient of Correlation (r)	Multiple Correlation ANOVA F	Sig.
Left Side Passing Ability	Speed	0.040	1.449	0.21
	Agility			
	Flexibility			
	Explosive Power			
	Cardio-vascular Endurance			

***Statistical significant at 0.05 level**

According to Table 4.11, it has been shown that the combined effect of motor fitness components on volleyball players' left side passing ability is statistically not significant **(r = 0.040; F = 1.449; p>0.05).** Therefore, it can be concluded from the research above that the selected motor fitness components listed above when combined do not affect a player's ability to left side passing in volleyball.

SET-UP ABILITY:

Right Side Set-up Ability:

Table 4.12 : Relationship of Motor Fitness Components with Right Side Set-up Ability of Volleyball Players

Sr. No	Motor Fitness Components	Volleyball Skill	Correlation Co-efficient	Sig. (2-tailed)
1	Speed	Right Side Set-up Ability	-0.084	0.26
2	Agility		0.037	0.62
3	Flexibility		-0.179*	0.01
4	Explosive Power		0.108	0.15
5	Cardio-vascular Endurance		0.107	0.15

***Statistical significant at 0.05 level**

The correlation coefficient between the right side set-up ability and motor fitness components of the volleyball players was presents in table 4.12. The statistical findings demonstrated that the flexibility **(r = -0.179, p<0.05)** significantly negative correlation with the right side set-up ability. Regarding the other variables, there was a positive but not statistically significant correlation between agility **(r = 0.0.37, p>0.05)**, explosive power **(r = 0.108, p>0.05)** and cardio-vascular endurance **(r = 0.107, p>0.05).** And speed **(r = - 0.084, p<0.05)** negative but not statistically significant correlation between right side set- up ability.

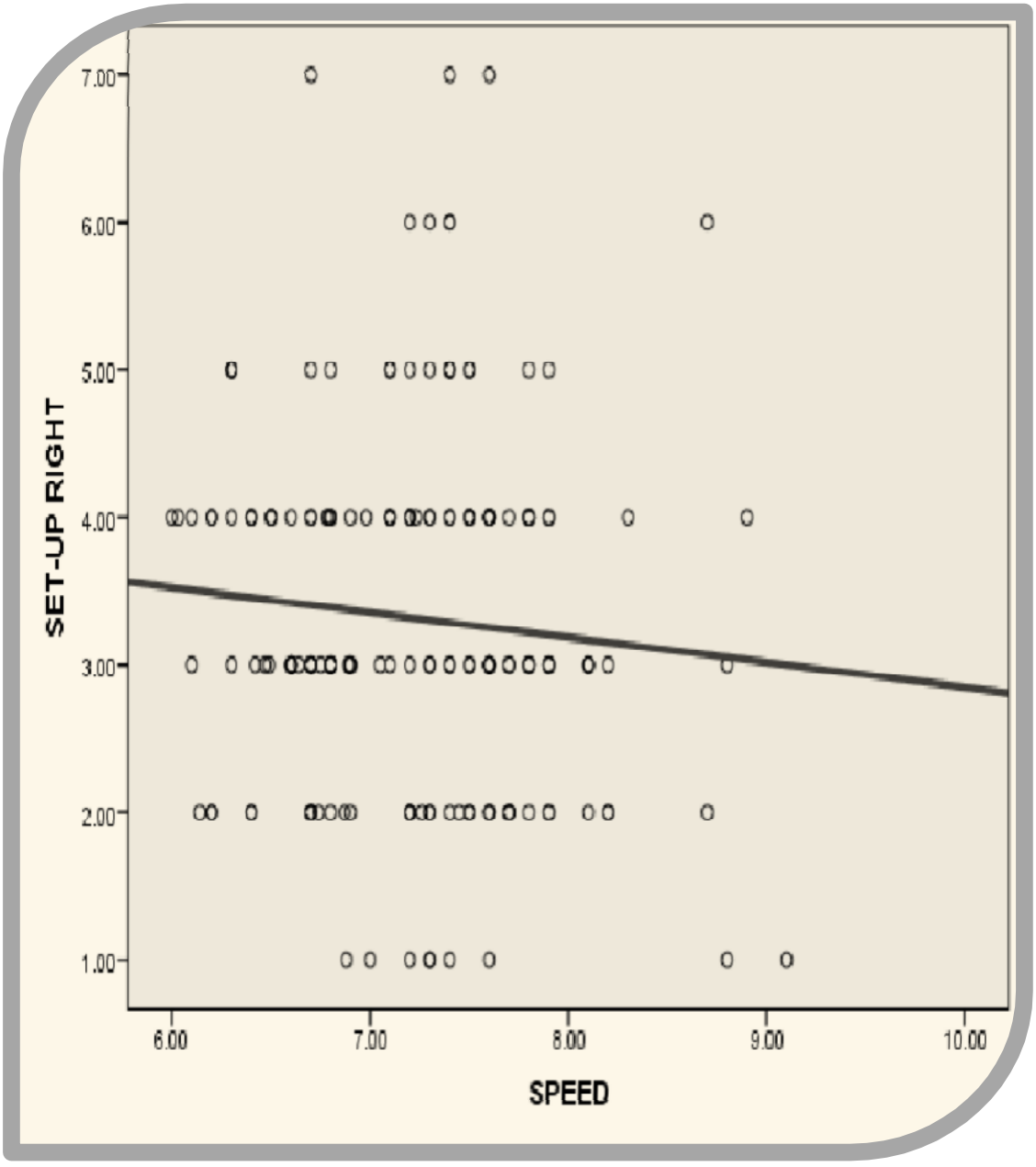


Fig. 21: Right Side Passing Ability and Speed Relationship

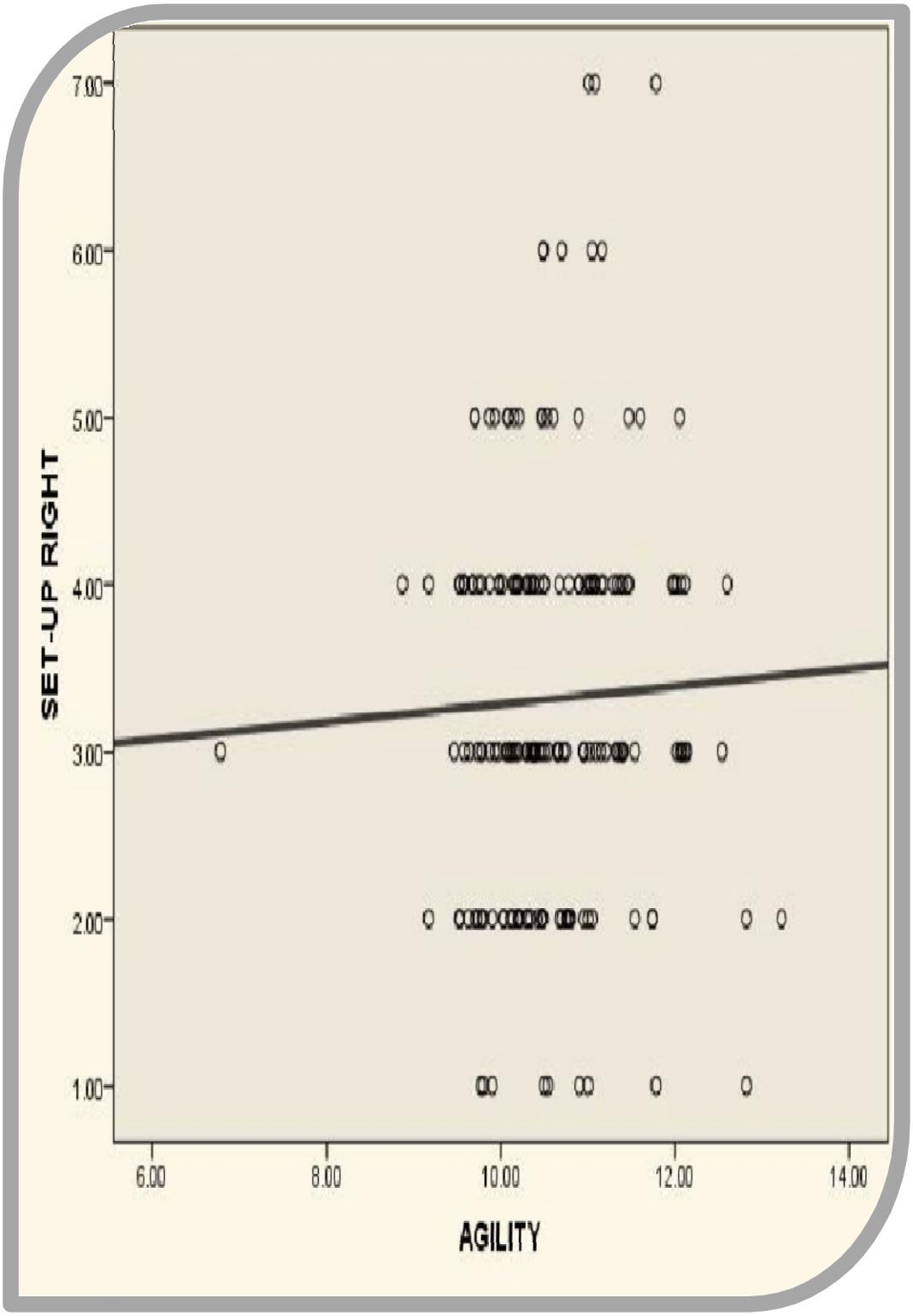


Fig. 22 : Right Side Passing Ability and Agility Relationship

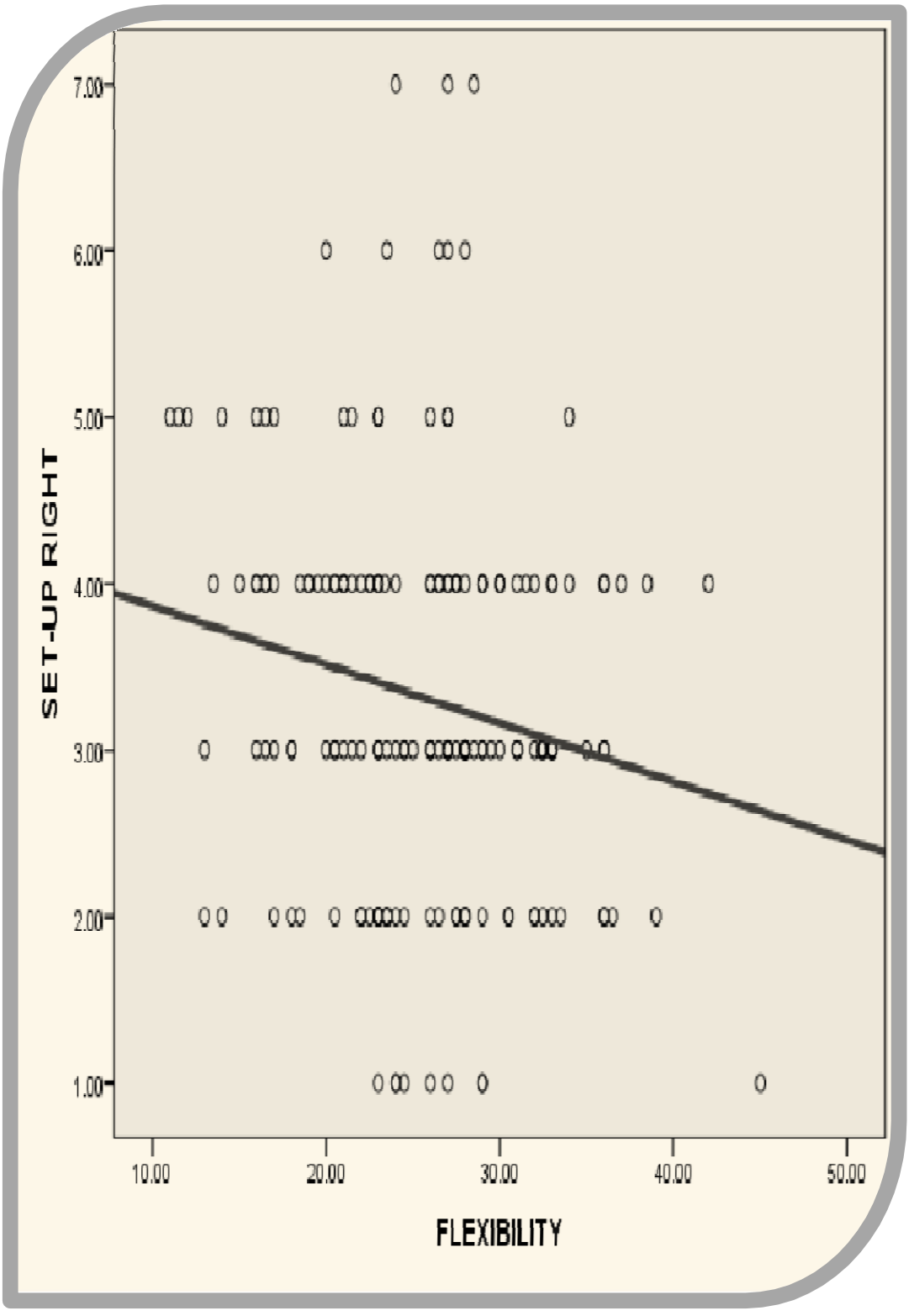


Fig. 23 : Right Side Passing Ability and Flexibility Relationship

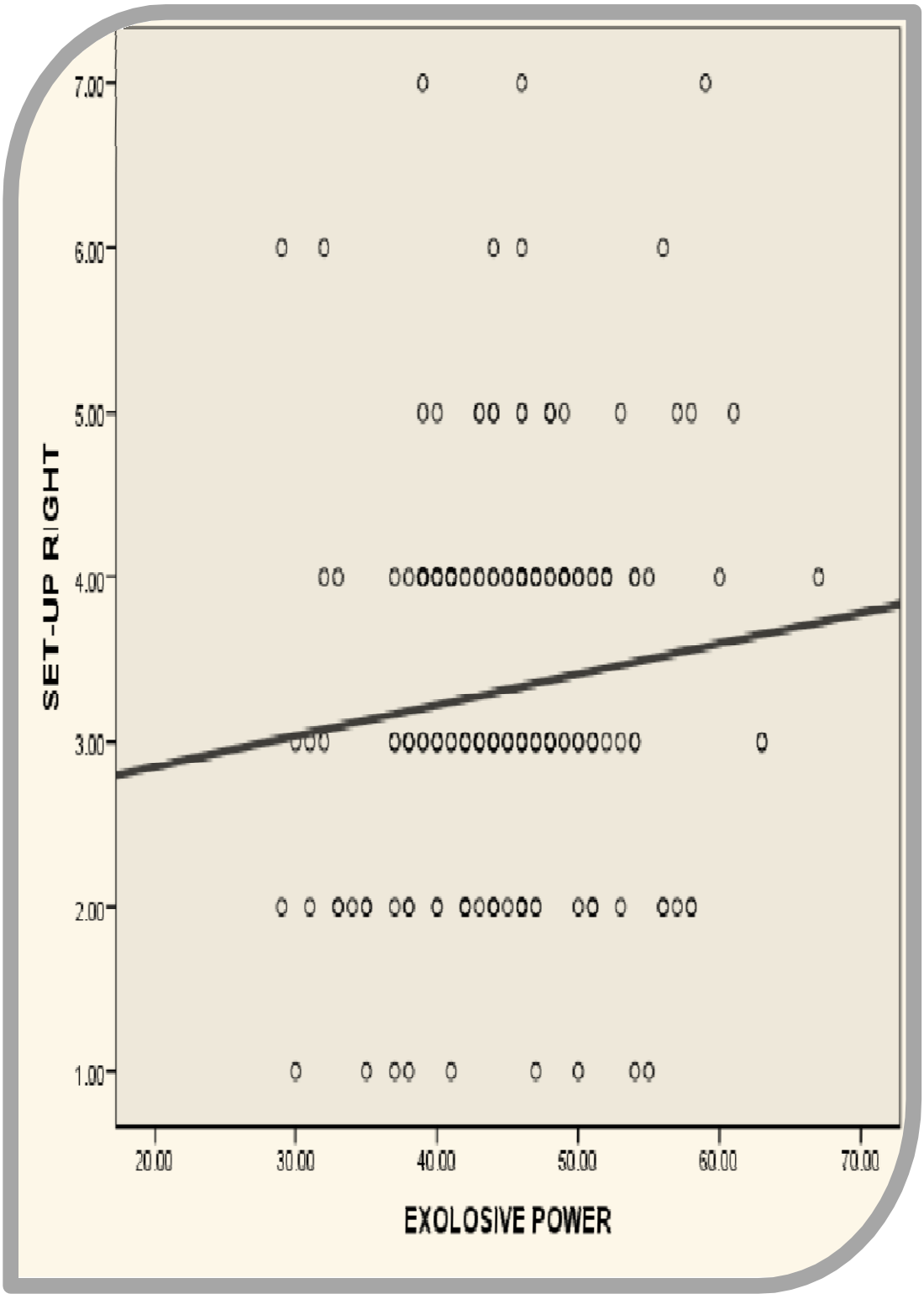


Fig. 24 : Right Side Passing Ability and Explosive Power Relationship

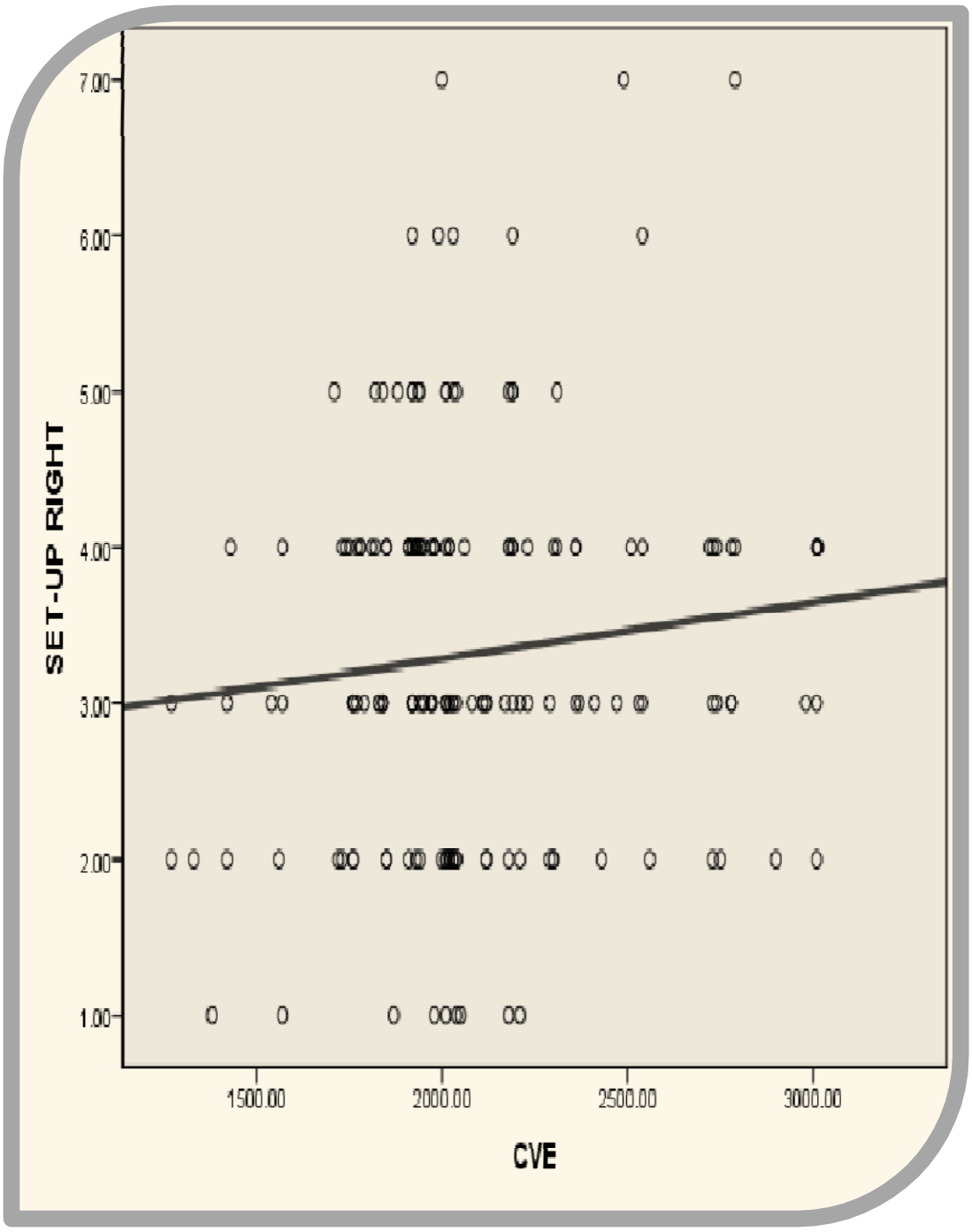


Fig. 25 : Right Side Passing Ability and Cardio – vascular endurance Relationship

The multiple correlation method yields correlations between a right side set-up ability (dependent variable) and the combined effect of the motor fitness components (independent variable), which are weighted to give maximum correlation. This allowed researchers to ascertain the combined contributions of specific motor fitness

components (speed, agility, flexibility, explosive power and cardiovascular endurance) to right side set- up ability of volleyball players.

Table 4.13 displays the multiple coefficients of correlation that were calculated between the independent and dependent variables.

Table 4.13 : Multiple Correlation between Volleyball Players' Right Side Set-up Ability and Motor Fitness Components

Dependent Variables	Independent Variable	Multiple Coefficient of Correlation (r)	Multiple Correlation ANOVA F	Sig.
Right Side Set-up Ability	Speed	0.071	2.651*	0.02
	Agility			
	Flexibility			
	Explosive Power			
	Cardio-vascular Endurance			

***Statistical significant at 0.05 level**

According to Table 4.13, volleyball players' combined contribution right side set- up ability to motor fitness components has been determined to be statistically significant at **r = 0.071 (F = 2.651, p<0.05).**

The step-wise regression technique was used to determine which factor has the biggest influence on volleyball players' right side set-up ability, taking into account the motor fitness components that were previously described and selected. The results are shown in Table 4.14.

Table 4.14 : Regression Prediction of Right Side Set-Up Ability with selected Motor Fitness Components of Volleyball Players

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.179[a]	0.032	0.026	1.204
2	0.230[b]	0.053	0.042	1.195

a. **Predictors: (Constant), Flexibility**

b. **Predictors: (Constant), Flexibility, Cardio – vascular endurance**

Table 4.15 : Regression Coefficients Estimating Right Side Set-Up Ability Using selected Motor Fitness Components of Players in Volleyball

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1.	(Constant)	4.21	0.38	- 0.18	11.04*	0.00
	Flexibility	- 0.03	0.01		- 2.42*	0.01
2.	(Constant)	3.32	0.59	- 0.21 - 0.15	5.63*	0.00
	Flexibility	- 0.04	0.01		- 2.78*	0.00
	Cardio-vascular endurance	0.001	0.00		1.98*	0.04

c. **Dependent Variable: Volleying Ability**

Table 4.14 displays the regression models that are available. Since the Adjusted R^2 value in the third model is 0.042, the regression equation was developed using the second model.

Furthermore, table 4.14 shows that three independent variables – flexibility and Cardio – vascular endurance have been found in the second model. As a result, the regression equation will only be developed using these three variables. These three independent factors explained 4.2 % variability in the volleyball players' right side set-up ability, as indicated by the model's adjusted R^2 value of 0.042. As a result, this model is ideal for creating the regression equations.

All of the models' regression coefficients are displayed in table 4.15. All two of the regression coefficients in the thread model 't' value have significant since their p-values, or significant values, are less than 0.05. Thus, it was said that the factors of flexibility and Cardio – vascular endurance account for a large portion of the variances in right side set- up ability.

The regression equation was created using the regression coefficients (Beta) of the third model, which are displayed in Table 4.15. It is as follows:

Right Side Set-Up Ability = 3.32 – 0.21 (Flexibility) - 0.15 (Cardio – vascular endurance)

Left Side Set-up Ability:

Table 4.16 : Relationship of Motor Fitness Components with Left Side Set-up Ability of Volleyball Players

Sr. No	Motor Fitness Components	Volleyball Skill	Correlation Co-efficient	Sig. (2-tailed)
1	Speed	Left Side Set-up Ability	-0.105	0.16
2	Agility		0.040	0.59
3	Flexibility		-0.059	0.43
4	Explosive Power		-0.044	0.56
5	Cardio-vascular Endurance		0.114	0.13

***Statistical significant at 0.05 level**

The correlation coefficient between the left side set-up ability and motor fitness components of the volleyball players was presents in table 4.16. The statistical findings demonstrated that the positive but not statistically significant correlation between agility **(r = 0.040, p>0.05)**, cardio-vascular endurance **(r = 0.114, p>0.05)**. And speed **(r = - 0.105, p<0.05),** flexibility **(r = -0.059, p>0.05)** and explosive power **(r = -0.044, p>0.05)** negative but not statistically significant correlation between left side set-up ability.

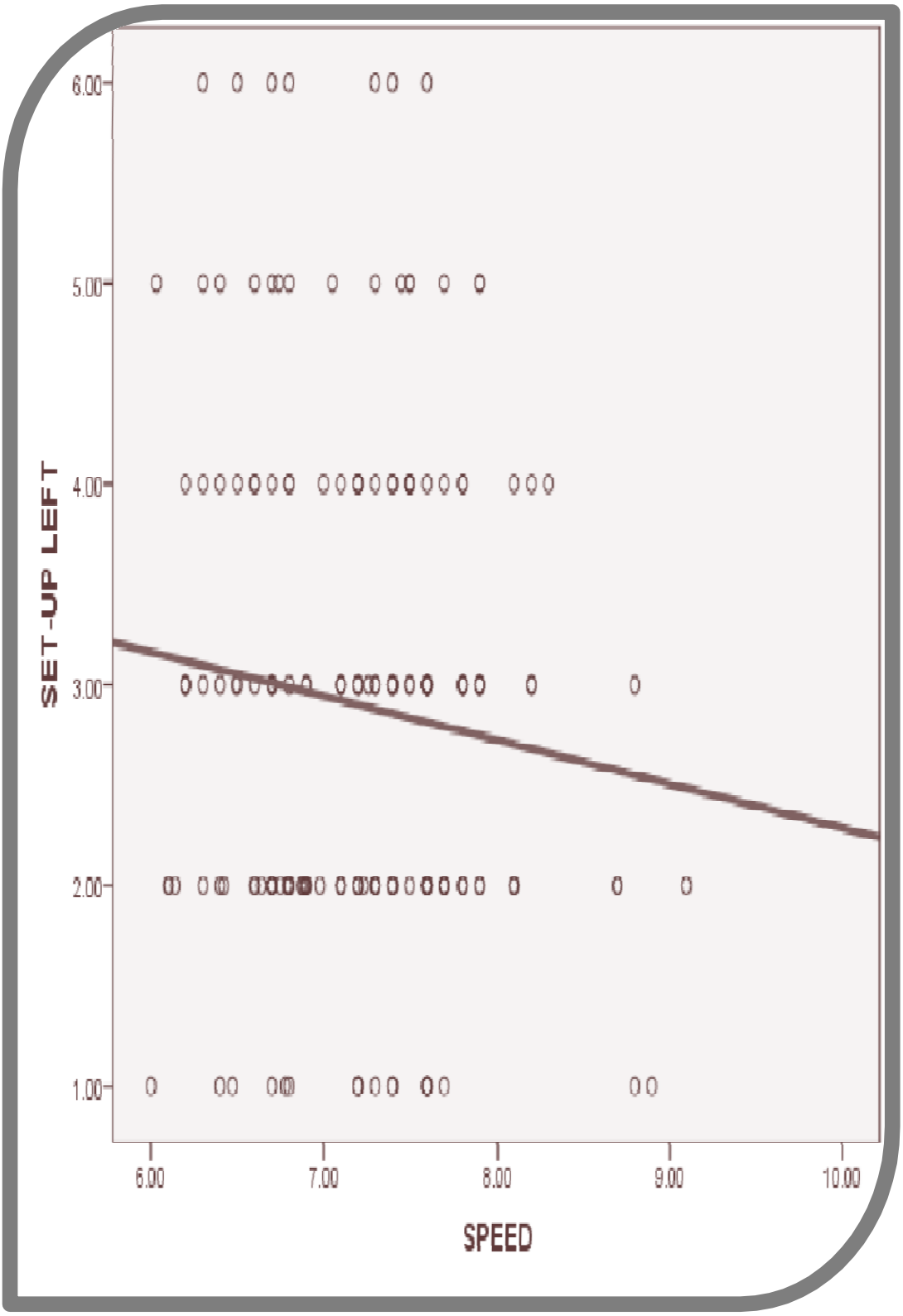


Fig. 26 : Left Side Passing Ability and Speed Relationship

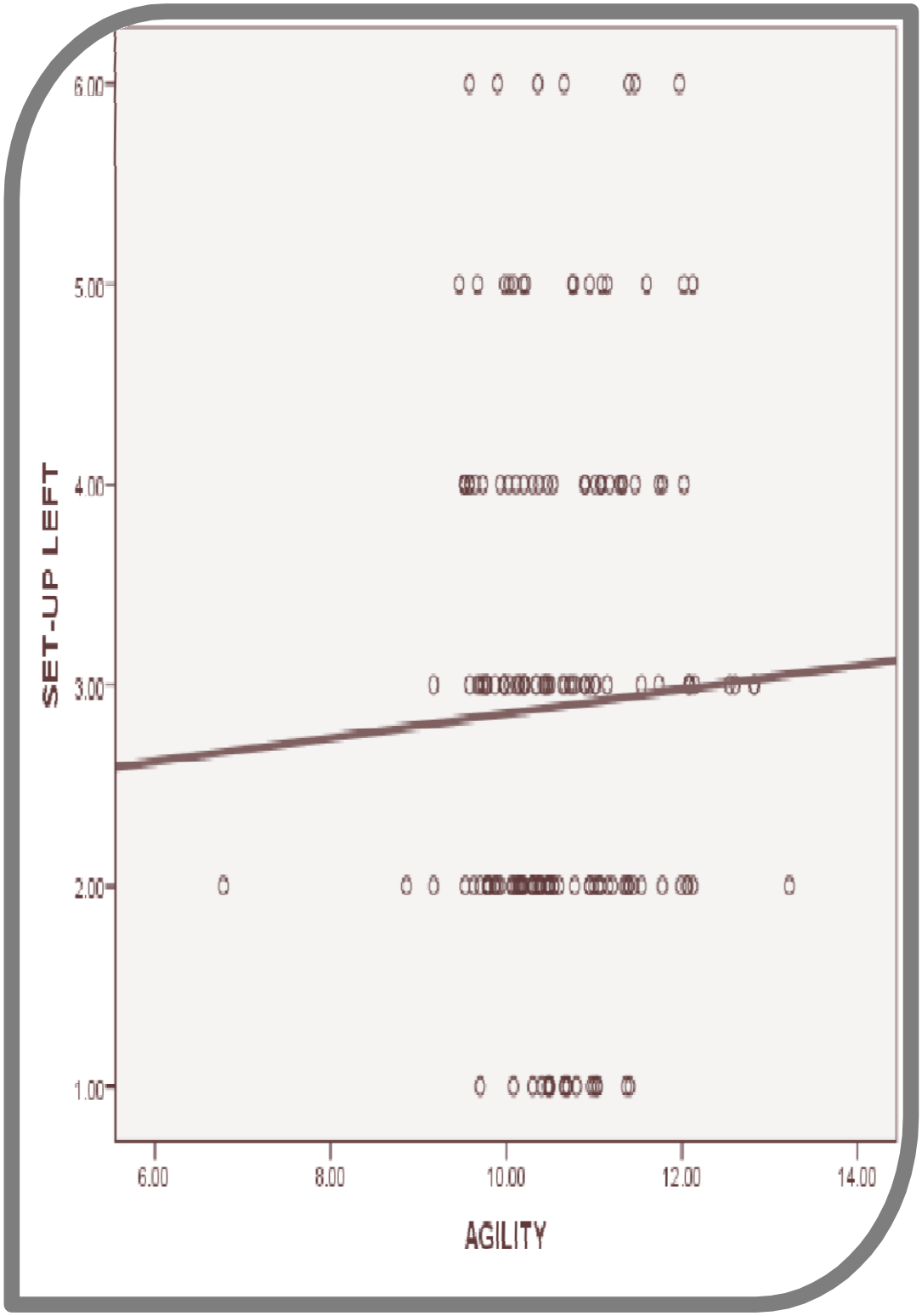


Fig. 27 : Left Side Passing Ability and Agility Relationship

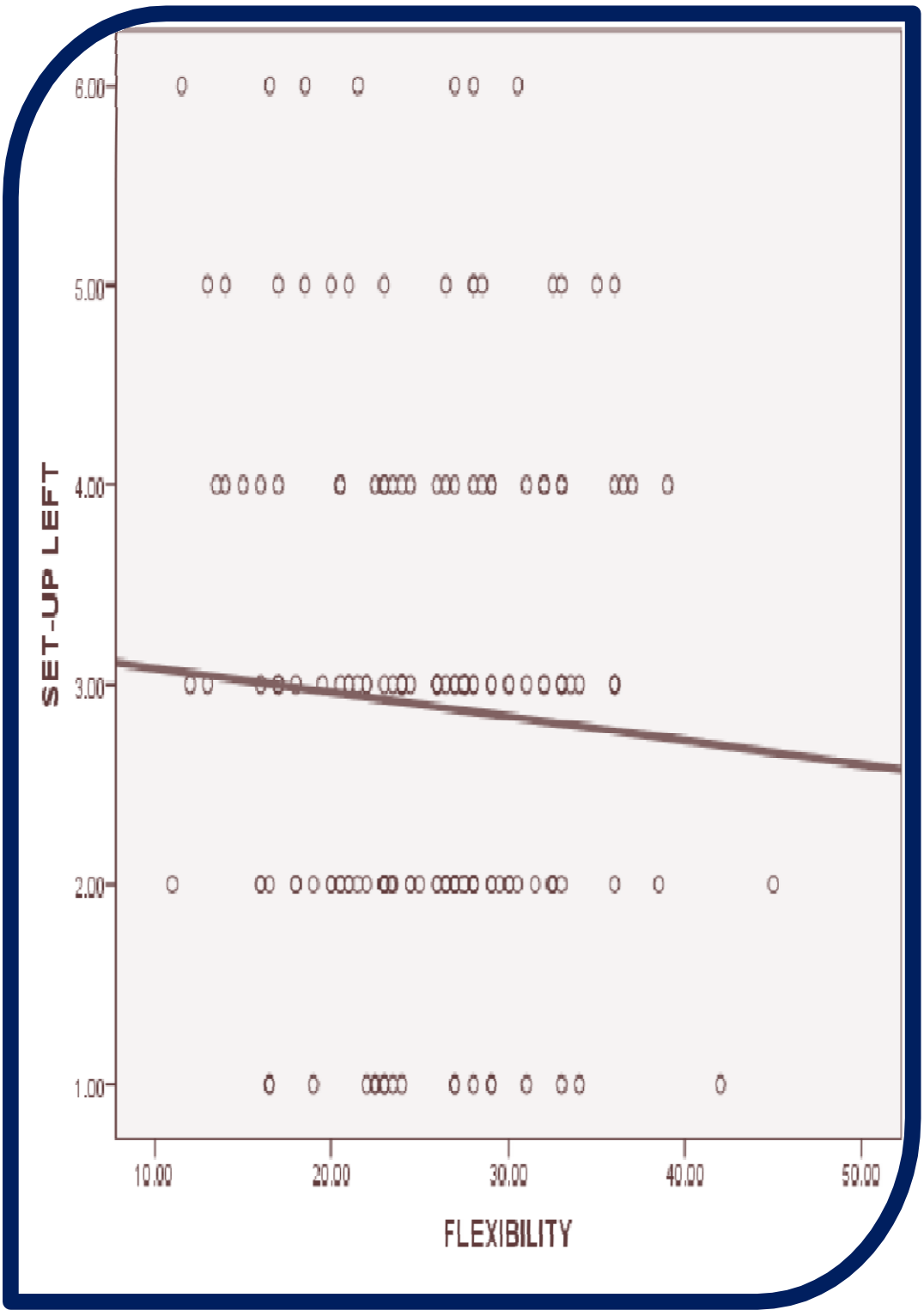


Fig. 28 : Left Side Passing Flexibility and Speed Relationship

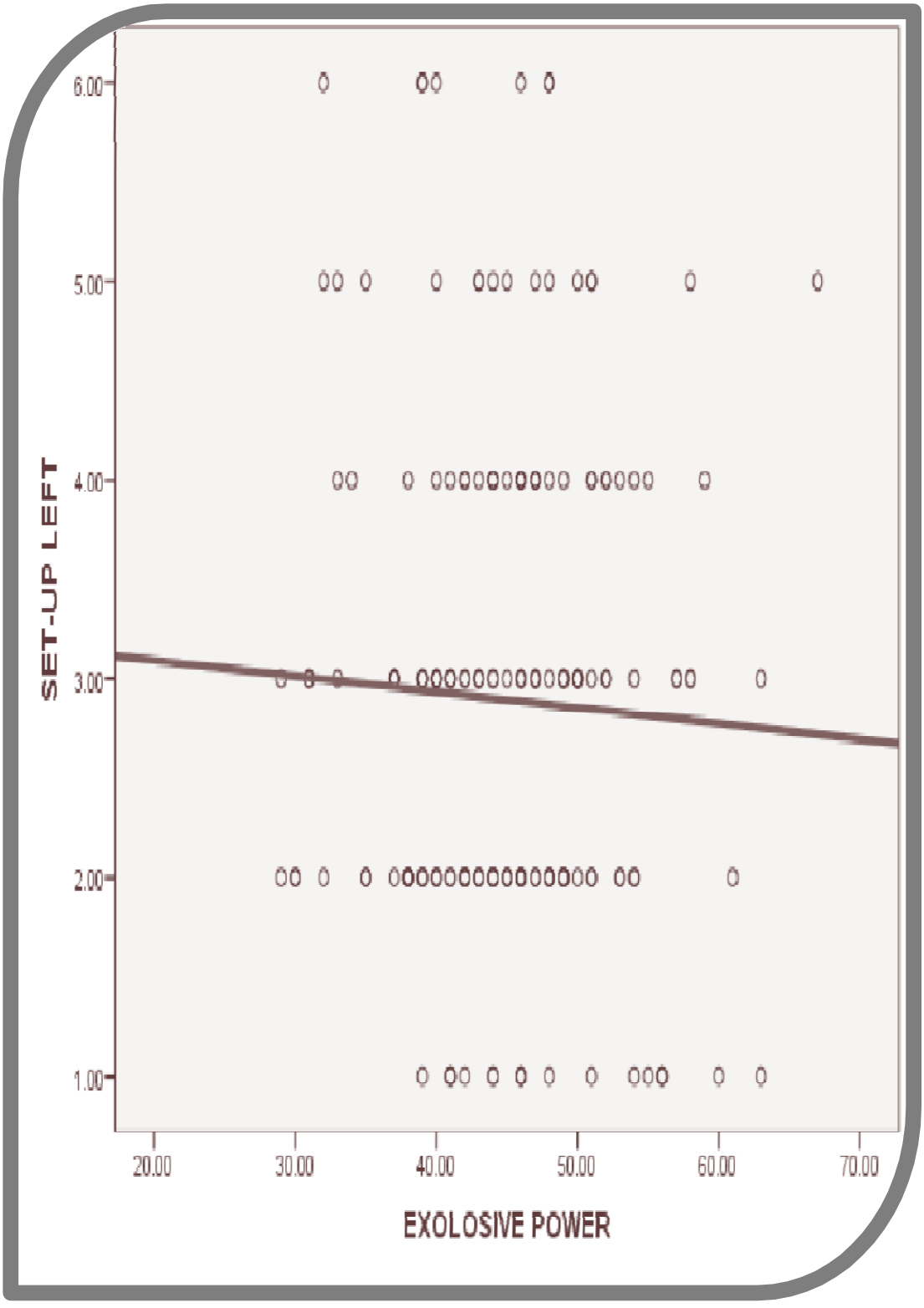


Fig. 29 : Left Side Passing Ability and Explosive Power Relationship

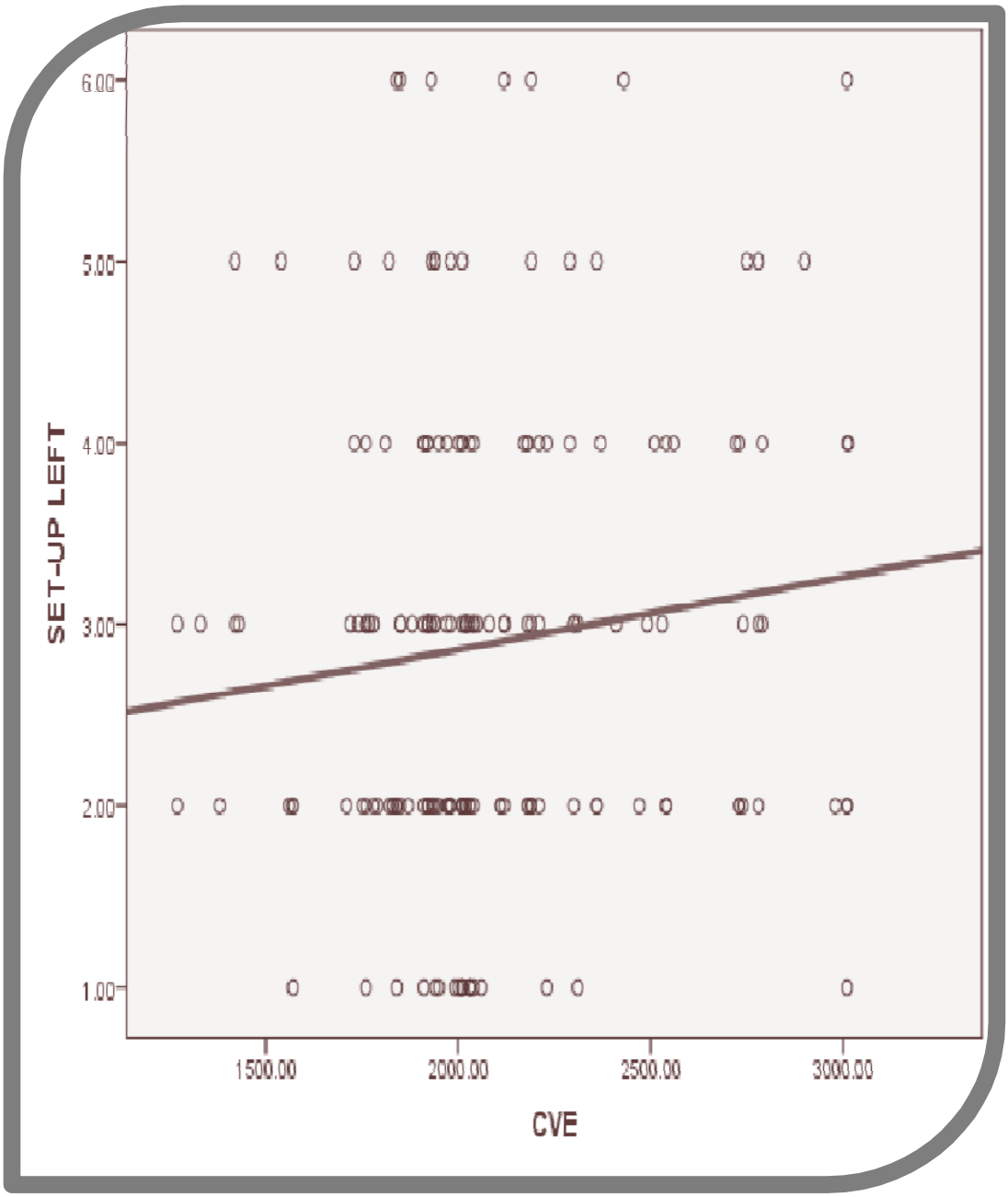


Fig. 30 : Left Side Passing Ability and Cardio – vascular endurance Relationship

The multiple correlation method yields correlations between a left side set-up ability (dependent variable) and the combined effect of the motor fitness components (independent variable), which are weighted to give maximum correlation. This allowed researchers to ascertain the combined contributions of specific motor fitness components (speed, agility, flexibility, explosive power and cardiovascular endurance) to left side set- up ability of volleyball players.

Table 4.17 displays the multiple coefficients of correlation that were calculated between the independent and dependent variables.

Table 4.17 : Multiple Correlation between Volleyball Players' Left Side Set-up Ability and Motor Fitness Components

Dependent Variables	Independent Variable	Multiple Coefficient of Correlation (r)	Multiple Correlation ANOVA F	Sig.
Left Side Set-up Ability	Speed	0.033	1.205	0.31
	Agility			
	Flexibility			
	Explosive Power			
	Cardio-vascular Endurance			

***Statistical significant at 0.05 level**

According to Table 4.17, it has been shown that the combined effect of motor fitness components on volleyball players' left side set-up ability is statistically not significant **(r = 0.033; F = 1.205; p>0.05).** Therefore, it can be concluded from the research above that the selected motor fitness components listed above when combined do not affect a player's ability to left side set-up in volleyball.

4.3 Discussion of the Findings

In the sport of volleyball, physical health and talent are highly valued. A successful volleyball player needs to move around the court with good speed, power, and agility. For volleyball success, the most crucial physical attributes are strength, speed, endurance, flexibility, coordination, explosive strength, jumping ability, and game endurance. Furthermore, volleyball players must possess motor fitness, which is the capacity to compete successfully in the sport. Personality traits including self-motivation, concentration, and game comprehension are also critical to individual success. Success on a team is influenced by group dynamics, leadership, and having a solid technical foundation in volleyball. Training should concentrate on these areas since attack, serve, and reception are the three most crucial volleyball abilities

nowadays. In general, volleyball success requires a blend of technical skills, psychological factors, motor fitness, and physical fitness.

As volleyball is a team activity, playing well requires a combination of talent and fitness. To become good at volleyball, one must have a certain set of abilities and strategies. In volleyball, abilities including serving, passing, lifting, spiking, and blocking are frequently employed. The association between a particular physical fitness component and volleyball players' skill performance is the main subject of this study.

Volleying Ability:

- Among the selected motor fitness components, agility and flexibility showed a significant negative correlation with volleying ability, whereas speed showed a positive correlation. A significant relationship indicates that a rise in these skills corresponds with an increase in volleying performance.
- The volleying ability was significant contribution with all of the selected motor fitness components. This demonstrates that improved fitness levels are necessary for volleying success.
- The third model (agility, flexibility, and speed) accounted for 7.1% of the variability in volleying ability, according to stepwise multiple regression analyses. Agility explained 2.7% of the difference in volleying skill, flexibility explained 2.7%, and speed explained 2.4%.

Service Ability:

- Among the selected motor fitness components, explosive power showed a significant negative correlation with service ability. A significant relationship indicates that a rise in these skills corresponds with an increase in service performance.
- There was no contribution between the motor fitness components and service ability performance. This demonstrates that the performance in service ability is unaffected by the components of motor fitness.

Passing Ability:

- Among the selected motor fitness components, agility and flexibility demonstrated a strong positive link with the ability to pass on the right side and the left side, respectively.
- No contribution was observed between the motor fitness components and the ability to pass on the right and left sides. This proves that the components of motor fitness have no bearing on passing ability performance.

Set-up Ability:

- Among the selected motor fitness components flexibility showed a significant negative correlation with right side set-up ability. A significant relationship indicates that a rise in these skills corresponds with an increase in set-up performance.
- The right side set-up ability was significant contribution with all of the selected motor fitness components. This demonstrates that improved fitness levels are necessary for set-up success.
- The third model (flexibility and cardio-vascular endurance) accounted for 4.2% of the variability in right side set-up ability, according to stepwise multiple regression analyses, flexibility explained 2.6% of the difference in right side set-up ability, and cardio-vascular endurance explained 1.6%.
- No significant correlation were observed between the motor fitness components and left side set-up ability.

This findings consonance with the studies:

Uslu et. al. (2021) the results of the study demonstrate that there is a strong relationship between a few critical motor skills and volleyball-specific technical skills among both male and female volleyball players.

Men's volleyball players' playing ability and the following traits were positively correlated, according to **Govindaiah et al. (2019)** findings: flexibility, muscular strength, explosive power, agility, and cardiovascular endurance.

Sudhakara (2018) considering the constraints and results of the study, physical characteristics including flexibility, speed, endurance, strength, and leg power are

positively correlated with the capacity to play volleyball. The results of the study show that specific physical characteristics affect volleyball players' performance.

Physical attributes including flexibility, speed, endurance, strength, and leg power are positively connected with the ability to play volleyball, according to **Vileep and Virupaksha's (2017)** findings and study limitations. The study's findings indicate that certain physical attributes have an impact on volleyball players' performance.

The study conducted by **Gangey and Kerketta (2016)** revealed a noteworthy association between volleyball playing ability and agility, coordination, and response time.

In volleyball, agility and jump performance are correlated **(Sahin, 2014),** and producing high power, quick stretch shortening cycle motions and high-speed whole-body movements requires agility.

The findings of **Cox's (2013)** study showed a substantial relationship between team performance and the volleyball skills under investigation when taken as a whole. After a more thorough examination of the relationship, it was determined that spiking, spike defense, serving, receiving, setting, and free ball passing were the volleyball abilities most important in forecasting team success.

Volleyball players had an advantage in terms of flexibility, muscular endurance, power, and cardio-respiratory endurance, according to a 2013 study by **Taware et al.**

The volleyball playing skill was found to be highly influenced by strength measures of the leg, arm, abdominal, and legs, with leg strength outweighing arm and belly strength, according to **Bhadoria's (2003)** study.

Sheela (1994) based on the importance of the motor fitness component that underpins volleyball performance. Flexibility, cardiopulmonary endurance, and muscular endurance were further factors in the volleyball player's performance. In volleyball, agility demonstrated a substantial relationship with skill.

4.4 Discussion of Hypothesis

H_1 - There would be significant relationship between selected motor fitness components with the volleyball skill test.

- The volleying ability of volleyball players was found to be significantly correlated with motor fitness components like speed, agility, and flexibility; hence, the hypothesis about the aforementioned motor fitness aspects has been accepted. However, there is no significant relationship between the other motor fitness components; explosive power and cardiovascular endurance, so they are rejected.
- The service ability of volleyball players was found to be significantly correlated with explosive power hence, the hypothesis about the aforementioned motor fitness aspects has been accepted. However, there is no significant relationship between the other motor fitness components; speed, agility, flexibility and cardiovascular endurance, so they are rejected.
- The right side passing ability of volleyball players was found to be significantly correlated with agility hence, the hypothesis about the aforementioned motor fitness aspects has been accepted. However, there is no significant relationship between the other motor fitness components; speed, flexibility, explosive power and cardiovascular endurance, so they are rejected.
- The left side passing ability of volleyball players was found to be significantly correlated with flexibility hence, the hypothesis about the aforementioned motor fitness aspects has been accepted. However, there is no significant relationship between the other motor fitness components; speed, agility, explosive power and cardiovascular endurance, so they are rejected.
- The right side set-up ability of volleyball players was found to be significantly correlated with flexibility hence, the hypothesis about the aforementioned motor fitness aspects has been accepted. However, there is no significant relationship between the other motor fitness components; speed, agility, explosive power and cardiovascular endurance, so they are rejected.

- The not significant relationship was found between selected motor fitness components and left side set-up ability of the volleyball players. Therefore, hypothesis has been rejected.

H_1 - There would be significant contribution of selected motor fitness components to the volleyball skill test.

- The volleying ability and right side set-up ability of volleyball players was found to be significantly **contribution** with the selected motor fitness components; hence, the hypothesis about the aforementioned motor fitness aspects has been accepted. However, there is no significant **contribution** with the selected motor fitness components with service ability, right side passing ability, left side passing ability and left side set-up ability, so they are rejected.

CHAPTER – V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

Volleyball programs can effectively make use of players' volleyball skills and physical fitness. This is why the researcher is interested in finding out how volleyball players' skill performance is related to various characteristics of physical fitness. The objective of the study is to find out the relationship of motor fitness components with skill performance of volleyball players. For the present study the selection of the sampling was based on Veer Narmad South Gujarat University, Surat Volleyball intercollege tournament. Here for this said tournament participating colleges were divided into four zones, Surat city, Surat Rural, Bharuch and Valsad district respectively. Out of these zones the four semi- finalists team of each zone means sixteen best teams, four from each zone having 192 male best players based on their performance, select total 180 subjects out of 192 for the present study. The subjects selected was in the age range of 17 -25 years.

The motor fitness components were speed, agility, flexibility, explosive power and Cardio – vascular endurance. The volleyball skill performance were measured with the AAHPER Volleyball Skill Test.

The analysis of the statistical parameters, such as descriptive statistics like mean, standard deviation, minimum value, maximum value, etc., was most relevant to the study's primary goals. Karl Pearson's product moment coefficient of correlation was used to evaluate the connection between volleyball players' skill performance and physical fitness components. Multiple regression analysis was used to predict the skill performance in volleyball from physical fitness components. A significance threshold of $p<0.05$ was used.

5.2 Result and Conclusions

Relationship of AAHPER Volleyball Skill with motor fitness components of volleyball players.

- The speed significantly positive. And agility and flexibility significantly negative correlation with the volleying ability.
- The negative but not statistically significant correlation between explosive power and cardio-vascular endurance and volleying ability.

- The explosive power significantly negative correlation with the service ability.
- The positive but not statistically significant correlation between speed, flexibility and agility. And the cardio-vascular endurance negative not statistically significant correlation with the service ability.
- The agility significantly positive correlation with the right side passing ability.
- The positive but not statistically significant correlation between speed, flexibility and cardio-vascular endurance**.** And explosive power negative but not statistically significant correlation between right side passing ability.
- The flexibility significantly positive correlation with the left side passing ability.
- The positive but not statistically significant correlation between speed and agility**.** And explosive power and cardio-vascular endurance negative but not statistically significant correlation between left sides passing ability.
- The flexibility significantly negative correlation with the right side set-up ability.
- The positive but not statistically significant correlation between agility, explosive power and cardio-vascular endurance**.** And speed negative but not statistically significant correlation between right side set-up ability.
- The positive but not statistically significant correlation between agility, cardio-vascular endurance. And speed**,** flexibility and explosive power negative but not statistically significant correlation between left side set-up ability.

The combined contributions of selected Motor fitness elements on AAHPER volleyball skill performance are as follows:

- The combined contribution of motor fitness components with volleying ability and right side set-up ability was found to be statistically significant. It can be inferred that volleying ability and right side set-up ability are improved if physical fitness components are taken together.
- There was no combined contribution with the motor fitness components of service ability, right and left passing ability as well as left side set-up abilities.

Combination prediction equation based on motor fitness components for AAHPER volleyball skill performance:

- A significant model for volleying ability was found; the agility, flexibility, and speed model explained 7.1% of the variability in volleying ability. The variation in volleying skill was explained by agility 2.7%, flexibility 2.7%, and speed 2.4%.
- A significant model for right side set-up ability was found; the flexibility and cardio-vascular endurance model explained 4.2% of the variability in right side set-up ability. The variation in right side set-up ability was explained by flexibility 2.6%, and cardio-vascular endurance 2.4%.

5.3 Recommendation

- It is recommended that volleyball players be chosen by coaches and trainers using the anthropometric, motor fitness, motor skill, and competitive experience variables equation listed in the results.
- Based on findings, coaches and trainers can create scientifically-based training programs that prioritize improving motor fitness and motor skill factors that have been identified as performance predictor to the current study's volleyball players' performance.
- Similar studies can be conducted by choosing alternative age groups, sexes, and performance levels.
- The same study can be performed with additional physical fitness components that were not included in the current study.
- Similar study may also be conducted for other sports/ discipline

APPENDIX

APPENDIX – I

Score of Motor Fitness Components of Volleyball Players

No	Speed	Agility	Flexibility	Explosive power	Cve
1	6.6	10.44	24.00	52	2530
2	7.7	9.78	30.00	51	2010
3	7.4	10.15	21.50	57	1920
4	7.2	10.80	22.00	56	2030
5	7.2	10.30	19.00	46	1910
6	7.5	9.87	16.00	40	1975
7	7.8	9.74	22.00	45	1940
8	7.2	9.80	23.50	53	2020
9	7.6	10.50	27.00	55	2040
10	6.9	10.42	32.00	58	2020
11	7.4	10.06	22.00	44	1830
12	6.8	11.47	15.00	41	1970
13	6.75	11.34	18.00	43	1840
14	7.2	12.82	24.00	57	2040
15	8.1	10.30	23.00	42	1920
16	9.1	10.54	29.00	30	1870
17	6.2	11.74	22.00	29	1330
18	7.6	10.40	29.00	54	1950
19	7.3	11.05	28.00	46	2540
20	7.6	12.07	16.00	43	1430
21	6.64	9.78	23.00	44	1570
22	6.3	10.02	32.00	42	3010
23	7.4	10.11	27.00	63	2040
24	7.2	9.78	32.00	37	2020
25	7.1	11.99	27.00	44	1750
26	7.2	12.05	11.00	61	2040
27	6.47	10.47	31.00	63	2010

No	Speed	Agility	Flexibility	Explosive power	Cve
28	7.5	11.33	37.00	55	2230
29	7.4	10.60	23.00	43	2010
30	7.9	10.72	13.00	37	2080
31	6.79	8.87	16.00	39	2190
32	7.1	9.87	12.00	49	1880
33	8.1	11.00	23.00	35	2010
34	7.2	10.30	19.00	41	1910
35	7.8	11.29	23.00	46	1950
36	6.8	10.36	27.00	48	2120
37	7.4	10.89	16.00	48	1920
38	6.98	11.08	30.00	54	2730
39	7.5	9.78	24.00	40	2190
40	7.7	10.19	23.00	35	1730
41	7.8	10.14	31.00	42	2740
42	6.8	9.58	36.00	52	2180
43	6.8	10.29	18.00	48	2110
44	6.7	10.47	29.00	47	1720
45	7.7	10.95	28.00	38	2030
46	6.03	11.15	20.00	32	1930
47	6.6	9.67	36.00	67	1940
48	6.5	9.58	33.00	39	1850
49	6.7	11.40	21.50	48	3010
50	6.4	10.47	22.50	44	2290
51	7.1	12.60	19.50	47	1770
52	6.7	12.12	32.50	40	2780
53	7.1	10.90	30.00	48	2180
54	7.6	11.74	36.50	34	1760
55	8.1	12.02	28.00	43	2370

No	Speed	Agility	Flexibility	Explosive power	Cve
56	6.3	11.60	14.00	48	2190
57	7.6	9.90	30.50	40	2430
58	6.1	10.18	23.00	47	2360
59	6.2	10.78	36.00	46	2300
60	7.1	11.40	38.50	38	3010
61	7.2	11.01	27.00	33	2510
62	6.6	10.40	25.00	42	2470
63	6.3	10.21	26.00	58	2310
64	7.8	10.38	33.00	54	2740
65	6.8	10.95	28.00	50	2290
66	6.5	9.53	20.50	47	3014
67	7.4	10.49	26.50	29	2190
68	7.9	10.08	32.50	48	1760
69	7.6	9.67	26.50	40	2790
70	6.7	10.46	23.00	43	2180
71	7.9	10.64	26.00	44	1760
72	6.7	11.08	28.50	46	2790
73	7.9	9.73	23.50	51	2210
74	6.6	6.78	32.40	53	2190
75	7.4	10.50	21.00	41	1780
76	7.1	9.93	17.00	44	2010
77	6.2	9.98	30.00	49	1920
78	6.7	10.49	23.00	44	2000
79	6.6	10.20	32.00	47	1920
80	7.45	10.75	13.00	33	2010
81	8.2	9.17	27.50	50	1930
82	6.3	11.21	16.50	45	1840
83	7.8	11.54	24.50	33	1270

No	Speed	Agility	Flexibility	Explosive power	Cve
84	6.4	9.98	26.50	51	1980
85	7.5	9.52	13.50	40	2540
86	6.14	11.05	28.00	45	1560
87	7.3	10.66	28.00	32	1840
88	6.8	10.34	27.50	46	2120
89	7.4	11.97	16.50	46	1930
90	8.3	11.08	31.00	49	2720
91	7.5	10.77	17.00	43	1420
92	8.8	11.00	24.00	41	1570
93	6.74	10.03	33.00	58	2900
94	6.8	10.48	27.00	48	1710
95	7.6	10.95	26.00	39	2030
96	8.7	11.16	20.00	32	1920
97	7.2	11.18	20.50	45	1910
98	7.3	9.90	45.00	38	1980
99	8.2	10.47	36.00	46	2120
100	7.6	10.38	36.00	50	2540
101	7.7	9.70	28.00	51	2010
102	7.9	11.45	23.40	51	2020
103	7.4	10.70	23.00	56	2030
104	7.6	11.37	20.00	45	1970
105	7.7	10.11	26.50	38	2040
106	7.8	9.70	27.00	46	1935
107	7.2	9.77	26.00	54	2050
108	7.6	10.50	26.00	48	2020
109	7.6	11.03	42.00	60	2060
110	7.5	11.08	26.00	44	1810
111	6.49	12.14	36.00	41	1970

No	Speed	Agility	Flexibility	Explosive power	Cve
112	8.7	13.22	28.00	42	1850
113	7.4	11.78	24.00	59	2000
114	8.9	11.04	22.50	42	2010
115	6.7	10.21	26.00	50	2300
116	7.9	10.22	18.50	51	2750
117	6.8	10.66	29.00	46	2230
118	6.7	9.53	20.50	47	3010
119	7.3	9.80	24.50	35	2210
120	6.42	10.11	27.00	49	1790
121	7.8	10.19	23.00	37	1740
122	7.7	10.14	32.50	42	2730
123	8.2	9.58	33.00	46	2170
124	6.9	10.37	26.50	49	2110
125	6.2	10.37	29.00	52	1730
126	7.6	10.95	27.50	38	2030
127	8.8	11.15	20.50	31	1920
128	7.05	9.46	35.00	47	1940
129	6.5	9.58	18.50	39	1850
130	6.4	11.37	22.50	48	3010
131	6.4	10.20	23.00	46	2300
132	6.9	12.54	21.00	47	1770
133	6.7	12.12	31.50	40	2780
134	7	10.90	29.00	47	2180
135	7.6	11.41	33.00	39	1760
136	7.9	12.02	28.00	43	2360
137	6.3	11.47	11.50	39	2190
138	7.6	12.07	28.00	40	2410
139	6.1	10.17	24.50	46	2360

No	Speed	Agility	Flexibility	Explosive power	Cve
140	6	10.67	34.00	41	2310
141	7.1	11.40	29.50	38	2980
142	7.6	11.01	27.00	39	2490
143	7.3	10.14	21.00	46	1920
144	7.4	10.70	23.50	56	2030
145	7.3	10.30	39.00	46	1910
146	7.6	9.87	26.50	39	1980
147	7.9	9.70	34.00	40	1940
148	7.2	9.64	24.50	51	2010
149	7.6	10.44	27.50	52	2020
150	7.5	10.53	23.00	53	2030
151	7.5	10.08	21.00	44	1820
152	6.78	10.97	16.50	46	1940
153	8.1	12.06	20.50	41	1830
154	7.4	12.82	24.00	50	2010
155	6.87	10.30	23.50	42	1940
156	6.89	10.54	28.00	30	1950
157	6.88	11.78	23.00	37	1380
158	7.6	10.34	29.00	50	1910
159	6.7	11.02	28.00	43	2780
160	7.8	9.73	23.50	51	2210
161	6.8	9.63	30.50	46	2180
162	7.6	10.50	21.00	39	1780
163	6.9	9.93	27.00	44	2010
164	6.7	9.97	33.00	42	1920
165	7.2	10.49	27.00	44	1990
166	6.9	10.16	21.50	41	1820
167	7.5	10.75	33.00	37	2020

No	Speed	Agility	Flexibility	Explosive power	Cve
168	7.23	9.17	27.50	49	1930
169	7.3	10.08	16.50	46	1840
170	7.8	11.54	23.00	38	1270
171	6.4	9.98	27.50	49	1980
172	7.5	9.52	14.00	42	2560
173	7.3	11.09	28.50	45	1540
174	7.3	10.67	18.00	31	1850
175	6.7	10.34	26.00	40	2120
176	7.3	10.89	17.00	41	1930
177	6.6	11.32	33.00	54	2730
178	7.6	12.09	17.00	43	1420
179	7.7	10.78	29.00	49	1570
180	7.26	10.03	33.50	44	1760

APPENDIX – II

Score of AAHPER Volleyball Skill Test of Volleyball Players

No	Volleying ability	Service ability	Passing right	Passing left	Set-up right	Set-up left
1	18	16	2	1	3	3
2	20	20	3	3	3	2
3	23	17	1	2	5	3
4	15	19	5	1	2	1
5	18	23	3	2	4	2
6	30	24	4	1	3	2
7	24	16	2	2	4	3
8	25	14	3	3	2	2
9	10	15	4	1	1	1
10	16	16	2	3	2	3
11	17	10	3	1	3	2
12	12	15	2	2	4	4
13	15	19	2	3	3	2
14	16	20	5	1	2	3
15	20	22	3	2	3	2
16	21	23	2	3	1	2
17	14	14	2	1	2	3
18	15	16	3	2	3	1
19	22	20	3	1	6	2
20	24	15	3	3	4	3
21	15	17	3	3	3	2
22	16	16	2	2	4	4
23	20	20	5	2	3	3
24	24	15	4	1	2	3
25	15	17	3	3	4	2
26	14	11	2	3	5	2
27	10	20	5	1	3	1
28	18	16	3	2	4	4
29	19	17	1	3	5	2
30	20	16	3	2	3	3
31	20	20	3	3	4	2
32	24	24	3	1	5	3
33	15	21	5	4	2	2
34	19	19	5	3	4	1
35	17	18	3	2	4	4

No	Volleying ability	Service ability	Passing right	Passing left	Set-up right	Set-up left
36	18	20	2	2	3	6
37	22	21	3	3	5	4
38	21	20	4	2	4	2
39	20	17	1	3	4	3
40	15	18	1	2	2	5
41	10	16	3	2	3	3
42	20	20	2	3	4	4
43	19	24	1	2	3	2
44	17	16	3	3	2	3
45	22	18	4	3	3	2
46	16	19	4	2	4	5
47	14	20	3	2	4	5
48	19	21	2	1	4	3
49	20	21	4	4	3	6
50	25	27	4	2	2	4
51	17	19	1	3	4	3
52	13	18	4	2	3	5
53	19	20	3	3	4	3
54	20	21	4	2	2	4
55	24	16	3	2	3	4
56	16	20	4	1	5	5
57	21	24	4	4	2	6
58	20	15	1	3	4	2
59	13	16	4	3	2	3
60	17	17	2	3	4	2
61	19	18	1	2	4	4
62	20	16	5	2	3	2
63	24	14	4	2	5	3
64	15	11	1	3	4	2
65	16	10	3	1	3	5
66	19	20	2	2	4	4
67	22	16	4	2	6	2
68	24	14	4	4	3	2
69	17	19	3	2	4	3
70	23	23	1	2	5	2
71	20	14	2	2	3	3
72	22	22	2	1	7	4
73	28	20	1	3	2	3
74	15	15	3	2	3	2

No	Volleying ability	Service ability	Passing right	Passing left	Set-up right	Set-up left
75	14	18	4	3	4	3
76	19	19	4	2	5	4
77	18	17	1	2	4	3
78	20	16	2	1	2	1
79	19	20	1	1	3	4
80	17	21	2	2	2	5
81	18	22	2	2	2	3
82	20	16	3	3	3	2
83	16	17	2	3	2	3
84	17	18	4	1	4	5
85	19	18	3	2	4	4
86	8	20	1	2	2	2
87	19	22	4	1	3	6
88	16	16	4	2	3	3
89	17	14	1	2	4	6
90	19	20	5	2	4	4
91	20	19	2	2	2	5
92	23	18	4	2	1	1
93	14	16	3	2	2	5
94	19	21	3	2	5	2
95	12	18	2	2	3	3
96	18	19	4	2	6	2
97	21	21	5	3	4	4
98	20	22	3	3	1	2
99	19	16	4	2	2	3
100	17	22	2	1	3	2
101	16	17	1	2	2	1
102	17	18	3	1	4	2
103	16	13	3	3	2	1
104	18	16	5	3	3	2
105	20	28	1	3	2	4
106	24	19	3	3	5	2
107	16	16	3	3	1	3
108	22	21	2	1	3	2
109	15	24	4	2	4	1
110	26	16	3	3	4	4
111	10	27	5	4	3	3
112	17	18	5	4	2	2
113	14	19	3	3	7	4

No	Volleying ability	Service ability	Passing right	Passing left	Set-up right	Set-up left
114	19	24	4	4	4	1
115	18	16	2	4	4	3
116	16	18	3	3	2	5
117	20	19	5	4	3	1
118	21	21	1	3	2	2
119	17	23	4	3	1	2
120	15	24	4	2	3	2
121	19	19	2	1	4	3
122	18	18	3	4	2	2
123	16	12	4	4	3	4
124	20	22	1	2	3	2
125	23	23	4	3	4	4
126	24	24	3	4	2	2
127	16	19	4	2	3	3
128	20	16	2	3	3	5
129	24	17	4	2	4	6
130	10	18	3	2	4	1
131	20	20	1	3	2	2
132	16	23	3	3	3	3
133	18	21	4	3	4	2
134	20	22	2	4	1	4
135	13	19	4	5	3	1
136	18	18	5	1	4	5
137	20	16	2	2	5	6
138	24	20	3	3	3	3
139	16	16	5	4	3	2
140	15	17	2	2	4	1
141	20	18	7	3	3	2
142	16	20	3	1	7	3
143	23	23	4	2	4	2
144	20	22	2	3	6	1
145	17	20	3	4	2	4
146	15	16	5	3	4	2
147	19	18	1	3	5	3
148	17	16	2	2	3	4
149	16	20	3	1	4	3
150	18	17	4	3	5	4
151	20	16	2	3	5	5
152	24	18	2	2	4	1

No	Volleying ability	Service ability	Passing right	Passing left	Set-up right	Set-up left
153	16	16	3	3	3	2
154	18	20	4	2	1	3
155	23	23	4	1	2	2
156	17	24	5	1	3	2
157	20	16	2	2	1	2
158	21	18	4	3	4	3
159	16	17	2	2	3	3
160	18	19	3	1	3	4
161	23	16	1	1	2	2
162	17	20	2	3	4	2
163	22	21	3	2	3	2
164	13	24	2	3	3	3
165	14	18	4	1	6	1
166	16	19	3	3	4	2
167	18	20	4	2	3	3
168	24	23	2	3	4	2
169	16	20	3	1	5	1
170	24	18	2	2	3	2
171	15	17	4	3	4	3
172	19	19	1	2	2	4
173	20	18	2	4	3	5
174	16	21	3	2	2	3
175	17	19	2	5	2	2
176	18	22	2	3	4	3
177	20	17	2	4	3	4
178	16	18	1	3	3	3
179	18	20	3	3	4	2
180	12	23	2	7	2	3

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PUBLICATIONS

Relationship of Motor Fitness Components with Volleyball Ability of Volleyball Players

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Abstract :
The purpose of the study was to find out the relationship of motor fitness components with Service Ability of volleyball players. For the present study the selection of the sampling was based on Veer Narmad South Gujarat University, Surat Volleyball intercollege tournament. Here for this said tournament participating colleges were divided into four zones, Surat city, Surat Rural, Bharuch and Valsad district respectively. Out of these zones the four semi-finalists team of each zone means sixteen best teams, four from each zone having 192 male best players based on their performance, select total 180 subjects out of 192 for the present study. The subjects selected was in the age range of 17 -25 years. After being informed of the study's requirements, each participant willingly consented to participate in the testing program. The research scholar met and had a special conversation to orient the subjects on the research study. A detailed explanation of the testing, experimental process, and exercise schedules was provided so that the subjects would know exactly what to expect and how much effort would be required of them.
The standard of measurement in this research study was measuring Speed - 50 Yard Desh test, Agility-4 X 10 m shuttle run, Flexibility- Seat and Reach, Explosive power- Sargent jump, Cardio – vascular endurance through the Cooper's 12 minutes ran/walk. In order to investigate the motor fitness components and skill performance of volleyball players, descriptive analysis statistics; such as mean, standard deviation, minimum value, maximum value was applied. The relationship of motor fitness components and skill performance of volleyball players, was established by computing Karl Pearson's Product Moment Co-relation was used. The combined contribution of separately considered motor fitness components to skill performance was obtained through multiple correlations. Further in order to find out which aspect has the maximum impact on the skill performance score of volleyball players, multiple regression analysis was applied. For testing the hypothesis, the levels of confidence were set at $p<0.05$. The Conclusion are as under The speed significantly positive. And agility and flexibility significantly negative correlation with the volleying ability. The negative but not statistically significant correlation between explosive power and cardio-vascular endurance and volleying ability. The explosive power significantly negative correlation with the service ability. The positive but not statistically significant correlation between speed, flexibility and agility. And the cardio-vascular endurance negative not statistically significant correlation with the service ability.

Introduction :
Sports and games are crucial for success in many facets of our lives, not just academic accomplishment. In the modern developed world, they are also a standard part of the curricula at schools and universities. Sports and games play a vital role in a student's life. To succeed in competitive tests, a student needs to put in a lot of study time. But to experience life's vitality and health, you also need to exercise and participate in sports. Sports and games have existed for as long as human civilization and have gained a collective status in contemporary culture. It is now more popular than any other kind of social interaction. Since physical education and sports are now part of the regular curriculum, it has become an essential component of the educational process. Different sports and games are taught to students in a methodical, scientific manner. Apart from instruction, pupils undergo performance evaluations. Engaging in sports and games for enjoyment and to reap the benefits on a physical, mental, social, emotional, and physiological level.
Within the hierarchy of human values, sports conquest occupies a special place. It combines triumph, achievement, and certain people's dominance over their friends and teammates. The loser's applause for the winners, along with their genial and shrugging demean or, shows the sublimity of competition.
A multitude of milestones have been reached in the gaming and sports industries thanks to various advancements in general and their use in the sports sector specifically. Achieving greatness in performance across several sports has become more and more dependent on scientific research into athlete performance. The use of new, scientifically verified training techniques and means of carrying out physical activity, such as sports tactics and techniques, equipment advancements, better sports fields, and other elements and conditions of the sports training system, has allowed athletes to perform at an exceptionally high level**.**
Everyone needs to be physically fit in order to keep their bodies. General motor fitness contributes to the maintenance of excellent physical and psychological health.

The neuromuscular aspects of fitness that allow an individual to excel in a given game, activity, or motor skill. A few examples of specific motor fitness components are power, agility, balance, coordination, speed, and reaction time. Skill-related fitness is another name for motor fitness. Also see physical well-being.
The most valuable thing a person can own is motor fitness, which must be acquired via regular motor training regimen. It goes without saying that healthy folks are a country's greatest assets and unhealthy citizens its liabilities. Since motor fitness is a prerequisite for the majority of the tasks that a man must perform in his everyday life, it is the duty of every nation to promote motor fitness among its population. A person's ability to think and work, which are crucial for both one's personal life and society in a welfare state, is compromised if his body is underdeveloped or sedentary and if he fails to develop motor prowess.

The Purpose of the Study:
The purpose of the study was to find out the relationship of motor fitness components with Skill performance of volleyball players.

Selection of Subjects
For the present study the selection of the sampling was based on Veer Narmad South Gujarat University, Surat Volleyball intercollege tournament. Here for this said tournament participating colleges were divided into four zones, Surat city, Surat Rural, Bharuch and Valsad district respectively. Out of these zones the four semi-finalists team of each zone means sixteen best teams, four from each zone having 192 male best players based on their performance, select total 180 subjects out of 192 for the present study. The subjects selected was in the age range of 17 -25 years.
After being informed of the study's requirements, each participant willingly consented to participate in the testing program. The research scholar met and had a special conversation to orient the subjects on the research study. A detailed explanation of the testing, experimental process, and exercise schedules was provided so that the subjects would know exactly what to expect and how much effort would be required of them.

Criterion of Measurement

Sr. No.	Motor Fitness Components	Methods	Unit/Measures
1.	Speed	50 Yards Dash	Second 1/100
2.	Agility	4 X 10 m shuttle run	Second 1/100
3.	Flexibility	Seat and Reach	Centimetres
4.	Explosive power	Sargent jump	Centimetres
5.	Cardio – vascular endurance	Cooper's 12 minutes ran/walk	Distance Covered

Statistical Procedure
1. In order to investigate the motor fitness components and skill performance of volleyball players, descriptive analysis statistics; such as mean, standard deviation, minimum value, maximum value was applied.
2. The relationship of motor fitness components and skill performance of volleyball players, was established by computing Karl Pearson's Product Moment Co-relation was used.
3. The combined contribution of separately considered motor fitness components to skill performance was obtained through multiple correlations.
4. Further in order to find out which aspect has the maximum impact on the skill performance score of volleyball players, multiple regression analysis was applied.
5. For testing the hypothesis, the levels of confidence were set at $p<0.05$.

Result of the Study :

Table – 1.1 Relationship of Motor Fitness Components with Volleying Ability of Volleyball Players

Sr. No	Motor Fitness Components	Volleyball Skill	Correlation Co-efficient	Sig. (2-tailed)
1	Speed	Volleying Ability	0.150	0.04
2	Agility		- 0.160	0.03
3	Flexibility		- 0.159	0.03
4	Explosive Power		- 0.086	0.25
5	Cardio-vascular Endurance		- 0.037	0.62

***Statistical significant at 0.05 level**

The correlation coefficient between the volleying ability and motor fitness components of the volleyball players was presents in table 1.1. The statistical findings demonstrated that the speed **($r = 0.150, p<0.05$)** significantly positive and agility **($r = - 0.160, p<0.05$)** and flexibility **($r = - 0.159, p<0.05$)** significantly negative correlation with the volleying ability. Regarding the other variables, there was a negative but not statistically significant correlation between explosive power **($r = - 0.086, p>0.05$)** and cardio-vascular endurance **($r = - 0.037, p>0.05$)** and volleying ability.
The multiple correlation method yields correlations between a volleying ability (dependent variable) and the combined effect of the motor fitness components (independent variable), which are weighted to give maximum correlation. This

allowed researchers to ascertain the combined contributions of specific motor fitness components (speed, agility, flexibility, explosive power and cardiovascular endurance) to volleying ability of volleyball players.
Table 1.1 displays the multiple coefficients of correlation that were calculated between the independent and dependent variables.

Table – 1.2 Multiple Correlation between Volleyball Players' Volleying Ability and Motor Fitness Components

Dependent Variables	Independent Variable	Multiple Coefficient of Correlation (r)	Multiple Correlation ANOVA F	Sig.
Volleying Ability	Speed Agility Flexibility Explosive Power Cardio-vascular Endurance	0.089	3.42*	0.00

***Statistical significant at 0.05 level**

According to Table 1.2, volleyball players' combined contribution volleying ability to motor fitness components has been determined to be statistically significant at r = 0.089 (F = 3.42, p<0.05).
The step-wise regression technique was used to determine which factor has the biggest influence on volleyball players' volleying ability, taking into account the motor fitness components that were previously described and selected. The results are shown in Table 1.3.

Table - 1.3 Regression Prediction of Volleying Ability with selected Motor Fitness Components of Volleyball Players

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.160[a]	0.026	0.020	3.582
2	0.240[b]	0.058	0.047	3.532
3	0.293[c]	0.086	0.071	3.49

a. Predictors: (Constant), Agility
b. Predictors: (Constant), Agility, Flexibility
c. Predictors: (Constant), Agility, Flexibility, Speed
d. Depended Variable Volleying Ability

Table – 1.4 Regression Coefficients Estimating Volleying Ability Using selected Motor Fitness Components of Players in Volleyball

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	25.58	3.37		7.60*	0.00
	Agility	- 0.68	0.32	- 0.16	- 2.16*	0.03
2	(Constant)	29.26	3.62		8.04*	0.00
	Agility	- 0.78	0.31	- 0.18	- 2.47*	0.01
	Flexibility	- 0.11	0.04	- 0.18	- 2.46*	0.01
3	(Constant)	22.82	4.53		5.04*	0.00
	Agility	-0.86	0.31	- 0.20	- 2.74*	0.00
	Flexibility	-0.11	0.04	- 0.18	- 2.49*	0.01
	Speed	1.01	0.43	0.17	2.34*	0.02

Dependent Variable: Volleying Ability
Table 1.4 displays the regression models that are available. Since the Adjusted R^2 value in the third model is 0.071, the regression equation was developed using the second model.
Furthermore, table 1.4 shows that three independent variables—agility, flexibility, and speed—have been found in the second model. As a result, the regression equation will only be developed using these three variables. These three independent factors explained
7.1 % variability in the volleyball players' volleying ability, as indicated by the model's adjusted R2 value of 0.071. As a result, this model is ideal for creating the regression equations.
All of the models' regression coefficients are displayed in table 1.5. All three of the regression coefficients in the thread model 't' value have significant since their p-values, or significant values, are less than 0.05. Thus, it was said that the factors of agility, flexibility and speed account for a large portion of the variances in volleying ability.
The regression equation was created using the regression coefficients (Beta) of the third model, which are displayed in Table 1.4. It is as follows:

Volleying Ability = 22.82 – 0.20 (Agility) – 0.18 (Flexibility) + 0.17 (Speed)

Conclusion :

- The speed significantly positive. And agility and flexibility significantly negative correlation with the volleying ability.
- The negative but not statistically significant correlation between explosive power and cardio-vascular endurance and volleying ability.
- The explosive power significantly negative correlation with the service ability.
- The positive but not statistically significant correlation between speed, flexibility and agility. And the cardio-vascular endurance negative not statistically significant correlation with the service ability.

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Relationship of Motor Fitness Components with Service Ability of Volleyball Players of Valsad District

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Abstract :
The purpose of the study was to find out the relationship of motor fitness components with Service Ability of volleyball players. For the present study the selection of the sampling was based on Veer Narmad South Gujarat University, Surat Volleyball inter college tournament. Here for this said tournament participating colleges were divided into four zones, Surat city, Surat Rural, Bharuch and Valsad district respectively. Out of these zones the four semi-finalists team of each zone means sixteen best teams, four from each zone having 192 male best players based on their performance, select total 180 subjects out of 192 for the present study. The subjects selected was in the age range of 17 - 25 years. After being informed of the study's requirements, each participant willingly consented to participate in the testing program. The research scholar met and had a special conversation to orient the subjects on the research study. A detailed explanation of the testing, experimental process, and exercise schedules was provided so that the subjects would know exactly what to expect and how much effort would be required of them. The standard of measurement in this research study was measuring Speed - 50 Yard Desh test, Agility-4 X 10 m shuttle run, Flexibility- Seat and Reach, Explosive power- Sargent jump, Cardio – vascular endurance through the Cooper's 12 minutes ran/walk. In order to investigate the motor fitness components and skill performance of volleyball players, descriptive analysis statistics; such as mean, standard deviation, minimum value, maximum value was applied. The relationship of motor fitness components and skill performance of volleyball players, was established by computing Karl Pearson's Product Moment Co-relation was used. The combined contribution of separately considered motor fitness components to skill performance was obtained through multiple correlations. Further in order to find out which aspect has the maximum impact on the skill performance score of volleyball players, multiple regression analysis was applied. For testing the hypothesis, the levels of confidence were set at $p<0.05$. The Conclusion are as under The explosive power significantly negative correlation with the service ability. The positive but not statistically significant correlation between speed, flexibility and agility. And the cardio-vascular endurance negative not statistically significant correlation with the service ability.

Introduction :
The American Alliance for Health, Motor Education and Recreation highlights the need for customized training with the goal of helping learners discover their own level of motor fitness. Every person has to be in good motor function in order to carry out their daily tasks and engage in a variety of activities.
The neuromuscular aspects of fitness that allow an individual to excel in a given game, activity, or motor skill. A few examples of specific motor fitness components are power, agility, balance, coordination, speed, and reaction time. Skill-related fitness is another name for motor fitness. Also see physical well-being.
Variables related to fitness aid in improving abilities at the peak of athletic performance. Based on the assertion that the researcher was enthusiastic about and engaged in the investigation of the connection between motor fitness and skill performance, the technical and motor skills of the engine are consistent.
Power, agility, speed, and balance are among the elements that make up motor fitness, which is defined as the ability to accomplish basic tasks like running, leaping, dodging, falling, climbing, and swimming with prolonged effort in a range of situations. "Motor fitness is the final criterion through which all other elements of physical fitness or total fitness are seen and measured in man" (Book in 1952). Components of Physical Fitness
Physical components: the most valuable asset is physical fitness, which is acquired via regular exercise and cannot be purchased
The contemporary era has produced competition. It's a challenge that pushes, encourages, and inspires the person to run faster, jump higher, throw farther, and generally aim to outperform himself in addition to demonstrating increased strength, stamina, and skill to dominate others. Due to a significant shift in the attitude around game and sport participation, contestants in today's sports place a higher value on winning (Melville & de Mellow, 1974).
The elements of health-related fitness serve as a benchmark for gauging our overall wellbeing. Enhancing our abilities in each of these domains is the aim of this activity. While some sports will require more physical preparation than others, athletes generally aim to reach a reasonable level of fitness for overall health in each domain. A balanced goal should be

to reach a balanced level of performance on each of these fitness components, unless you concentrate on fine-tuning your body's performance for an exceptionally demanding sport. Activities and exercises that support each of these health-related fitness components should be a part of your fitness regimen.
We are conducting a survey to determine which aspect of fitness is most critical to volleyball performance. The factors that readers of this site deem most important are power, agility, speed, flexibility, balance and coordination, and cardiovascular endurance, among the other options that include body size and composition, muscle strength, muscular endurance, power, speed / quickness, agility, and balance / coordination. You can view the most recent results and add your vote.
We asked respondents to a similar survey to rank the 12 sports success elements. Each of these elements has been ranked by site visitors for the sport of indoor volleyball, and they have determined that skill, balance/coordination, agility, reaction time, and speed/quickness are the most crucial. Along with seeing the most recent outcomes, you can also rate What Qualifies Successful Indoor Volleyball Players.

The Purpose of the Study :
The purpose of the study was to find out the relationship of motor fitness components with Service Ability of volleyball players valsad district.

Selection of Subjects :
For the present study the selection of the sampling was based on Veer Narmad South Gujarat University, Surat Volleyball intercollege tournament. Here for this said tournament participating colleges were divided into four zones, Surat city, Surat Rural, Bharuch and Valsad district respectively. Out of these zones the four semi-finalists team of each zone means sixteen best teams, four from each zone having 192 male best players based on their performance, select total 180 subjects out of 192 for the present study. The subjects selected was in the age range of 17 -25 years.
After being informed of the study's requirements, each participant willingly consented to participate in the testing program. The research scholar met and had a special conversation to orient the subjects on the research study. A detailed explanation of the testing, experimental process, and exercise schedules was provided so that the subjects would know exactly what to expect and how much effort would be required of them.

Criterion of Measurement

Sr. No.	Motor Fitness Components	Methods	Unit/Measures
1.	Speed	50 Yards Dash	Second 1/100
2.	Agility	4 X 10 m shuttle run	Second 1/100
3.	Flexibility	Seat and Reach	Centimetres
4.	Explosive power	Sargent jump	Centimetres
5.	Cardio – vascular endurance	Cooper's 12 minutes ran/walk	Distance Covered

Statistical Procedure :
1. In order to investigate the motor fitness components and skill performance of volleyball players, descriptive analysis statistics; such as mean, standard deviation, minimum value, maximum value was applied.
2. The relationship of motor fitness components and skill performance of volleyball players, was established by computing Karl Pearson's Product Moment Co-relation was used.
3. The combined contribution of separately considered motor fitness components to skill performance was obtained through multiple correlations.
4. Further in order to find out which aspect has the maximum impact on the skill performance score of volleyball players, multiple regression analysis was applied.
5. For testing the hypothesis, the levels of confidence were set at $p<0.05$.

Result of the Study :

Table – 1.1 Relationship of Motor Fitness Components with Service Ability of Volleyball Players

Sr. No	Motor Fitness Components	Volleyball Skill	Correlation Co-efficient	Sig. (2-tailed)
1	Speed	Service Ability	0.013	0.86
2	Agility		-0.021	0.78
3	Flexibility		0.041	0.58
4	Explosive Power		-0.150*	0.04
5	Cardio-vascular Endurance		-0.034	0.64

*Statistical significant at 0.05 level

The correlation coefficient between the service ability and motor fitness components of the volleyball players was presents in table 1.1. The statistical findings demonstrated that the explosive power ($r = - 0.150$, $p<0.05$) significantly

negative correlation with the service ability. Regarding the other variables, there was a positive but not statistically significant correlation between speed (r = 0.013, p>0.05), flexibility (r = 0.041, p>0.05) and agility (r = -0.021, p>0.05), cardio-vascular endurance (r = -0.034, p>0.05) negative not statistically significant correlation with the service ability.
The multiple correlation method yields correlations between a service ability (dependent variable) and the combined effect of the motor fitness components (independent variable), which are weighted to give maximum correlation. This allowed researchers to ascertain the combined contributions of specific motor fitness components (speed, agility, flexibility, explosive power and cardiovascular endurance) to service ability of volleyball players.
Table 1.2 displays the multiple coefficients of correlation that were calculated between the independent and dependent variables.

Table – 1.2 Multiple Correlation between Volleyball Players' Service Ability and Motor Fitness Components

Dependent Variables	**Independent Variable**	**Multiple Coefficient of Correlation (r)**	**Multiple Correlation ANOVA F**	**Sig.**
Service Ability	Speed Agility Flexibility Explosive Power Cardio-vascular Endurance	0.028	1.023	0.40

*Statistical significant at 0.05 level

According to Table 1.2, it has been shown that the combined effect of motor fitness components on volleyball players' service ability is statistically not significant (r = 0.028; F = 1.023; p>0.05). Therefore, it can be concluded from the research above that the selected motor fitness components listed above when combined do not affect a player's ability to serve in volleyball.

Conclusion :

- The explosive power significantly negative correlation with the service ability.
- The positive but not statistically significant correlation between speed, flexibility and agility. And the cardio-vascular endurance negative not statistically significant correlation with the service ability.

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