EFFECT OF RECREATIONAL GAMES ON MOTOR FITNESS AND PSYCHOLOGICAL PROFILE OF SCHOOL CHILDREN

A THESIS SUBMITTED TO THE JADAVPUR UNIVERSITY FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN ARTS

BY

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AUGUST 2023

Dedicated

to

My Parents

&

My beloved sisters

and

Brother-in-laws

CERTIFICATE

Certified that the thesis entitled **"EFFECT OF RECREATIONAL GAMES ON MOTOR FITNESS AND PSYCHOLOGICAL PROFILE OF SCHOOL CHILDREN".** Submitted by me for the Degree of Doctor of Philosophy in Arts at Jadavpur University is based upon my work carried out under the supervision of **Dr. ASHOKE KUMAR BISWAS, Professor, Department of Physical Education, Jadavpur University.** And that neither this thesis nor any part of it has been submitted before for any degree or diploma anywhere/ elsewhere.

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LIST OF ABBREVIATION

Sl. No	Short Form	Full Form
1	Yrs.	Years
2	Kg	Kilogram
3	cm	Centimeter
4	m	Meter
5	Exp.	Experiment
6	Gr.	Group
7	BMI	Body Mass Index
8	BKS	Bend Knee Sit-up
9	SS	Side Stepping
10	SBJ	Standing Broad Jump
11	MPU	Modified Pull-ups
12	ST	Squat Thrust
13	MC	Motor Creativity
14	SD	Standard Deviation

CHAPTER-I

INTRODUCTION

1.1 General introduction

1.2 Statement of the problem

1.3 Purpose of the study

1.4 Delimitation of the study

1.5 Limitation of the study

1.6 Hypothesis

1.7 Significance of the study

1.8 Definition of terms

CHAPTER-I

INTRODUCTION

In this chapter a formal introduction of the area of study is presented. It has a general introduction that explains a brief historical background to the study, the nature of the subject area and the justification area of study. It also includes the statement of problem, purpose, limitation, delimitation, hypotheses, significance of the study and definition of specific terms.

1.1 GENERAL INTRODUCTION:

The word ‘human’ in this context means the species Homo. In geological terms, Humans are a young species. About 200,000 years ago, the first Homo sapiens, the forerunners of modern humans, emerged. Homo is the scientific name for "man" or "human" in biology. Homo sapiens is the name of the genus of humans that exists today. Homo sapiens is Latin for "the thinking man" and "Sapiens" is Latin for "thought". Charles Darwin made the case for the potential of new species developing from older ones in "On the Origin of Species" (1859), which was published. The most prevalent and ubiquitous species of primate is Homo sapiens, a giant ape that is bipedal and highly intelligent. Because of their huge human brains and resulting cognitive capacities, they have been able to flourish in a variety of habitats and create sophisticated communities. **(Desai, 2018)**

Early bipeds eventually gave rise to early hominin known as australopithecines, which later gave rise to the species Homo. There are various hypotheses regarding the adaptive benefits of bipedalism. It's probable that bipedalism gained popularity because it allowed people to grasp and transport food in the hands free, conserved energy while moving about, allowed for longer distance running and hunting, and extended their field of view. **(Ko, 2015).**

Humans are classified as primate Homogenous carrying a culture especially Homo-Sapiens. Humans are physically similar and related to the great ape but differ by a higher develop brain and a consequent ability for clear technology. Until about 10,000 years ago, most people were hunter gatherers. They did not live in one place but moved around with the change of seasons. During this period they always had to be mentally and physically prepared because

of apprehension of animals attack. At that time people and animals would fight for survival equally **(Little & Blumler, 2015).**

Control of fire early humans was an important technology that enabled human evolution. Fire provided source of warmth and light, protection from predators, making more advanced hunting tools and cooking food. Cultural progress allowed geographic dispersal of humans, cultural innovation and changes in food and behavior. Creating fires allows human activity to continue during the night and cool hours of the evening **(James, 1989).**

The stage of human development or culture that is defined by the use of stone and the human hand. With the help of stone tools they gathered food, hunted wild animals and birds, gathered wild fruits and berries, produce water, other nutrients like honey for food, construct and keep up clothes and shelter, protecting themselves from predators, and taking part in social activity. And they used this stone tool to protect themselves, this is how they lived **(Robert et al., 2022).**

After a while they start planting crops for food then gradually build habitat. They competed for areas and resources to live in, sometimes they fought with each other and gradually people started to improve their lifestyle **(Rector, 2017).**

Physical Activity was a biological imperative in primitive societies. It had been noticed that the participation in physical activity has been a part of human civilization at every phase of development. But the purpose was different. Human had run to hunt for food and survive against natural calamities for survival. Today human has to keep himself fit even in this highly mechanized world just to maintain his posture **(Sing et. all, 2012).**

"Physical activity as any physical movement produced by skeletal muscle that requires energy expenditure. Physical activity refers to all movement during leisure time, for transport to and from places, or as part of a person's work" **(WHO, 2022).** According to Plato- "Lack of activity destroys the good conditions of every human being, while movement and methodical physical exercise save it and preserve it" **(Sing et. all, 2012).**

Barrow has very rightly mention- exercise is a basic need of life. This need is deeply rooted in the biological nature of humanity as well as in their psychological urges over the

countless ages during which evolutionary processes managed to turn humans into active moving beings. This demand has existed for millions of years. The type of the amount of exercise required for growth, development and maintenance has changed relatively little over the past several thousand years **(Barrow, 1988).**

Walking, cycling, active play, and other forms of exercise can all be enjoyed by people of all ability levels. Physical activity should not be confused with physical exercise, which is the category of physical activity. Physical exercise is the practice of specific exercises to improve or maintain general health and fitness. Exercising daily can lead to healthy bones, muscles and joints, healthy heart and lungs, body coordination, strength, healthy body weight, flexibility, balance and body posture, leading to the improvement of attention and thinking ability and chronic diseases reduction and more.

Play is an important heredity drive. It is the natural, spontaneous, joyful and creative activity in which people find self-expression. Some other characteristics of play are simplicity, freedom, and self-forgetfulness, power to absorb interest and satisfaction in the activity itself. Play involves movement and human movement serves specific purpose. Plato said to be nature's mode of education. Movement becomes both an end and a means to an end when play is a leisure pursuit. One's needs, interests and attitudes are reflected through play. It becomes part of one's nature. After all it is a type of behaviour that is engaged in for the purpose of fun and enjoyment without any useful purpose. Play involves various aspects of behaviour without any particular purpose. But it is certain that play helps in the transition from infancy to adulthood via childhood and adolescence. Through play a person gets acquainted with his environment and to controls his emotions, develops single-mindedness and the ability to communicate with others. Play thus serves useful biological and social functions. **(A. K. Bhattacharyya, 2012).**

Play is the gateway to the abundance of symbols, language, metaphors, creativity, and inspiration. It is the key to entering "another reality," evoking circumstances, mixing representations, and developing thought. **(Besio, 2018).**

The form of natural play gradually evolved into organized game to become more purposive, systematic and more objective. As it is became organized, it became repeatable and predictable and instrument of comparison. Games became structured through rules, regulations

and standard. In this process, it has lost spontaneous impulsive behaviour, simplicity, unlimited flexibility, and genuine freedom of play and has become bounded by control and rigidity. The game provides opportunities to fulfill specific objectives like health, fitness, excellence, relaxation, enjoyment etc. The structured game provide not only creates conflict between participants but also with values. This structured pattern provides opportunities to validate and compare individual or team performance across environments. Society has accepted the transformation of simple forms of play into structured forms of organized game. The society has to established better control over the games and to impress upon obeying the rules, regulations and accepted norms of behaviour. Thus a cultural pattern may emerge through the reflection of the social systems **(A. K. Bhattacharyya, 2012).**

From the beginning of the game, it was related to military training. The history of the game can be traced back to the time when every civilization and society in the world had its own game. The history of the game is also found in the history of the ancient world. In Ancient Sumerian civilizations there was Wrestling, Boxing, Running and Tug of War. In Chinese Civilization there were various defensive games known as Martial Arts. The Indus Valley Civilization of India it is believed that swimming, wrestling etc. were prevalent. Among the ancient Civilization, however, unimaginable progress was made in sports in Greek civilization. The ancient Olympic Games begin in 776 BC in the Greek city of Olympia in honour of the God Zeus since the games were the greatest religious festival in the life of the Greeks. After the fall of Greek civilization, the Roman Empire spread over the world. At this time, different tastes and cultures were found in the field of sports. In Roman civilization, a slave had to fight against a ferocious beast known as a Gladiatorial Combat and people used to enjoy watching this fight **(Sing et. all, 2012).**

Games became more complex, more organized, more Competition-oriented, the structure becomes more rigid and institutionalized, and evolved into sport. It assumes elaborate organization, smooth and efficient conduct with emphasis on competition outcomes. In the elaborate sphere of institutionalized organization and conduct are the teams, the media, sponsors & the promoters, the government, the publicity the related industry and others. Sport is made up of games but it involves employment of high level coordinated motor skills for achieving competition outcomes. It is this exhibition of physical prowess and the Competition value that make sport distinctly characteristic and deterrent from game. In order to execute high

level of proficiency, considerable training and practice is necessary specialized skill instruction, strategy and other related training and conditioning affairs come into the picture. Technology is now being employed in involving superior material equipment and in executing high level of skill. Although skill is employed in a game situation too, it (i.e., skill instruction and acquisition) remain more or less informal, simplified, and sometimes casual. But in top class sport this affair is highly formal, stylized, and technology-oriented **(A. K. Bhattacharyya, 2012).**

"Sports means all forms of physical activity, which through random or organized participation, are directed towards the expression or improvement of physical and mental well-being, formation of social relation or achievement of results in competitions of all levels" **(Sutula, 2018).**

Even if it is in the direction of play, games and sports, now we will discuss about physical activity. Physical activity plays an important role in life in order to keep our health and retain our regular behavior. It includes all activities, performed at any intensity, at any time of the day or night. This includes both daily routine combined exercise and ancillary activities. This integrated activity may not be designed, structured, repetitive or intentional to improve fitness. The ability to hunt or gather food, make water, make clothing and shelter, escape from predators, and take part in social activities all had an impact on how active Stone Age humans were physically. Advances in technology in the modern age have led us to a sedentary lifestyle and as a result our regular physical activity have been significantly reduced and eating habits have been changed from natural food to fast food causing hypokinetic diseases. Physical activity can keep your brain healthy, help with weight control, reduce the risk of disease, improves sleep quality, reduces feelings of anxiety and depression, strengthen bones and muscles and improve the ability to perform daily activities smoothly **(Rahman & Singh, 2020).**

But at present people have become slaves of machines. Everything is lost and run away. And people are so busy running and they don't have time to think about anything. Physical exercise and physical activity cannot be done at the same time by most people. Any movement that the general public makes that uses up energy is considered to be physical exercise. Exercise is defined, planned, structured, repetitive and intentional movement. Exercise also used to improve or maintain physical fitness. In rural India, there are numerous traditional sports at the regional level and most of these are now extinct. People have also lost leisure time, and that is only due to the use of various electronic gadgets. Now a days kids can't be seen on the

playground. Children are so much pressure from school, tuitions, computer class and reading that they do not understand how they spend their days. When children want to play, parents give them mobile phones and children spend their leisure time with mobile phones. As a result, children's immunity is declining and obesity like diseases are seen. So as much as possible we need to keep our children engaged in a variety of physical activities, whether indoor or outdoor. Play is virtually universal. Almost all the children of the world play and their style of play is of the same nature as a whole **(Gulam, 2016).**

Just as a seed contains all the genetic code of a mature plant, so a child carrier no chance of becoming a mature adult. A child can love, express compassion and empathy. A child's mind is free to create whatever it wants. Children like to learn naturally because they are naturally inquisitive. A child feels the thrill of learning something new and is surprised at what he/she did not know before. They have an appetite for learning which is terrible. The main characteristics of the children consisting of curiosity, social skill, resilience, integrity, resourcefulness, creativity, assertiveness, humility and confidence etc. The child is born with some instincts and emotions; but with no acquired behaviour. Along with the growth, children acquire some behaviour by way of interaction with the members of the family, school and society. Some influential factors are hidden behind such behaviour. Success or failures in life, self-concept, attitude, motivation, creativity, personality, etc. play vital role in the manifestation of behaviors which may be good or bad in nature. Achievements in any form, happiness as well as wellness, motivation, anxiety, satisfaction, etc. comes from the facilities available within the family, school and ultimately the society. Lack in proper use of leisure time in the form of play, recreation, involvement in social activities also act as the drives of such behaviour **(Gulam, 2016).**

Participation in any kind of activity or games which are recreational in nature may lead to enjoyment and happiness which ultimately reflects in health. Enjoyment in any activity helps the children to engage in activities. The "need to do something for recreation" is a key element in human biology and psychology. Recreational activities are regarded as "fun" because they frequently take place for amusement, enjoyment, or pleasure. **(Uppal & Satyanarayana, 2019).**

Play, the broad term for children's recreational activities, is difficult to distinguish from recreation. Children may mockingly replicate actions that mirror adult life's reality. Play and

recreational activities are ways to take out excess energy by directing it toward socially acceptable pursuits that satisfy requirements on an individual as well as a societal level without the use of coercion while also bringing the participant happiness and pleasure. According to a conventional viewpoint, leisure time is important for recharging the brain and body, which in turn enhances work efficiency. **(Uppal & Satyanarayana, 2019)**

Recreation is an important part of human life and takes on a variety of shapes that are naturally influenced by both personal interests and the social structures around us. Active or passive, outside or indoors, good or detrimental to society, recreational activities might be social or solitary, active or passive. The majority of human interests are represented in the list of routine activities, which is essentially lengthy. Reading, composing music, watching TV or movies, hunting, gardening, and participating in hobbies and sports are a few examples. Gambling, drinking alcohol, and other recreational activities cannot be called intellectual, healthy, socially acceptable, or productive **(Uppal & Satyanarayana, 2019).**

According to **Uppal & Satyanarayana (2019)** the benefits of Recreational Games are:

i) to get enjoyment and to use the leisure time;
ii) improves energy, agility, coordination, balance and flexibility;
iii) because of fun, recreational games are one of the most enjoyable ways to get fit; Even people who low levels of motivation can benefit;
iv) also supports mental health, greatly reduce stress level and deal with any emotional challenges such as self-concept, depression etc.;
v) due to the variety of recreational games participants can any age and genders and
vi) due to the nature of games, it develops social skills like leadership quality, managing ability, sense of brotherhood.

Humans spend their time engaging in everyday tasks, labor, sleep, social obligations, and leisure, the latter of which is unrestricted by obligations to physiologic or social demands, which are necessary for amusement. Many people now need fewer hours per day to maintain their physical and financial well-being, and leisure time has increased along with longevity, but some people assert that time pressure has increased for modern people as a result of their dedication to too many obligations. Wealth, demographic changes, and the growing commercialization of alternative forms of recreation are among the factors that are impacting

the growing importance of recreation. A different perspective asserts that leisure is a force that enables people to think about and reflect on the values and realities that are missed in day-to-day activities, thus being a vital component of civilization and personal growth. While one perspective holds that leisure is simply "spare time," time not taken up by necessities of life, another perspective asserts that leisure is a force that enables people to think about and reflect on the values and realities that are missed in day-to-day activities. This line of thinking has even been expanded to encompass the notions that leisure is the ultimate reward for effort, that it is a reward in and of itself, and that "leisure life" is a reflection of a society's morality and character. The Universal Declaration of Human Rights states that having fun is a fundamental human right. **(Gulam, 2016)**

Recreation is an activity of body and mind that relieves tension and fatigue. Recreational activities relieves us feelings of fatigue, restore our energy and promote feelings of happiness. Life without entertainment will be dull and miserable. Recreation refers to leisure pursuits that a person selects to enhance his quality of life and means of subsistence. All of these actions are productive. These take time but are not time-dependent. **(Gulam, 2016)**

Computer and video games are played as recreational activities at work. Online casual game players admitted to playing their games while working in a survey. The statistics show that playing computer games at work results in a sizable amount of recuperation time. Playing games at work was also strongly connected with increased productivity. Furthermore, people with high levels of work-related fatigue reported stronger recovery experiences during gameplay and those with lower levels of work stress were more likely to play games during work hours. Work control was positively related to the use of games in the workplace. **(Reinecke, 2009)**

Charles A. Bucher (1992) said- “Physical Education as an Integral part of total educational process, is a field of endeavour which has its aim- the development of physically, mentally, emotionally and socially fit citizens through the medium of physical activities which have been selected with a view to realise these outcomes.” Central Advisory Board of Physical Education and Recreation (CABPER) also said, “Physical education is the process of education through physical activities. It is the development of the total personality of the child to its fullness and perfection in body, mind and spirit”. **(Singh et. al, 2012)**

People can also stay physically healthy and fit through active participation of constructive leisure activities. The capacity to carry out or complete work without suffering undue exhaustion is known as physical fitness. Fitness does not equate to in-gym body sculpting. It is a combination good food, strength, flexibility and endurance, of course covering type of good sleep and emotional aspect as well. Fitness is the condition of being physically and mentally fit with good health. Fitness is a personal characteristic that varies from person to person. Age, sex, heredity, personal habits, exercise, eating patterns, food, anxiety, tension, and outlook on life all have an impact on it. Fitness means having enough energy to enjoy life while performing daily duties thoughtfully and aggressively. Improved health, a better sense of well-being, a better appearance, an improved social life, and more stamina are some advantages of increased physical fitness.

Fitness is a physiological state of well-being that lowers the prevalence of hypokinetic disorders, serves as a prerequisite for participating in sports, and improves one's ability to carry out activities of everyday life. **(Donnelly et al., 2016)**

Performance, which is dependent on a variety of parameters, is a measure of motor fitness. The fitness factors that are frequently considered are strength, endurance, power, speed, coordination, balance, and flexibility. Some of these factors are more dominant than others and thus have a higher related with motor fitness. Earlier, physical fitness was measured by the efficiency and duration spent on the work performed. People may not understand the basic anatomy or physiology of the human body but they can appreciate the exhibition of speed, strength and endurance. While testing motor fitness, should not forget the other important elements like aggression, swiftness in learning, cooperation and educability etc. **(S. Kumar et al., 2019)**

Motor fitness consists of factors that appear to be more dynamic such as strength and endurance. Minimum standards of motor fitness can be achieved over a short period of time. At the same time, fitness is lost unless it becomes a daily lifestyle product. Motor fitness is a complex concept. A number of factors enter into efficient performance whether it is skill, speed, strength and endurance. It is not a alone thing, but a combination of factors such as body type or structure, kinetic energy, flexibility and bio-functionality **(Gaur & Nigam, 2011).**

God, who created the cosmos and is the top mind with the highest capacity for creativity, is Almighty. Everyone is creative and is born with certain instincts and feelings. One of nature's special gifts is creativity. The ability to see things differently, uncover hidden patterns, link seemingly unconnected events, and come up with solutions are all examples of creativity. Thinking and producing are the two processes that make up innovation. Motor creativity is the act of expressing one's creativity through movement. It is a fresh approach to being adaptable in novel circumstances. Despite the fact that motor creativity in children is a crucial component of motor development, very few exercise regimens support this process. According to Spearman (1931) "Creativity is the power of the human mind to create new contents by transforming relations and thereby generating new correlates". M.J. Levin (1978) once said- "Creativity is the ability to discover new solutions to problem or to produce new ideas, inventions or works of art. It is a special form of thinking, a way of viewing the world and interacting with it in a manner different from that of the general population" **(Mangal, 2015).**

Creativity is a complex skill that allows people to create basic and innovative ideas to solve different situations of daily life and thus an essential skill of individual adaptation process in a rapidly changing society **(Cassotti et al., 2016).**

Motor creativity or creative responses means creative expression through motor movements. Motor creativity can also be termed as the individual's ability to express themselves creatively through motor behaviour and motor movement. It is the collective expression of critical and creative thinking and motor abilities through creative motor movements in distinct forms of individuality, uniqueness, originality and variability. **(Mukhopadhyay, 1999)**

The capacity to produce both different and distinctive motor responses to a stimulus may serve as an operational definition of motor creativity. **(Wyrick, 1968)**

When a person engages in an event or action that satisfies a want, objective, or need—such as, but not limited to, pleasure, money, safety, security, sustenance, respect, belonging, or love—they feel enjoyment, and a pleasant emotional state. **(Smith et al., 2014)**

Enjoyment is the pleasure and satisfaction you get from doing or experiencing something you like. Participation in any kind of activity or game that is recreational in nature

may lead to enjoyment and happiness, which ultimately reflect health. Enjoyment in any activity helps the children engage in an activity. A crucial component of human existence, enjoyment may be found in a wide variety of businesses that are molded by both naturally occurring interests and social creation. Reading a book, engaging in creative endeavors, or participating in sports can all be enjoyable activities for people. The experience of enjoyment reflects general feelings, such as pleasure, liking, and satisfaction. **(Moore et al., 2009)**

A crucial component of human existence, enjoyment may be found in a wide variety of businesses that are molded by both naturally occurring interests and social creation. Reading a book, engaging in creative endeavors, or participating in sports can all be enjoyable activities for people. **(Raedeke, 2007).**

Attitude is a psychological structure, a mental entity that inherits a person. It is the emotional state of a person relating to a value and it arises from the reactionary energy towards oneself, a person, a place, a thing, an attitude, which in turn affects the person's thoughts and actions. Attitude are usually expressed by thoughts and feelings. Attitudes usually give rise to ides about human behavior. Attitude can be performed from a person's past and present. Children show their love for certain actions by their specific attitude. **(Perloff, 2016)**

Attitude affects how people act toward other people and things, feelings, actions, and preferences become strong predictors of behavior that may be altered, molded, taught, adjusted, or even replaced. One of the most significant predictive variables for behavioral intentions connected to physical activity is attitude. **(Araujo & Dosil, 2015)**

Allport (1935) said "attitude is a mental or neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situation with which it is related".

Most attitudes are learned directly from our experiences and we learn them from others. Many specific attitudes closely reflect attitudes that exist in our homes and communities. When members of a community have roughly the same attitude on a subject, anyone raised in that community is almost certain to adopt it as well. Attitudes are learned through a process of interpretation, response and confirmation **(Singh et. al, 2012).**

In both everyday life and literature, we use the word "personality" in a variety of ways. The Latin term "persona" (which means "mask") is where the word "personality" originates. Character is something distinctive and particular. Everyone is special in their own right. Self-consciousness is exhibited in personality. It contains all information on a person. Every personality is a result of both environment and genetics. Both of those have a crucial role in the personality development of the youngster. A child does not have a personality at birth; rather, one emerges through constant exposure to his surroundings. **(Mangal, 2015)**

The term "personality" means to the entire collection of one's distinct and individual thoughts, feeling, acting, and behavior patterns. Each personality is distinctive. Nobody is exactly like another. Morton Prince (1924) - "personality is the total of all the biological innate dispositions, impulses, tendencies, appetites, and instincts of the individual and the acquired dispositions and tendencies". Gordon Allport (1937) - "personality is the dynamic organization within the individual of those psychological systems that determine his unique adjustments to his environment". **(Sujan, 2021)**

Insofar as people's personalities don't drastically shift from one day to the next, personality traits are comparatively stable. However, over an extended period of time, changes take place as a result of both natural forces and deliberate actions. A core of relatively persistent individual distinctions, personality is subject to changes that can be brought about consciously or unintentionally. Personality traits, which reflect both hereditary and environmental effects, are regarded as phenotypic dimensions of the human variety.**(Chapman et al., 2011)**

RESEARCH GAP:

There have been a lot of research on recreation games in other countries and that research has been effective. Physical activity related research is being done in India but recreational game related are very less in number. Because people here think recreation is a waste of time, in fact people don't know what a recreation game is or they don't have the right idea about it. Today's parents do not want their children to be busy with games and play, but want them to study and earn money. This idea has to be changed, otherwise children will suffer from various diseases and psychological problems. During review collection the researcher found that most of the work done so far in our country on college students and adults, not on children. This idea has inspired the researcher to adopt the current research work. The aim was

to spread among everyone in the country about the value of recreation games. That is the justification of selection such a problem.

1.2 STATEMENT OF THE PROBLEM:

The current study's goal was to examine how recreation activities affected school children's motor skills and a few other psychological variables. Accordingly the problem was stated as **"EFFECT OF RECREATIONAL GAMES ON MOTOR FITNESS AND PSYCHOLOGICAL PROFILE OF SCHOOL CHILDREN".**

1.3 PURPOSE OF THE STUDY:

Purpose of the study was confined:

i) to know the effect of recreational games on motor fitness of school going children;
ii) to know the changes of creative motor responses i.e. motor creativity through participation in recreational games
iii) ;
iv) to know the changes in the level of enjoyment due to participation in recreational games;
v) to know the difference in the level of attitude through participation in recreational games;
vi) to know the changes in the level of personality trait due to participation in recreational games and
vii) to know the improvement of motor fitness, motor creativity, enjoyment, attitude and personality trait due to participation in selected recreational games.

1.4 DELIMITATION:

The limitations of the current investigation were the following situations.

i) The age group of the subjects for this study have been delimited to a range between twelve to thirteen years;
ii) The number of subjects for this study was sixty (30+30) only;
iii) The study was conducted on the students from Kakinada area, North 24 Parganas of West Bengal and
iv) The study was only with the following parameter: motor fitness, motor creativity, enjoyment, attitude and personality level.

1.5 LIMITATION:

The present study having following limiting conditions,

i) the motivation of children during the participation in exercise protocol and achieving highest possible level of performance;
ii) lifestyle of the subjects were considered as a limitation factor;
iii) the researcher did not put any effort to control the quality and quantity of food intake of the subjects as they were stayed home separately during training period;
iv) time and finance were also limiting factors. ;
v) the social, heritable, economic and cultural environment of the subjects was considered as limiting factor and
vi) uncontrollable weather condition was also limiting factor.

1.6 HYPOTHESIS:

The following theories served as the hypotheses for the current inquiry.

H_0: due to training from recreational sports, there would be no significant gain in motor fitness.

H_1: training using recreational games would significantly improve motor creativity;

H_2: training using recreational games would significantly improve enjoyment level;

H_3: training using recreational games would significantly improve attitude level and

H_4: training using recreational games would significantly improve personality traits.

1.7 SIGNIFICANCE OF THE STUDY:

It was anticipated that the study's findings would enable us to understand the following factors:

i) the study was to analyze the motor fitness and psychological trait of school children, so this information can provide clear mapping for future researchers in this field;
ii) it can provide rich source of material for further investigation;
iii) it can be helpful to physical educators to improve the ability of school children;
iv) it can provide better idea to researchers to analyze various related aspects of training;
v) it can guide physical educators to prepare exercise schedules or training protocols for children and
vi) it can be helpful to physical educator to conduct the recreational games to be included to prepare exercise schedules or training protocols for children.

1.8 DEFINITION AND EXPLANATION OF TERMS:

Strength: Strength is the capacity to act against or overcome resistance. Strength shouldn't be viewed as the exclusive result of muscular contractions. In actuality, it is a result of the neuro-muscular system's stimulation of voluntary muscle contractions. Maximum strength, explosive strength, and strength endurance are the three categories under which strength ability can be classified.

Agility: The ability to quickly adjust one's body direction while accelerating or decelerating is known as agility. Balance, strength, coordination, and skill level all play a role in it. By establishing a strong foundation of strength and conditioning suited for the athlete's level of difficulty, agility can be increased.

Coordination: Coordination is the capacity to regulate bodily motions in concert with physiological processes. It is the body's capacity for fluid and effective movement. Athletes with good coordination can combine several motions into one seamless motion that accomplishes the desired result.

Speed: The ability to move the body quickly is known as speed. It is the capacity to move swiftly across the surface or use additional limbs for grabbing or throwing. While most people connect speed with running, other workouts, such as throwing or kicking a ball, rely on quick arm or leg movements. It is complex in nature because it heavily relies on the central nervous system.

Balance: It is the capacity to maintain equilibrium while moving or motionless thanks to the coordinated actions of our sensory functions. Static and dynamic balances are the two types. Standing stationary and maintaining balance is known as static balance. Dynamic balance keeps you upright while you're going.

Neuroticism: One of the "big five" personality qualities, neuroticism is sometimes described as having a propensity for worry, despair, self-doubt, and other negative emotions. Neuroticism is a personality trait that exists on a spectrum, with some people being significantly more neurotic than others.

Self-sufficiency: Being self-sufficient means having a strong sense of inner stability and wholeness as well as feeling safe and content with oneself. On the surface, it is about safeguarding your self-esteem as well as defending your reputation as a deserving and honorable person. But it goes further than having a healthy sense of self-worth; it's not just a cognitive but also an emotional state, and it's a feeling of fundamental wholeness and well-being.

Introversion: A person who possesses the introverted personality type is said to be an introvert since they prefer to pay attention to their own inner thoughts and ideas rather than what is happening around them. Instead of being among vast crowds or groups of people, they prefer to spend time with one or two people.

Dominance: Dominance assesses a person's characteristic sense of control and influence over their life situations versus being controlled and influenced by others.

CHAPTER- II

REVIEW OF RELATED LITERATURE

2.1 Recreational Games

2.2 Motor Fitness

2.3 Motor Creativity

2.4 Enjoyment

2.5 Attitude

2.6 Personality

CHAPTER- II

REVIEW OF RELATED LITERATURE

Review of literature is the processes of gathering information about literature published in the form of books and journals and other research work on research topics. It provides a background of hypothesis and method selection. This helps to explain the results already reported in the work area. A sincere effort was made to identify the necessary information related to the field of study in professional journals and books. Knowledge of various research work in the field of research was also gathered through internet. According to the variables summary report of review has been presented in the following sections.

2.1 RECREATIONAL GAMES:

According to **Dekker & Slotboom (2023)**, Participation in video games affects one's behavior, skill and capabilities. They discovered that various game genres and playing styles stimulate various qualities and advantageous benefits of video game amusement, such as tension reduction and stress coping techniques. Additionally, they discovered that playing video games for fun has the potential to enhance real-world abilities including comprehension, reading, creativity, and problem-solving. They suggested that playing video games in moderation is key to achieving these advantages, but excessive gaming can result in emotional, physical, and social issues.

Sarbu et al. (2023) conducted "a cross-sectional investigation to determine the relationship between vigorous physical activity, leisure time, screen time, and time spent with parents and the intensity of drug use in adolescents". They discovered that these factors were all negatively correlated with the index of drug use, whereas screen time positively predicted the intensity of drug use.

According to **Turan et al. (2022)**, boys scored substantially higher on average for digital game addiction than girls in their study on the relationship between social anxiety levels and recreationally engaged adolescent players. Additionally, they discovered that playing video games excessively, together with the factors of gender and owning a computer at home, statistically significantly predicted social anxiety.

Galan et al. (2021) came to the conclusion that the usage of different recreational activities considerably improved the state of the visual analyzer, as well as the boys' binocular

vision and visual acuity. Following the recreational activities, they evaluated changes in the state of the boys' foot arches and noticed an increase in the proportion of kids with a normal foot arches. Additionally, they came to the conclusion that frequent football practice improved an organism's capacity for adapting to physical stress.

Petersen et al. (2021) conducted a study on "the relationship between self-rated health and well-being and engagement in recreational activities" and found that participation in recreational activities was related to greater self-rated health and quality of life.

Boot et al. (2020) have discovered that older persons consistently prefer particular video games and game elements, but younger adults do not uniformly favor the same kinds of games. They also discovered that, in contrast to popular belief, many older persons are capable of becoming active gamers and enjoying the benefits of leisure gaming when given the chance (access) and help (design, training).

Alanazi (2020), the impact of active recreational math games (ARMG) on male first-graders. He discovered a substantial difference in math anxiety and performance between the experimental and control groups, as well as a significant negative association between arithmetic anxiety and student performance. The experimental group outperformed the control group in terms of performance and had reduced levels of arithmetic anxiety.

Zambrano & Villafuerte (2020) did a study on recreational games to improve balance and oral expression in kids with Down syndrome and discovered that these games help these kids' balance and oral expression develop.

Quwaider et al. (2019) observed a connection between the player's behavior and the video games, and that the games may produce a range of changes in the player's attitude, including aggression, negativity, collaboration, and attention from the positive side.

Guler & Turkmen (2018) did a study to identify the obstacles to free time and the levels of motivation among university students. Due to the impressions of a lack of pertinent facilities and insufficient time, it was discovered that participant perceptions of barriers to leisure time were above average. Additionally, they discovered that levels of motivation for leisure time were more significantly influenced by higher identification-introjection and knowing-succeeding dimensions. However, there was no connection between the amount of incentive for leisure time and barriers to leisure time.

Emir Ekinci (2018) revealed that there were no gender variations in the loneliness levels of participants in his study on the impact of engaging in recreational activities on middle school students' loneliness levels. However, the correlation between the amount of loneliness

and engagement in leisure activities, as well as between these variables and the parent's marital status, was statistically significant.

Argan et al. (2018) investigated form their study on examining relationships among well-being, leisure satisfaction, life satisfaction and happiness and found significant relationships among them.

Ozen (2017) examined the "impact of recreational activities on trait and state anxiety levels" and discovered a notable impact of recreational activities on trait anxiety. Oner and Le Compte (1995) used and modified the Spielberger et al. (1970) Anxiety Inventory. The study's findings also revealed that while trekking, camping, and rock climbing do not significantly affect trait anxiety, they do significantly raise state anxiety. When taking into account the gender variable, it was discovered that rock climbing and camping caused female participants' state anxiety to statistically significantly increase.

Blumberg et al. (2013), they came to the conclusion that young adults' improved cognitive skills and recreational video game play had a positive link. There was little discussion of this relationship among kids and teenagers.

Reinecke (2009), Studying video and computer games for recreation at work revealed that it significantly increases feelings of relief. The gaming-related recovery experience was the best predictor of using games at work, and it was discovered that social dynamics at work had a big impact on game use and task control. This study also shows how computer games have a huge recuperation potential at the office.

Hoffman et al. (2005) their study, "Recreational sports involvement is associated with better physical fitness in children" and concluded that year-round recreational sport participation in youngsters is associated with higher levels of anaerobic and muscle strength.

Tauer & Harackiewicz (2004) did a study on the impact of cooperation and competition on intrinsic motivation and performance. No appreciable changes in task enjoyment or performance were found between intrinsic motivation and performance. They discovered that intergroup competition had a favorable impact on enjoyment.

Mukhopadhyay and Samanta (1996) observed the effect of participation in recreational games and practice of asana on the personality, motor creativity, motor fitness and pulse rate of juvenile delinquents and found positive effects in personality, motor creativity, motor fitness and pulse rate.

2.2 MOTOR FITNESS:

Castelli (2022) found that increased cognitive performance was positively correlated with physical activity and fitness. They discovered that children who are aerobically fit and participate in regular physical exercise are quicker and more accurate responders. They also discovered that children who engage in moderate to strenuous physical activity benefit cognitively. According to their findings, participation in activities demanding a variety of motor skills has the greatest potential to optimize children's cognitive function in the relationship between physical exercise and cognitive performance.

Formenti et al. (2021), studied the effects of various sports on children's motor skills and inhibitory control. According to their findings, the open-skill sports group outperformed the sedentary group in terms of motor fitness performance (reaction time, speed, power, and agility) and inhibitory control, whereas the closed-skill sports group outperformed the sedentary group only in terms of reaction time.

Ivashchenko et al. (2021) studies on the differences in motor fitness between boys and girls in 7-year-old schoolchildren have identified no appreciable gender differences in the maturation of vestibular stability and movement coordination of particular body parts. However, there were noticeable variations between males and girls in terms of the amount of strength, speed, endurance, and skill in acrobatic exercises.

Wu et al. (2021) conducted a study on "the relationship between motor fitness, fundamental movement skills and the quality of movement patterns in primary school students" and discovered that girls performed significantly better on the Fundamental movement skills than boys did on the object-control subtest and the Test of Gross Motor Development. Additionally, they noted a weak correlation between motor fitness and the ability to perform basic movement abilities and a level of quality in movement patterns. They also came to the conclusion that although there was a slight correlation between motor fitness, basic movement abilities, and quality of movement patterns.

Vandoni et al. (2021) conducted a study on fitness and fatness in Children & Adolescents and found differences in anthropometric characteristics and physical fitness between the two groups, as well as a high correlation between weight and fat mass and various physical fitness tests.

Kumar et al. (2019) reported from their study on "analysis of relationship between motor fitness and sports performance among high performer cricketers" and found motor fitness variables positively contribute towards better sports performance among cricketers.

Moradi et al. (2019), they found a positive relationship between agility and both congruent and incongruent reaction time, and no relationship between the underlying fitness components and either information processing control or inhibitory control, but an association was found between agility and both congruent and incongruent reaction time.

Madic et al. (2018) did a study on the influence of developmental gymnastics on preschool girls' motor fitness. They discovered that, as compared to pretest values, the training group significantly improved on practically all of the investigated parameters (such as the backward obstacle course, the standing broad leap, the arm plate tapping, the bent arm hang, and sit-ups). However, other than the standing broad jump and arm plate tapping, no significant improvements were seen in the control group.

Singh & Moriya (2017) based on their research on the differences in motor fitness between men and women, they concluded that while women had faster reaction times and greater agility than men, males have greater balance, coordination, and power.

Silva-Santos et al. (2017), came to the conclusion that preschool children who were obese (ages 3-6), they were six times more likely than non-overweight to be classed as having inadequate motor fitness levels. Additionally, they revealed a sizable range of overweight and obesity among preschoolers.

Gaur & Nigam (2011) found significant differences between cricket and football players in speed, abdominal muscular strength, endurance, flexibility and agility. But no significant differences were found between cricket and football players in arm muscular strength endurance and leg explosive strength. They also reported that performance of footballers was greater than the performances of cricketers in speed, abdominal muscular strength, endurance, flexibility and the cricketers were better than footballer in agility.

Milanese et al. (2010) discovered a positive link between BMI and body density and a negative correlation with waist circumference and subcutaneous fat. Additionally, they discovered that motor fitness was substantially connected with age, performance, and gender, with a higher level in men, and that it was not significantly impacted by BMI. On the other hand, there was a positive correlation between motor fitness and other factors, particularly in females. Furthermore, it was discovered that motor function gets better with age and that this development is somewhat sex-related, with boys showing a stronger association.

Voelcker-Rehage et al. (2010) discovered a significant relationship between motor fitness (speed, balance, motor coordination, and flexibility) and cognitive functioning in addition to the physical fitness index (cardiovascular fitness and muscular strength). They came to the conclusion that cognitive function in old age is influenced by both motor and physical fitness.

Mondal (2006) revealed that, with the exception of the Physical Fitness Index (PFI), all physical and motor fitness metrics increased gradually with age from 9 to 18. The greatest increase was seen in children aged 11 to 13. Although there were substantial negative relationships for speed, agility, and PFI, all fitness tests showed favorable correlations with age, height, and weight.

Fjortoft (2000) reported from the study on motor fitness in pre-primary School Children and found motor fitness had strong dependency on age and a small dependence on sex.

Mukhopadhyay & Samanta (1996) conducted a study on recreational games and practice of yoga asanas on juvenile delinquents and found positive changes on personality, motor creativity, motor fitness and pulse rate.

Rossi & Sullivan (1996) reported from the study of motor fitness in children and adolescents with traumatic brain injury on 8 to 17 years old boys and girls, and no significant variations were detected between the performances on the two testing sessions of motor fitness. Additionally, they observed that motor fitness testing procedures might be utilized by therapists to assess children who have suffered traumatic brain injuries.

Mukhopadhyay (1999) found that yoga and recreation have positive impacts on motor fitness in a study on the impact of certain yogic practices on the psycho-social profiles of juvenile offenders.

Beunen et al. (1983) conducted a study on Fatness, Growth and Motor Fitness of 12-20 Years boys and found that fatness is related to anthropometric dimensions and motor fitness with zero order and partial correlation was found between them. A positive correlation were found between estimated fatness and anthropometric dimensions. They also found negative correlation between fatness and motor fitness.

2.3 MOTOR CREATIVITY:

Thomaidou et al. (2021) did a study on motor creativity and motor competence and found a strong relationship between age and both of these skills.

Karaca et al. (2020) reported from a study on "the relationship between preschool children's motor creativity and peer play behaviors" and found that there was no statistically significant difference in the motor creativity of boys and girls. However, there was a significant difference in the disruption of play between boys' and girls' peer play behaviors.

Richard et al. (2018) determined that there were no appreciable variations in the likelihood of adapting to exercise difficulties between cognitive and motor creativity in their study on the development of cognitive and motor creativity in children through an exercise program employing nonlinear pedagogy principles.

Ourda et al. (2017) reported on their research and discovered that the experimental group's motor creativity significantly increased across the board as a result of a nutritious diet and regular exercise.

Dominguez et al. (2015) did a study on how motor creativity changed during elementary schooling and discovered that fluency and flexibility of motor creativity, in particular, grew as students advanced through the grades. Additionally, they discovered that between the ages of 6 and 9 years, motor fluency developed quickly, as did the symbolic transformation of objects and motions between the ages of 8 and 11.

Scibinetti et al. (2011) reported on their study of "children's motor creativity and creative thinking" and discovered no differences between motor creativity and motor competence, but substantial disparities between creative moving and creative thinking were discovered for all variables except originality.

Bournelli et al. (2009), investigated "the relationship between motor creativity and self-concept on 6-7 years children" and found motor creativity was correlated with the self-concept.

Pagona & Mountakis (2008) did a study on "the growth of motor creativity in elementary school students" and discovered that the experimental group performed much better than the control group in terms of motor creativity.

Justo C.F. (2008) was researched on "creative relaxation, motor creativity, and self-concept of early childhood education" and found significant differences in different variables between experimental group and control group. They also concluded that self-concept and motor creativity were more feasible to develop on infant educational stage.

Trevlas et al. (2003) reported on their research on the connection between playfulness and motor creativity in preschoolers and discovered a substantial association between total playfulness, motor fluency, and motor flexibility, as well as discovering that playfulness and motor creativity were associated.

Wang (2003) found that compared to the control group, the experimental group demonstrated significantly higher motor creativity. They made the case that the child's development depended heavily on the creative movement program.

Goon et. al (1993) reported a positive relationship of creative motor responses with intelligence, age, sex and locality.

Mukhopadhyay (1999) has done a study on **"**effect of selected yogic practices on psycho-social profiles of juvenile delinquents" and juvenile non delinquents and found yoga and yoga-recreation treatments are effective in increasing motor creativity of juvenile non delinquents. The treatment with yoga-recreation is found to be more effective than yoga treatment.

Mukhopadhyay and Bhattacharyya (1992) reported from their study on anxiety level and movement satisfaction in creative motor responses and found positive relationship between motor creativity, anxiety and movement satisfaction. But in case of girls they found inverse significant relationship between motor creativity and anxiety. Further they reported that girls were more anxious, superior in movement satisfaction than boys but boys were superior in motor creativity and significant sex difference was found in motor creativity.

Philipp (1969) investigated the "relationship of motor creativity with figural and verbal creativity and selected motor skills" and discovered that expression of motor creativity through movement is not connected with the performance of motor skill and no significant relationships were found between various aspects of creativity.

Wyrick (1968) provided findings from a study on the creation of a motor creativity test that showed a strong correlation between fluency and originality in the tests.

2.4 ENJOYMENT:

Chen et al. (2021) discovered that the Physical Activity Enjoyment Scale (PACES) was a trustworthy and valid tool that may be especially helpful to gauge how much people like participating in physical activity in large-scale investigations.

Garn et al. (2019) reported from the study on "Reciprocal effects model of Children's physical activity, physical self-concept" and enjoyment that sport self-concept may be especially important for children's Physical Activity enjoyment and Physical Activity.

According to **Burns et al. (2017)**, school-based physical activity interventions can help kids and teenagers enjoy exercise more.

Remmers et al. (2015) did a study on "the connection between children's physical activity and enjoyment" and discovered important differences in impulsivity for physical activity behavior, gender, and physical activity enjoyment. Additionally, they discovered a link between boys' impulsivity and their enjoyment of physical activity and their behavior when they engaged in physical activity, but not in girls, where these links were less.

Lucardie (2014) found that fun and enjoyment were seen as a mechanism that promoted learners' attentiveness and assisted in learning. Additionally, they discovered that adults' learning experiences, particularly fun and enjoyment, might benefit from and be taken into consideration by placing more emphasis on the emotional domain of learning.

According to **Mekler et al. (2014)** systematic review of quantitative studies on the enjoyment of digital entertainment games, game enjoyment refers to the positive cognitive and emotive evaluation of the gaming experience and may be partly linked to the support of player needs and values.

Labbrozzi et al. (2013) reported from their study on "Pubertal development, physical self-perception and motivation toward physical activity in girls" and discovered that more developed girls had a negative lower score on the Physical Activity Enjoyment Scale and had a poorer physical perception on the measures of body fat, overall physical self-concept, and looks. **Scarpa et al. (2012)** investigated the relationship between "peer victimization during sports practice and physical activity enjoyment in 12 to 13 years children" and discovered a positive connection between peer victimization and the enjoyment of physical activity and a favorable link between peer victimization and sports practice.

Moore et al. (2009) conducted a study "on measuring enjoyment of physical activity in children" and discovered that the Physical Activity Enjoyment Scale (PACES) had strong

internal consistency and item-total correlations. Additionally, it was found that task goal orientation, athletic ability, outward attractiveness, and self-reported physical activity were substantially connected with PACES performance.

Raedeke (2007) conducted a study on "The Relationship between Enjoyment and Affective Responses to Exercise" and showed that after exercise, there was a substantial decrease in negative affect and a rise in positive affect, and that enjoyment was positively correlated with increases in positive affect but not with changes in negative affect.

Ginis et al. (2006) investigated the "effects of two types of acute physical activity bouts on enjoyment and subsequent change in attitudes among older men and women". They discovered that both conditions increased their physical activity; the weight condition enjoyed their bout more, and the enjoyment condition mediated subsequent changes in attitudes.

Dishman et al. (2005) stated in their study on "Enjoyment Mediates Effects of a School-Based Physical-Activity Intervention that the intervention had direct" and found the benefits of physical activity and the factors that affect students' pleasure of physical education, which led to an explanation of the relationship between improved physical activity enjoyment and self-efficacy.

Kendzierski & DeCarlo (1991) investigated "the reliability and validity of the Physical Activity Enjoyment Scale (PACES)" and found that the subjects' PACES and their PACES on a test of boredom propensity had a substantial negative connection in the control condition. Additionally, they discovered a strong connection between the individuals' activity selections and their PACES evaluations, which were completed after each activity.

2.5 ATTITUDE:

Dr. A. Kumar & Rathour (2022) concluded a study on **"**attitude towards physical education and sports of higher secondary school students" and discovered no significant difference in pupils' attitudes toward physical education and sports between the good and poor categories.

Cruz et al. (2021) conducted a study on the "attitudes of Filipino middle school students toward physical education between 12 and 19 years students" and discovered that middle school students had moderate attitudes toward physical activity, with female students having higher positive attitudes.

G. Singh & Kaur (2019) investigated the effect of parent's attitude on girl's participation in sports and concluded no significant differences in attitude of female and male parents towards participation of girls in sports.

Freire & Teixeira (2018) conducted a study on "the influence of leisure attitudes and leisure satisfaction on adolescents' positive functioning" and discovered a significant gap between leisure attitudes and leisure satisfaction as well as the finding that leisure satisfaction significantly predicts all aspects of positive functioning.

Keskin et al. (2017) found that the attitudes of students towards the physical education courses were generally high and no significant differences were found towards the physical education courses in terms of gender and age groups. They also found that the students' who involved in a sports club and attending to tournaments they positively affected their attitude towards the physical education courses and it was statistically meaningful.

Araujo & Dosil (2015) conducted a study on the "influence of attitudes toward physical activity and sports" and discovered that attitudes toward sports and physical activity were more favorable in younger males who frequently engaged in physical exercise but did not attend higher education.

Kellmann et al. (2014) conducted a study on attitudes towards physical Activity and exercise participation and reported less positive attitudes towards intensive exercise/sporting competition and risky sporting activities.

Nelson et al. (2010) examined a study on "negative attitudes toward physical activity" was explored, and it was discovered that there was a strong correlation between the two. Additionally, they discovered that a bad attitude predicted physical activity more accurately than a good one.

Deforche et al. (2006) did a study and discovered that obese teenagers had less favorable attitudes compared to their normal-weight and overweight peers. It was also discovered that the degree of overweight had no effect on the relationship between sport involvement and attitude.

Mukhopadhyay (1999) has done a study on "effect of selected yogic practices on psycho-social profiles of juvenile delinquents" and found positive changes in attitude after treatment and it was good sign for their development.

Austin & Huberty (1993) investigated the development of the child attitude toward illness scale on 8–12 years children who had epilepsy or asthma and found positive relationships with the Child Behavior and self-concept.

Brutten & Dunham (1989) conducted a study on the “communication attitude test in grades 2-8” and discovered that from the second to the eighth grade, negative attitudes about speech considerably diminished. They also came to the conclusion that neither the test results nor their correlation with age or sex were statistically significant.

2.6 PERSONALITY:

Pfeffer & Rhodes (2023) examined in "Physical activity across the life span: personality, physical activity, and sedentary behavior", and found that there was a favorable relationship between the big five personality traits of openness, conscientiousness, extraversion, agreeableness, neuroticism, and healthy behavior.

Remilly et al. (2023) concluded from a study on personality traits associated with the risk of exercise dependence in ultra-endurance athletes: a cross-sectional study and found a higher level of neuroticism was connected with increased exercise dependence scale-revised scores and significantly higher scores in the exercise dependence group. They also found association between neuroticism and exercise dependence.

Li et al. (2022) examined in the study "Trait Creativity, Personality, and Physical Activity: A Structural Equation Model", and discovered that openness in personality was positively connected with physical activity and that physical activity was negatively correlated with curiosity, challenge, risk-taking, and imagination.

Navya et al. (2018) concluded from their study on “personality traits and mental health of adolescents in Delhi NCR” and identified a strong association between personality qualities and mental health, and they also discovered that female adolescents had better mental health and personality traits than their male counterparts.

A study by **Tolea et al. (2012)** on "associations between personality traits, physical activity level, and muscle strength" discovered that neuroticism and the majority of its components were negatively connected with strength.

Chapman et al., (2011) concluded from their study on “personality and longevity: known, unknown and implications for Public health and personalized medicine” and found personality traits are significant predictors of longevity.

Klimstra et al. (2009) reported on the study on the "maturation of personality in adolescence" and found In terms of personality development, girls reached maturity earlier than boys.

L. S.-L. Chen et al. (2008) investigated a study on "Personality Traits and Life Satisfaction among Online Game Players" and found significant difference between neuroticism and negative influence on life satisfaction.

Matthews et al. (2006) conducted a study on Emotional intelligence, personality and task-induced stress and found neuroticism was positively related to distress and worry.

Hausenblas & Giacobbi (2004) investigated the "relationship between exercise dependence symptoms and personality" and discovered that agreeableness and exercise dependency symptoms were adversely linked with extraversion and neuroticism. They also discovered that openness and conscientiousness did not significantly connect with the symptoms of exercise dependence.

Mukhopadhyay (1999) has done a study on "effect of selected yogic practices on psycho - social profiles of juvenile delinquents" and found neuroticism was equally influenced by the experimental treatment and no treatment can be considered superior to the other. He also found that experimental treatment and the existing treatment programme have no influence on the traits of personality (self-sufficiency, introversion and dominance).

Courneya & Hellsten (1998) conducted a study on "personality correlates of exercise behavior, motives, barriers and preferences" and they discovered that all "Big Five" personality traits were in some way associated favorably with preferences for exercise environment and organization. They also discovered that extraversion and conscientiousness were positively correlated with exercise activity, while neuroticism was adversely correlated.

Roy et al. (1995) conducted from their study on some personality correlates of female delinquency and found delinquent girls had poor self-esteem, more aggressive, poorly adjusted and greater risk taker than non-delinquent.

Mukhopadhyay and Samanta (1994) conducted a study on comparative study between boys and girls on Some Psycho-Physical Characteristics of State Level yogasana competitors and found significant difference between boys and girls in flexibility and personality. They also found a relationship between age and personality.

CHAPTER-III

METHODOLGY

3.1 The Subjects

3.2 Orientation of Subjects

3.3 Selection of Variables

3.4 Criterion Measures &
Use of Instruments

3.5 Training Design

3.6 Training Programme

3.7 Experimental Design

3.8 Administration of Test

3.9 Statistical Procedure

CHAPTER-III

METHODOLOGY

The researcher used an approach for performing the research that was practical for the researcher. This covers selection of subject, orientation of subject, variable selection, criterion measure and instrument used, experimental design, research protocol, data collection procedure, and analytical procedure.

3.1 THE SUBJECTS:

Sixty (60) girls (10–13 years old) in all were chosen as study participants. In Kankinara, North 24 Parganas, West Bengal, the subjects in classes V–VII were chosen at random. Such student groups are referred to as Upper Primary standards. A total of sixty (60) girls were split into two groups, with thirty (30) participants in each. The group that underwent the experiment was the first group, and the control group was the second.

3.1.1 SAMPLING:

Sixty (60) girls were selected from of six hundred fifty-four (654) girls who are 10 to 13 years of age. The lottery system of simple random sampling was used to select them. This system usually done in five steps and the steps are:

Step I: Preparation of sampling unit list.

Step II: Writing numbers on small pieces of paper.

Step III: Mixed well all the papers with numbers in a container.

Step IV: Take out one piece at a time.

Step V: Continue this process till the total number of sampling was selected.

3.2 ORIENTATION OF SUBJECTS:

The researcher explains the purpose of the training programme and describes the involvement of the subjects. Before the training investigator demonstrated each and every exercise, then they perform to make clearly understand the exercises. After the exercises the researcher explain each recreational game (five recreational games in a day) of the training programme then the subjects were performed to make them understand the games.

3.3 SELECTION OF VARIABLES:

The investigator examined analyses of psychological, motor, and fitness factors from many sources and spoke with specialists in these fields. When choosing independent and dependent variables, the literature, expert opinion, and administrative viability were all taken

into account. This refers to the availability of tools and competence for measuring and collecting data. Based on the above-mentioned criteria the following variables were selected which is described in table no.1.

Table-1: Independent and Dependent Variables

Independent Variable: Recreational Games	
Dependent Variables	
Motor Fitness	**Psychological Variables**
a) Bent knee sit-up b) Side Stepping c) Standing Broad Jump d) Modified pull-ups e) Squat Thrust	I. Motor Creativity: a) Item no.- I (Different type of movements of the upper part of the body) b) Item no.- II (Different ways one can move from line AB to CD) c) Item no.- III (Different type of movements on the narrow bench) d) Item no.- IV (Different ways hit the ball on the wall using any part of the body) e) Item no.- V (Different body movements from four different position) II. Enjoyment, III. Attitude, IV. Personality

3.4 CRITERION MEASURES AND USE OF INSTRUMENTS:

Anthropometric (Age, Height, Weight, BMI, Waist-Hip Ratio), Motor Fitness and Psychological variables were selected having discussion with expert of Physical Educationist and Sports Scientist. After reviewing the available research, the following standardized tests were picked and used to gather relevant data on the selected variables, which is displayed in the tables below.

3.4.1 PERSONAL DATA

Anthropometric variables, use of instruments and unit of measurement are describe in table no. 2.

Table-2: Use of Instruments and Unit of Measurement of Personal Data

Variables Type	**Parameter**	**Used Instruments**	**Unit of Measurement**
Anthropometric	Height	Stadiometer,	in cm
	Weight	Weighing machine,	in kg
	BMI	---	Kg/m2
	Waist Hip Ratio (Waist and Hip Circumference)	Measuring tape	In cm

3.4.2 VARIABLES:

Motor fitness, motor creativity, psychological variables, use of instruments and unit of measurement are described in table no. 3.

Table-3: Details of Variables, Use of Instruments and Unit of Measurements

Variables Type	Parameter	Used Instruments	Unit of Measurement
Motor Fitness	Bent knee Sit-ups	Mat, Stopwatch	In number
	Side Stepping	Lime dust, Two lines on the floor 12 feet apart.	In number
	Standing Broad Jump	Floor with take-off mark and measuring tape.	In meter
	Modified pull-ups	Modified pull-up bar, stopwatch.	In number
	Squat Thrust	Stopwatch	In number
Motor Creativity	Item No. – I (Different type of movements of the upper part of the body)	Mat/floor and stopwatch	In number
	Item No. – II (Different ways one can move from line to line)	Two parallel lines on the floor 10 feet apart and stopwatch	In number
	Item No. – III (Different type of movements on the narrow bench)	Narrow bench (5-6” wide, 18” high and 3-4’ long) and stopwatch.	In number
	Item No. – IV (Different ways can one hit the ball on the wall using any part of the body)	Tennis ball, wall and stopwatch.	In number
	Item No. – V (Different body movements from four different position)	One mat with 1,2,3,4 marked and stopwatch.	In number
Psychological Variables	Enjoyment	Physical Activity Enjoyment Scale (PACES) Questionnaire	Value
	Attitude	G. Russon standardized questionnaire	Value
	Personality	Bernreuters standardized questionnaire.	Value

3.4.3 TRAINING PROGRAMME LOCATION:

In this experimental study, the training schedules constructed for recreational games. The researcher selected study location at Kakinara of North 24 Parganas, West Bengal, India.

3.4.4 RELIABILITY OF DATA AND INSTRUMENTS:

The reliability of the data was ensuring by establishing the competence of the researcher, the reliability of the instruments for testing and the reliability of the subjects.

Instruments used in this research work were Stadiometer, Weighing machine, Stop watch, Measuring tape, Pulse Oximeter, Sphygmomanometer, Thermometer, Skinfold caliper and other accessories for this study. All the instruments used in this research were in proper working state. All the instruments were standard quality and manufactured by reputed and reliable companies.

3.5 TRAINING DESIGN:

All tests were conducted in the playground of Kankinara High School. Training programme was scheduled at 7 A.M to 8:30 A.M including warm up and cooling down. Separately designed 12 weeks training programme for all in the independent variables were applied on school girl's students for 3 alternative days (Monday, Wednesday and Friday) per week. The training designs are given below:

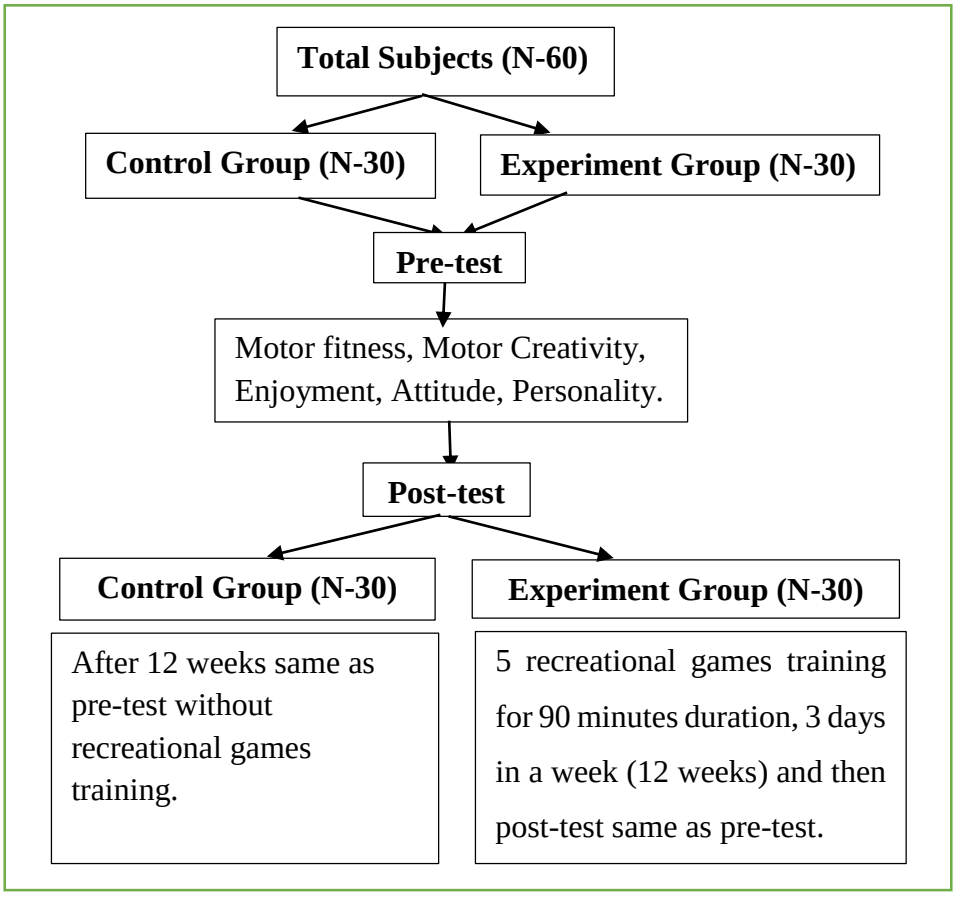


Fig.-1 Training Design

3.6 TRAINING PROGRAMME:

The researcher created a training regimen for the experimental group that included playing recreational games. Three days a week for twelve weeks was the length of the training plan, and a post-test was given following the training with the corresponding procedure. The subjects under the treatment group was given selected fifty (50) recreational games (five games in a day) based on physical movement for twelve weeks. The recreational games are presented in table-4. And the training schedules are presented in table-5

Table-4: Recreational Games

1. Memory game	18. Good Morning	35. Touch down carrying the object
2. Cat and Mouse	19. Tug of war	36. Nose Race
3. Circle weaving race	20. Pagalwala	37. artner Tag
4. knee-bend balance	21. Wall Ball	38. Kangaroo Relay
5. Ball Roll Relay	22. Dog & Bone	39. Couple Break
6. Telephone Game	23. Thief and Policeman	40. Rope Skipping
7. Catch the Fox's Tail	24. Leg Cricket	41. Caterpillar
8. Poison Circle	25. Run and Throw	42. Frog Attack
9. Human Obstacle	26. Busy Bee	43. Wrestling
10. Touch and Run	27. Passing the ball through channel	44. Sack Race -2
11. Dog in the Circle	28. Fox and Sheep	45. Blloon Belley
12. Rat and Rabbit	29. Four leg race	46. Shadow Thief
13. Zigzag Relay	30. Head Balancing	47. Free and Caught
14. Shoulder Shoving	31. Read light green light	48. CatManDew
15. Potato Race	32. Squirrels in the trees	49. King in the Ring
16. Home Change	33. Freeze Tag	50. Sack Race-1
17. Capture the Flag	34. Criss Cross	

Table- 5: Training Schedule

DAY	Warming Up (15minutes)	Recreational Game (40minutes)	Cooling Down (5 minutes)
M O N D A Y (1)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Memory Game ii. Cat and Mouse iii. Circle weaving race iv. Knee-bend balance v. Ball Roll Relay	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
W E D N E S D A Y (2)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Telephone game ii. Catch the fox's Tail iii. Poison Circle iv. Human Obstacle v. Touch and run	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
F R I D A Y (3)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Dog in the circle ii. Rat and Rabbit iii. Zigzag Relay iv. Shoulder Shoving v. Potato Race	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
M O N D A Y (4)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Home Change ii. Capture the Flag iii. Good Morning iv. Tug of War v. Pagalwala	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips

Table-5: Training Schedule (cont.)

Day	Warming Up (15minutes)	Recreational Game (40minutes)	Cooling Down (5 minutes)
W E D N E S D A Y (5)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Wall ball ii. Dog and Bone iii. Thief and Policeman iv. Leg Cricket v. Run and Throw	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
F R I D A Y (6)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Busy Bee ii. Passing the Ball through Chanel iii. Fox and Sheep iv. Four Leg race v. Head balancing	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
M O N D A Y (7)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Red Light, Green light ii. Squirrel in the Trees iii. Freeze Tag iv. Criss Cross v. Touch down carrying the object	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
W E D N E S D A Y (8)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Nose Race ii. Partner Tag iii. Kangaroo Relay iv. Couple Break v. Rope Skipping	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips

Table-5: Training Schedule (cont.)

Day	Warming Up (15 minutes)	Recreational Game (40 minutes)	Cooling Down (5 minutes)
F R I D A Y (9)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Caterpillar ii. Frog Attack iii. Wrestling iv. Sack Race v. Balloon Belly	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
M O N D A Y (10)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Shadow Thief ii. Free and Caught iii. CatManDew iv. King of the Ring v. Sack Race	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
W E D N E S D A Y (11)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Memory Game ii. Cat and Mouse iii. Circle weaving race iv. Knee-bend balance v. Ball Roll Relay	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
F R I D A Y (12)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Telephone game ii. Catch the fox's Tail iii. Poison Circle iv. Human Obstacle v. Touch and run	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips

Table-5: Training Schedule (cont.)

Day	Warming Up (15 minutes)	Recreational Game (40 minutes)	Cooling Down (5 minutes)
MONDAY (13)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Dog in the circle ii. Rat and Rabbit iii. Zigzag Relay iv. Shoulder Shoving v. Potato Race	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
WEDNESDAY (14)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Home Change ii. Capture the Flag iii. Good Morning iv. Tug of War v. Pagalwala	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
FRIDAY (15)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Wall ball ii. Dog and Bone iii. Thief and Policeman iv. Leg Cricket v. Run and Throw	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
MONDAY (16)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Busy Bee ii. Passing the Ball through Chanel iii. Fox and Sheep iv. Four Leg race v. Head balancing	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips

Table-5: Training Schedule (cont.)

Day	Warming Up (15 minutes)	Recreational Game (40 minutes)	Cooling Down (5 minutes)
WEDNESDAY (17)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Red Light, Green Light ii. Squirrel in the Trees iii. Freeze Tag iv. Criss Cross v. Touch down carrying the object	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
FRIDAY (18)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Nose Race ii. Partner Tag iii. Kangaroo Relay iv. Couple Break v. Rope Skipping	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
MONDAY (19)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Caterpillar ii. Frog Attack iii. Wrestling iv. Sack Race v. Balloon Belly	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
WEDNESDAY (20)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Shadow Thief ii. Free and Caught iii. CatManDew iv. King of the Ring v. Sack Race	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips

Table-5: Training Schedule (cont.)

Day	Warming Up (15minutes)	Recreational Game (40minutes)	Cooling Down (5 minutes)
F R I D A Y (21)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Memory Game ii. Cat and Mouse iii. Circle weaving race iv. Knee-bend balance v. Ball Roll Relay	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
M O N D A Y (22)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Telephone game ii. Catch the fox's Tail iii. Poison Circle iv. Human Obstacle v. Touch and run	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
W E D N E S D A Y (23)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Dog in the circle ii. Rat and Rabbit iii. Zigzag Relay iv. Shoulder Shoving v. Potato Race	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
F R I D A Y (24)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Home Change ii. Capture the Flag iii. Good Morning iv. Tug of War v. Pagalwala	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips

Table-5: Training Schedule (cont.)

Day	Warming Up (15minutes)	Recreational Game (40minutes)	Cooling Down (5 minutes)
M O N D A Y (25)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Wall ball ii. Dog and Bone iii. Thief and Policeman iv. Leg Cricket v. Run and Throw	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
W E D N E S D A Y (26)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Busy Bee ii. Passing the Ball through Chanel iii. Fox and Sheep iv. Four Leg race v. Head balancing	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
F R I D A Y (27)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Red Light, Green light ii. Squirrel in the Trees iii. Freeze Tag iv. Criss Cross v. Touch down carrying the object	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
M O N D A Y (28)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Nose Race ii. Partner Tag iii. Kangaroo Relay iv. Couple Break v. Rope Skipping	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips

Table-5: Training Schedule (cont.)

Day	Warming Up (15minutes)	Recreational Game (40minutes)	Cooling Down (5 minutes)
W E D N E S D A Y (29)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Caterpillar ii. Frog Attack iii. Wrestling iv. Sack Race v. Balloon Belly	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
F R I D A Y (30)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Shadow Thief ii. Free and Caught iii. CatManDew iv. King of the Ring v. Sack Race	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
M O N D A Y (31)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Memory Game ii. Cat and Mouse iii. Circle weaving race iv. Knee-bend balance v. Ball Roll Relay	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
W E D N E S D A Y (32)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Telephone game ii. Catch the fox's Tail iii. Poison Circle iv. Human Obstacle v. Touch and run	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips

Table-5: Training Schedule (cont.)

Day	Warming Up(15minutes)	Recreational Game (40minutes)	Cooling Down (5 minutes)
F R I D A Y (33)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Dog in the circle ii. Rat and Rabbit iii. Zigzag Relay iv. Shoulder Shoving v. Potato Race	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
M O N D A Y (34)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Home Change ii. Capture the Flag iii. Good Morning iv. Tug of War v. Pagalwala	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
W E D N E S D A Y (35)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Wall ball ii. Dog and Bone iii. Thief and Policeman iv. Leg Cricket v. Run and Throw	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips
F R I D A Y (36)	I. Jogging (200m) II. Loosening exercises III. Striding (50m x 4) IV. Stretching exercise. V. Acceleration run/Wind sprint (30m x 4)	i. Busy Bee ii. Passing the Ball through Chanel iii. Fox and Sheep iv. Four Leg race v. Head balancing	I. Seated Groin stretch II. Front of trunk stretch III. Seated trunk twist IV. Seated Groin and Hamstring stretch V. Lying quadriceps stretch VI. Lying hamstring stretch VI. Sit-ups VII. Dips

3.7 EXPERIMENTAL GESIGN:

Parallel group design was used in this study. There were two equated groups of subjects consisted of 60 individuals in each. One group was considered as the Experiment group and the other were the Control group. The experiment group was treated with planned systematic training for a period of twelve (12) weeks. The control group were not be given any such training for twelve (12) weeks. Rather the subjects were controlled so that they do not participate in any organized training on a regular basis.

3.8 ADMINISTRATION OF TEST:

The tests for personal data (anthropometric), motor fitness, motor creativity, and psychological variables were conducted in the classrooms and on school grounds. Before the conduct of every test, the subjects were assembled at the testing venue, and the purpose of the test was explained to them. The investigator took the help of an M.P.Ed. students and other research scholars in conducting the test. A demonstration of all the tests was given before the subjects, and all sorts of efforts were made by the research scholar to ensure accuracy and uniformity in the administration of the test. A short warm-up period of eight to ten minutes was given to the subjects before the test. All the tests were conducted on each subject.

3.8.1 TEST OF PERSONAL DATA:

Here some tests of anthropometric variables have been taken as personal data. The procedures of the tests taken are given below in sequence. The investigator collected data on the following parameter for the research study.

I. Height: Without wearing shoes, the individual is upright and standing on a flat surface. Her heels are in contact with each other if you ask her to stretch the furthest. In order to stretch fully, a small amount of upward pressure is placed below the mastoid processes. Holding the head in the horizontal bar, the stadiometer counterweighted board should be lowered until it lightly contacts the head. To the nearest cm from the stadiometer, the measurement was recorded.

II. Weight: The weight of each subject was taken with weighing machine. The subject was asked to stand on the weighing machine in erect position with front views and the skill reading from the weighing machine was to be recorded in kilogram (kg) as the weight of the individual.

III. BMI (Body Mass Index): This test was based upon the relationship between height and weight. It is usually done to check a person's health and fitness ability. Here height was considered in meters and weight was considered in kilograms (kg) and grams (g). The BMI is calculated by BMI=Weight in kg/ height in meter square.

IV. Waist-Hip Ratio (WHR): Waist-Hip ratio one of the several measurements was used to observe overweight and if that excess weight is putting your health at risk. It measures the waist circumference and hip circumference. The subject asked stand up straight. Wrap the measuring tape around the widest part of the stomach, across the belly button, this was the waist circumference. Then wrap measuring tape around the widest part of the buttocks, this is the largest part of the body and this was the hip circumference of the subjects. Calculated WHR by dividing the waist circumference by hip circumference, WHR= waist circumference in cm/hip circumference in cm.

3.8.2 Test of Motor Fitness ➡ North Carolina Motor Fitness Battery:

Purpose: To assess progress toward the physical fitness goal.

Evaluation: Items were selected through the jury technique on the basis of criteria established by a fitness committee.

Level and Sex: Boys and girls 9 through 18 years age.

Time allotment and number of subjects: A class of 30 to 35 pupils can be tested in a 45 minutes class period.

Time allotment and number of subjects: A class of 30 to 35 pupils can be tested in a 45 minutes class period.

Floor plan, space requirement and class organization: The tests were administered on a combination of the station to station methods of administration. The subjects were divided in five groups. The subjects were rotated from one station to another until the subjects had visited all five stations.

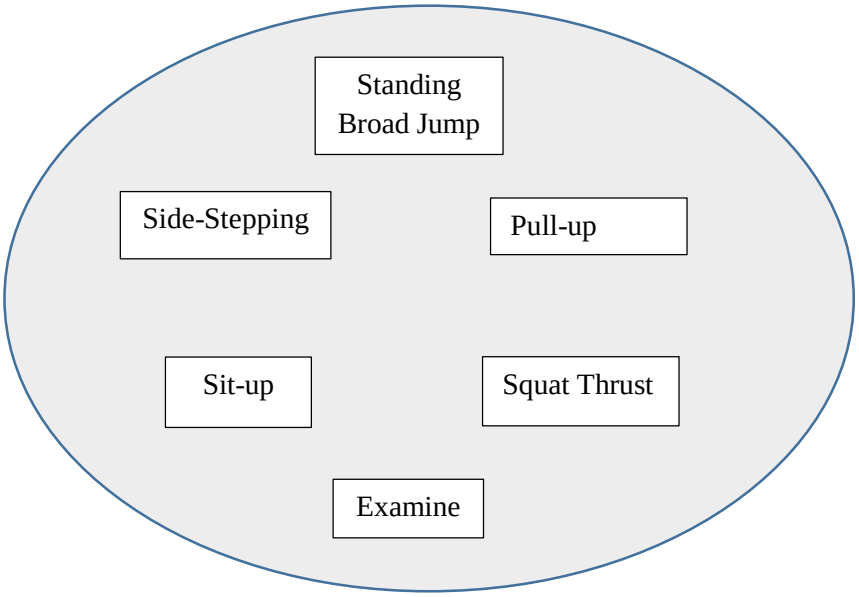


Fig.-2: Floor plan for North Carolina Motor Fitness Battery

At the beginning of the test all the subjects were supplied with an individual score card. All five test items were explained and demonstrated to the entire assembly of subjects. The subjects then went to the assigned. Score cards were collected by the subject leader at the station where the subject was tested.

General procedure:

1. The five testing station were arranged in the rotation order mentioned in the following section.
2. The following sequences were maintained for rotation: sit-ups, side –stepping, broad jump, modified pull-ups and squat thrusts. The sequence was designed so that a subject did not be using the same muscle group in consecutively.
3. The researcher himself/herself operated the watch and collected the require information data from the scorer.

Test description and administration: All the test items were administration in the school ground. The subject were started and stopped by the researcher signal.

3.8.2.1 Item Number-I: Bent Knee Sit-ups

Purpose: To measure abdominal strength, endurance and speed.

Facilities and Equipment: Mat/floor and Stopwatch.

Procedure: The student lay on his back with his legs bent, feet flat on the floor, hands clasped behind his neck, and elbows resting on the floor. A partner held the feet firmly in place. The student then stood up, rotated his or her trunk to the left, placed his or her right elbow to the left knee, and then sat back down in the same spot as before. The patient switched sides, and the exercise was repeated.

Instruction: With the elbows resting on the ground, the pupil must revert to the starting posture. The fingers remain in contact behind the neck throughout the exercise. Subject might not rest between sit-ups, and she must touch the knee with the opposite elbow. Do as many sit-ups as subject could in 30 seconds.

Scoring: A sit-up was scored each time an elbow touches a knee. The score was the number of correct sit-ups performed in thirty seconds.

3.8.2.2 Item number-II: Side-Stepping

Purpose: To measure agility, endurance and speed.

Facilities and Equipment: Two lines on the floor twelve feet apart and stopwatch.

Procedure: The student assumes a starting position with one foot touching a side line. On the signal to start he/she takes a side-step to the side with the foot closest to the line being approached and repeats this step until the foot touches or moves off the line. The subject then moved to the other side line in the same manner.

Instruction: The subject must face in the same direction during the exercise. She must reach the line and never cross her feet at any time.

Scoring: One point was scored each time the subject touched a side line. The final score was the number one-way trips completed in 30 seconds.

3.8.2.3 Item Number-III: Standing Broad Jump

Purpose: To measure leg muscle power.

Facilities and Equipment: Floor (with a take-off mark), one measuring tape and lime dust.

Procedure: The subject should stand with his or her toes slightly in front of the takeoff mark and their feet several inches apart. She can mark her forward leap by swaying her arms and bending her knees while simultaneously kicking off both feet from the ground.

Instruction: The subject should squat and make a preparatory motion with her arms before taking off. She leaps and spreads her arms widely. Jump with both feet while attempting to avoid falling backward upon landing.

Scoring: The measurement was made from the take-off line to the nearest point where any part of the body touches the floor. There trials were allowed and the best one was recorded to the nearest inch.

3.8.2.4 Item Number-IV: Modified Pull-ups

Purpose: To measure arm and shoulder girdle strength, endurance and speed.

Facilities and Equipment: With a minimum height of 30 inches supported a bar one inch in diameter and four feet long and one stop watch.

Procedure: The subject holds the bar with palms away from the face and the body under the bar with the feet on the floor directly below the knees so that there was a straight line between the knees and the head. Arms were extended to form a 90 degree angle with the chest. From that position the subject pulls up with the arms until they were fully flexed and then lowers to the full extension of the arms.

Instruction: The subject was not allowed to rest between pull-ups. Her feet must be kept under the knees all the time and her body must be kept straight between the knees and head. Flex her arms until her chest or chain touched the bar. Her arms must be fully extended between pull-ups.

Scoring: The score was the number of correct pull-ups performed in 30 seconds.

3.8.2.5 Item Number-V: Squat Thrust

Purpose: To measure endurance, agility and speed.

Facilities and Equipment: Stop watch.

Procedure: The subject starts in a standing position. (1) she went to a full squat position with both hands on the floor shoulder width apart in front of her feet; (2) she was in resting position leaning forward with both legs pushed back and the body resting on both hands and toes and almost straight shoulder to leg; (3) she turned to a full squat position; (4) then the subject stood erect.

Instruction: She must reach a full squat position before her legs back. Lean forward and keep her back straight in that resting position. She must come into an upright position with the body in a straight line at the hips. She cannot rest between in this movement.

Scoring: The score was the number of complete four phase repetitions correctly executed in 30 seconds.

3.8.3 Test of Motor Creativity:

A modified Motor Creativity test battery with five test items was used. It was formed and standardized by Prof. A. K. Bhattacharyya following Wyrick Test of Motor Creativity. These tests were on motor activity, whose performance reflects creativity in the motor domain.

Purpose: To measure creative expression through motor movements.

Level and sex: Boys and girls of age group 10 - 13 years.

Floor Plan, Space Requirement and Class Organization: All five test items were explained and demonstrated to the whole group assembled in a large room at the beginning. Then one by one the subjects moved to separate room for individual testing. No subject was allowed to observe the performance of another subject.

Reliability and Validity of the Test: The reliability of the test battery (item wise and overall) was monitored using a test-retest method. The item wise co-efficient of correlation obtained are 0.82, 0.75, 0.78, 0.88 and 0.67 for item numbers- I, II, III, IV and V respectively. Also the overall correlation co-efficient is 0.92. Validity of Motor Creativity Test Items was established by expert opinions.

Test Description and Administration:

3.8.3.1 Test Item No. – I (Different type of movements of the upper part of the body):

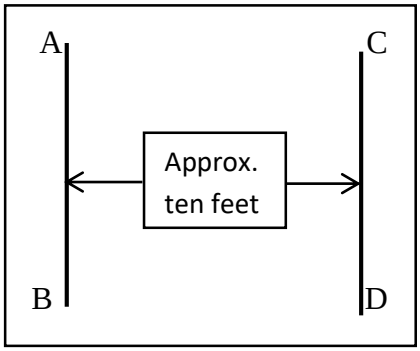
Instruction: The subject asked to do different types of movement of the upper part of the body could be made while keeping the lower part of the body fixed. The time allowed for this test item was three minutes. An item was demonstrated so that one could understand easily.

Scoring: Each recognized movement received a credit mark of one. The total number of responses within the allotted three minutes was recorded as the motor creativity score from this test item.

3.8.3.2 Test Item No. – II (Different ways one can move from line AB to CD):

Marking: Two parallel lines were drawn on the floor maintaining a gap of ten feet.

Instruction: The subject was asked that how many different way, except walking (as walking was shown to the subject by the experimenter), could she move from the line AB to the line CD within three minute.



Scoring: One point for each accepted movement from the line AB to the CD line. Total number of successive accepted movements was the total score.

3.8.3.3 Test Item No. – III (Different type of movements on the narrow bench):

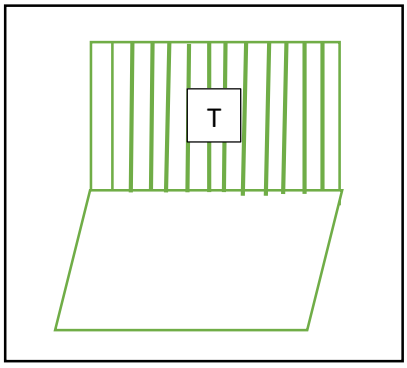
Arrangement: A narrow bench was placed in such a way that when the subject stood on it, she could not get support from anything else.

Instruction: While balancing on a narrow base (in this case the bench), the subject was asked to perform as many new movements as possible within three minutes. The movements that the subject had performed earlier would not come into account.

Scoring: Total number of new movements was counted with one mark for each recognized movement. The total number of such movements revealed the motor creativity score for this test item.

3.8.3.4 Test Item No. – IV:

Marking: A line (AB) was drawn eight feet apart from a wall where a target 'T' was drawn.

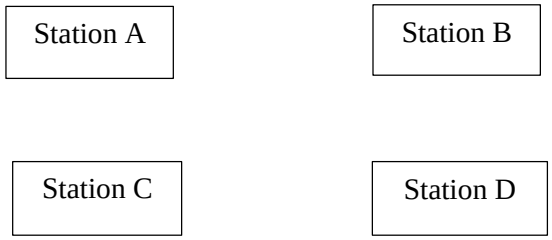


Instruction: The subjects were asked to hit the target 'T' from the line AB with a Tennis ball using any part of their body in as many different ways as possible within three minutes.

Scoring: Each accepted way of hitting obtained one mark. Total number of accepted hits on the wall was the motor creativity score from this test item.

3.8.3.5 Test Item No. – V:

Marking: Four stations (A, B, C and D) were marked on the floor, and instructions were given about the exercises to be performed from the particular station.



Station A: Exercises from standing position.

Station B: Exercises from sitting position.

Station C: Exercises from supine position.

Station D: Exercises from prone position.

Instruction: The subject was asked to perform as many exercises as possible at all stations while maintaining the stated body position at the specific station within five minutes. She could do any number of exercises at any given station and devote her own time at any station, but the total for this item should not exceed five minutes. However, after every one minute she would be verbally instructed about time.

Scoring: The motor creativity score from this test item was the sum of the responses obtained from the four locations.

Total score of motor creativity: The total motor creativity score was the total of the scores obtained on all the five test items.

3.8.4 Administration test of Enjoyment:

On the testing day, researcher administered the questionnaires to students who were assembled in a classroom. All students were given uniform instructions. In this questionnaire the total 16 questions are there and against each question there are 5 options (1.Strongly Disagree, 2. Moderately disagree, 3. Slightly disagree, 4. Slightly agree, 5. Strongly Agree) and the subjects were instructed to give answer accordingly. They were given 40 minutes for the questionnaire.

3.8.5 Administration test of Attitude:

A standardized and reliable Bengali version questionnaire on trait of attitude scale developed by Prof. Sukumar Bose and Dr. Shivnath Deb of the Dept. of Applied Psychology, University of Calcutta was used to measure behavioral attitudes of the subjects. This test was modified to measure an individual's delinquency attitude and to identify weather the child was antisocial or social with reference to thirty five questions with three sub-test scores. Differences in attitude were judged in terms of (i) disregard for social order and values, (ii) external locus of control of behavior, and (iii) low anxiety tolerance. Higher scores indicate the presence of differences.

How to Response: While answering each question read each statement carefully and mark (✓) the one which seems correct, mark (X) the one which is not correct.

Scoring: Each response marked with (✓) earned a score, indicating the presence of delinquent as a behavioral trait only in respect of sub-test-II and sub-test-III, while it was not indicated in the case of sub-test-I offenders as characteristics of behavior.

3.8.6 Administration test of Personality Trait:

R.C. Bernreuter (1935) developed a self-report inventory and standard known as the Bernreuter Personality Inventory for individual and adults. It consists of 125 items carefully selected from the following sources: (i) Thurstone Personality schedule, (ii) Laird's Study on Introversion-Extroversion, (iii) Allport's Ascendence-Submission Reaction Study, and (iv) Bernreuter's Self-Sufficiency Scale.

Personality trait (neuroticism, self-Sufficiency, introversion and dominance) were measured using a standardized and reliable short-form Bengali version questionnaire of the Bernreuters Personality Inventory. The thirty item questionnaire was developed by the Indian Statistical Institute, Kolkata and translated into Bengali and standardized by Prof. D. Das Mahanta of the dept. of Education, University of Calcutta.

3.9 PROCEDURE FOR ANALYSIS OF DATA:

The data were analyzed by appropriate statistical tools and technique. Responses from the subject's as a measure of central tendency and variability, descriptive statistics were generated. The significance of difference between two means was tested by t – test and statistics kingdom (online software) was used for this purpose.

CHAPTER-IV

PRESENTATION OF DATA,

RESULTS AND DISCUSSION

CHAPTER-IV

PRESENTATION OF DATA, RESULTS AND DISCUSSION

The current study's results were reported in this chapter after being acquired utilizing the method described in chapter III. The results of the numerous tests were statistically analyzed using the appropriate methods, and the results were then interpreted in light of the knowledge already known and the hypothesis put out.

4.1. THE DATA

Sixty (60) girls were selected for this research work, who are 10 to 13 years age. In present investigation the Personal Data, Motor Fitness and selected psychological parameters including were the Motor Fitness, Motor Creativity, Enjoyment, Attitude and Personality Trait are presented. The score of parameters like Mean, SD, t-value and p-value are given in the following section.

4.2. PRESENTATION OF DATA

Collected data have been presented along with their statistical analysis. For better understanding the data have been presented in different sequential section and the relevant data have been presented in graphical representation in different figures.

4.2.1. PERSONAL DATA

For better presentation, the personal data f different parameters (Age, Height, Weight, BMI and Waist-Hip Ratio) for Control and Treatment groups have been presented in table-6.

Table No-6: Descriptive Statistics of Personal Data of the Groups

Parameter	Control Group	Experiment Group
	Mean and SD	Mean and SD
Age (yrs.)	11.23 ± 0.81	11.62 ±0.77
Height (cm)	141.66 ±6.01	145.28 ±7.95
Weight (kg)	31.71 ±6.09	32.56 ±4.82
BMI (kg/m^2)	16.00 ±3.22	16.23 ±2.00
Waist-Hip Ratio	0.81 ±0.06	0.80 ±0.03

According to table-6 the Mean and SD value of age, height and weight for control group were 11.23 ±0.81, 141.66 ±6.01 and 31.71 ±6.09 respectively. And the experiment group were 11.62 ±0.77, 145.28 ±7.95 and 32.56 ±4.82 respectively.

On the other hand Mean and SD value of BMI and waist-hip ratio for Control Group were 16.00 ±3.22 and 0.81 ±0.06 respectively. And the Experiment Group were 16.23 ±2.00 and 0.80 ±0.03 respectively.

The graphical representation of Age, Height, Weight, BMI and Waist-Hip Ratio for Control and Treatment Group are presented in following figures.

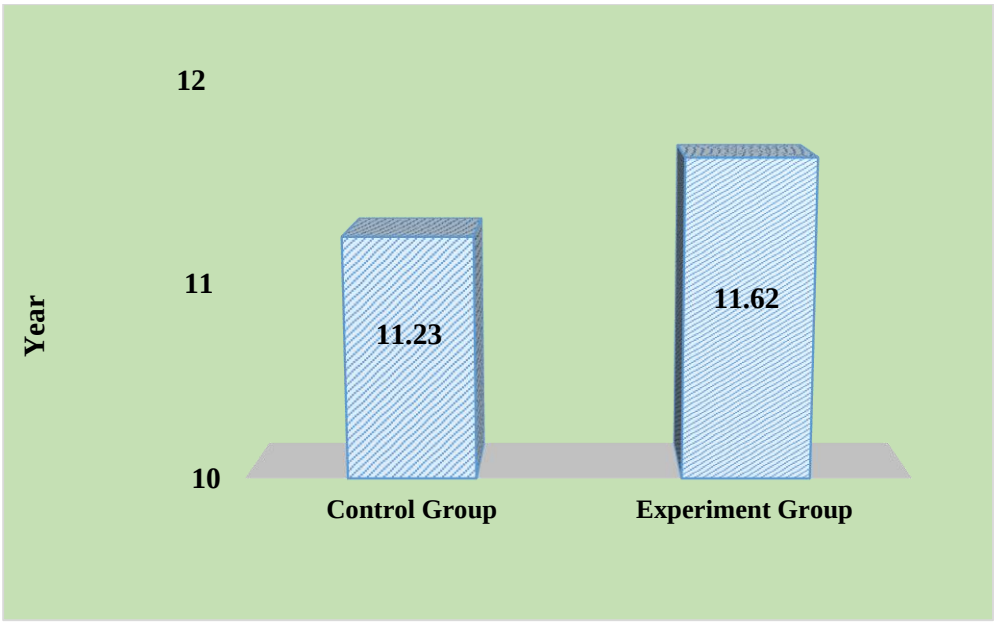


Fig.-3: Age for Control & Experiment Gr.

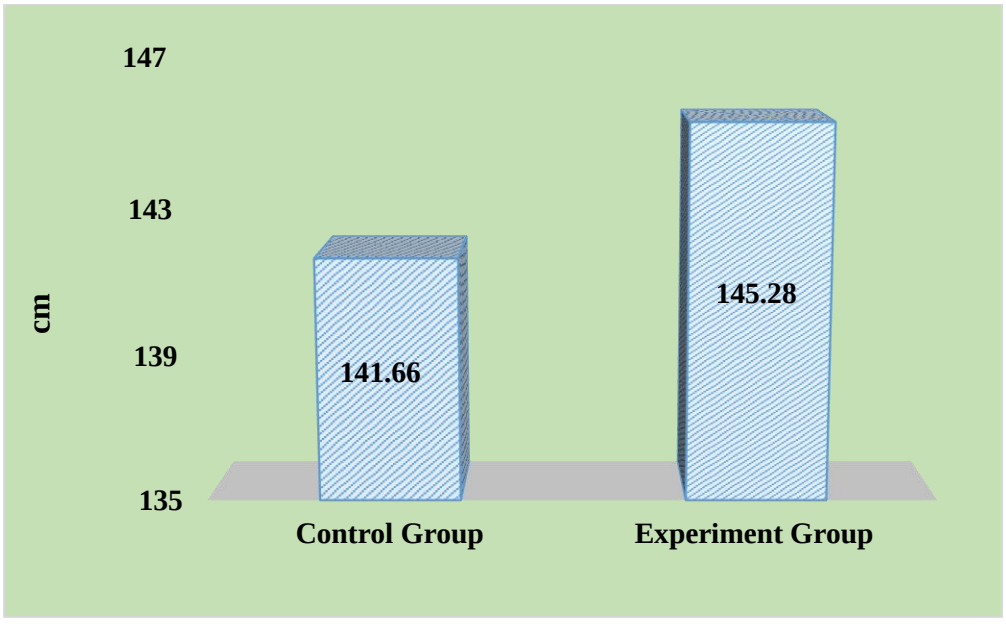


Fig.-4: Height for Control & Experiment Gr.

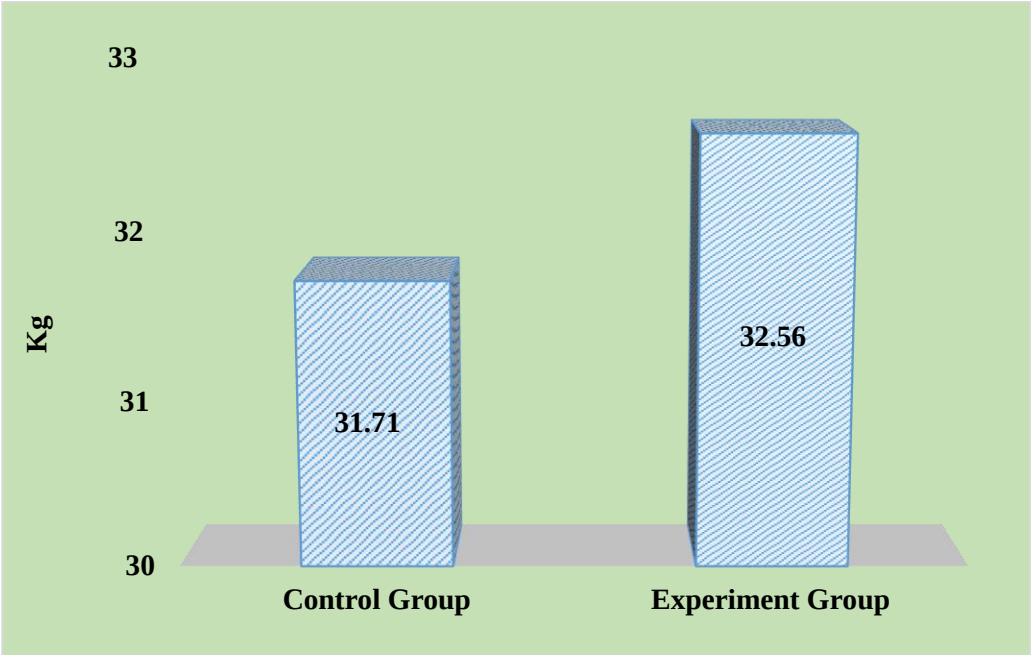


Fig.-5: Weight for Control & Experiment Gr.

From the figure-3, 4 and 5 it was observed that the age, height and weight for control & experiment group were just similar.

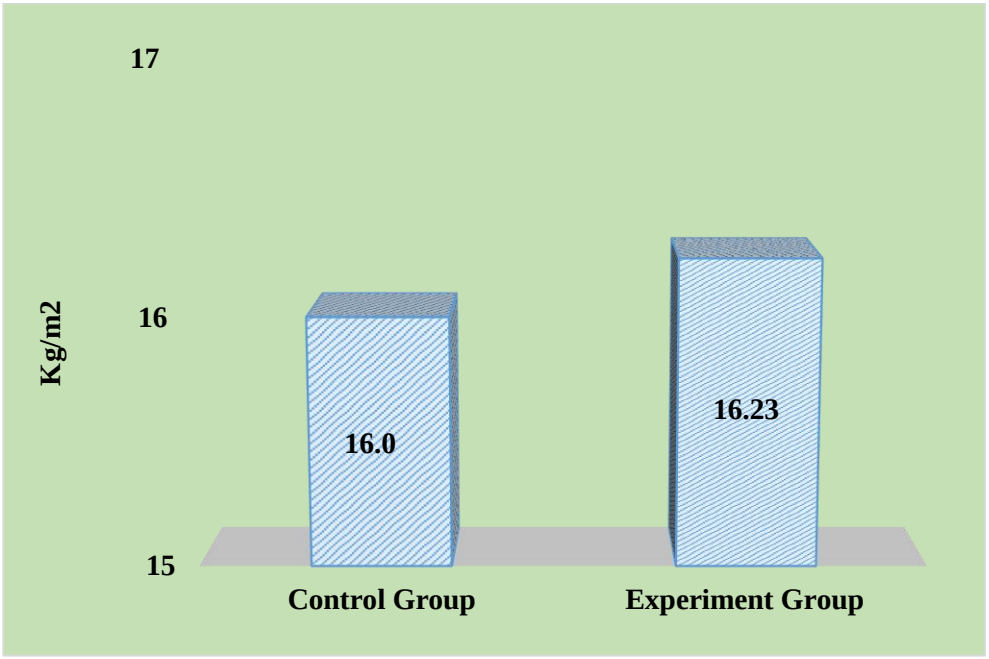


Fig.-6: BMI for Control & Experiment Gr.

The figure no.-6 shows the BMI for both groups were almost similar. According to BMI the normal range for girls were 18.5-24.5, but from the above figure it is clear that they are underweight (16.0 & 16.23).

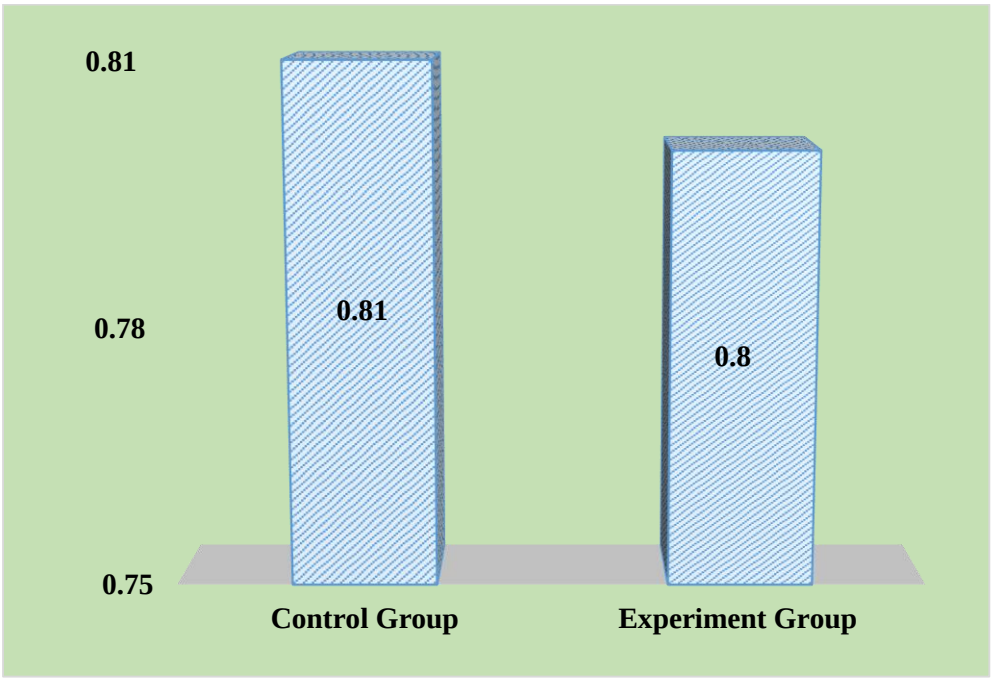


Fig.-7: Waist-Hip Ratio for Control & Experiment Gr.

In figure no.-7, result shows the waist-hip ratio for control and treatment groups and the values are almost same. Normal range of waist-hip ratio of girls are 0.90 or lower is considered good ratio.

4.2.2. PRESENTATION OF DATA BEFORE EXPERIMENT AGAINST DIFFERENT VARIABLES FOR CONTROL AND EXPERIMENT GROUP:

For better presentation, before experiment the Motor Fitness, Motor Creativity, Enjoyment, Attitude and Personality for Control and Experiment Groups data have been presented in the following section.

4.2.2.1. MOTOR FITNESS:

The Motor Fitness are consist of five test items and the test items are: Item no.-I: Bent Knee Sit-up (abdominal muscular strength endurance and speed), Item no.-II: Side Stepping (agility, endurance and speed), Item no.-III: Standing Broad Jump (leg explosive strength), Item no.-IV: Modified Pull-up (arm and shoulder girdle strength endurance and speed) and Item no.-V: Squat Thrust (endurance, agility and speed). The data have been presented in table-7.

Table-7: Comparison of Motor Fitness between Control & Experiment group (Before Experiment)

Motor Fitness Components	Test Item	Control Group	Experiment Group	t-value	p-value	Normality p-value
		Mean & SD	Mean & SD			
Abdominal Muscular Strength Endurance and Speed	Item no.-I: Bent Knee Sit-up (No)	10.10 ±3.13	10.47 ±3.86	0.39	0.69	0.3418
Agility, Endurance and Speed(No)	Item no.-II: Side Stepping	13.33 ±1.73	13.27 ±2.18	0.18	0.85	0.2913
Leg Explosive Strength(m)	Item no.-III: Standing Broad Jump	1.27 ±0.13	1.20 ±0.14	1.57	0.13	0.3704
Arm and Shoulder Girdle Strength Endurance and Speed(No)	Item no.-IV: Modified Pull-up	12.43 ±2.19	12.67 ±2.52	0.37	0.71	0.7756
Endurance, Agility and Speed(No)	Item no.-V: Squat Thrust	11.73 ±1.61	12.23 ±2.03	1.11	0.28	0.3303

df= 58 **Table value=2.00** ***Significant level at 0.05**

i. Item no.-I: Bent Knee Sit-up:

Above table-7 shows the mean and SD score of Bent Knee Sit-up for Control and Experiment Group (before exp.) and the values were 10.10 ±3.13 (No) and 10.47 ±3.86 (No) respectively.

For the comparison of the Bent Knee Sit-up before experiment between the Control and Experiment Groups, the estimated t-value and p-value were 0.39 and 0.69, respectively.

ii. Item no.-II: Side Stepping:

From table-7 shows before experiment the mean and SD score of Side Stepping for Control and Experiment Groups were 13.33 ±1.73 and 13.27 ±2.18 respectively.

Calculated t and p-value for comparing the Side Stepping between Control and Experiment Groups were 0.18 and 0.85 respectively.

iii. Item no.-III: Standing Broad Jump:

According to table-7, the mean and SD of Standing Broad Jump for Control group Experiment Groups (before exp.) were 1.27 ±0.13 and 1.20 ±0.14 respectively.

Calculated t-test for comparing the Standing Broad Jump before experiment between the Control and Experiment Group were 1.57 and the p-value was 0.13 respectively.

iv. Item no.-IV: Modified Pull-up:

In the table-7 the mean and SD score of Modified Pull-up for Control and Experiment Groups (before exp.) were 12.43 ±2.19 and 12.67 ±2.52 respectively.

Before experiment the calculated paired t-value and p-value for comparing the Modified Pull-up between Control and Experiment Groups were 0.37 and 0.71 respectively.

v. Item no.-V: Squat Thrust:

It is seen from table-7 the mean and SD score of Squat Thrust for control group and Experiment Groups (before exp.) were 11.73 ±1.61 and 12.23 ±2.03 respectively.

Calculated t-test for comparing Squat Thrust between the Control and Experiment Groups (before experiment) were 1.11 and p-value were 0.28 respectively.

The graphical representation of bent knee it-up, side stepping, modified pull-ups, squat thrust and standing broad jump for Control and Experiment Groups are presented in figure no.-8 & 9

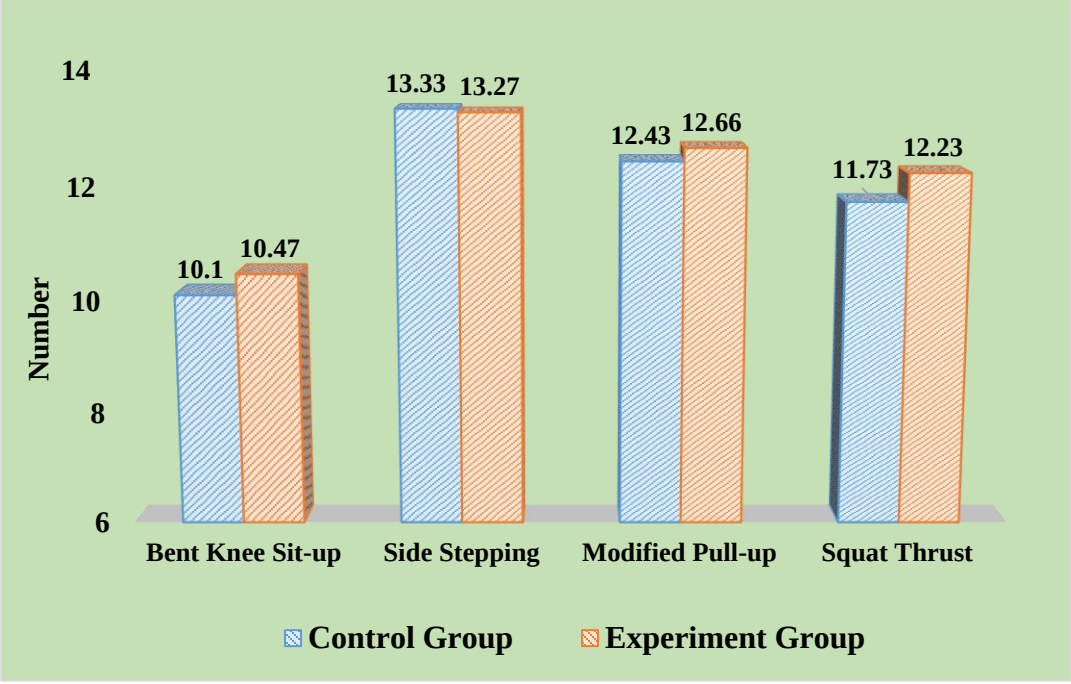


Fig.-8: Performance of Motor Fitness (BKS, SS, MP& ST) for Control &Experiment Gr. (Before Exp.)

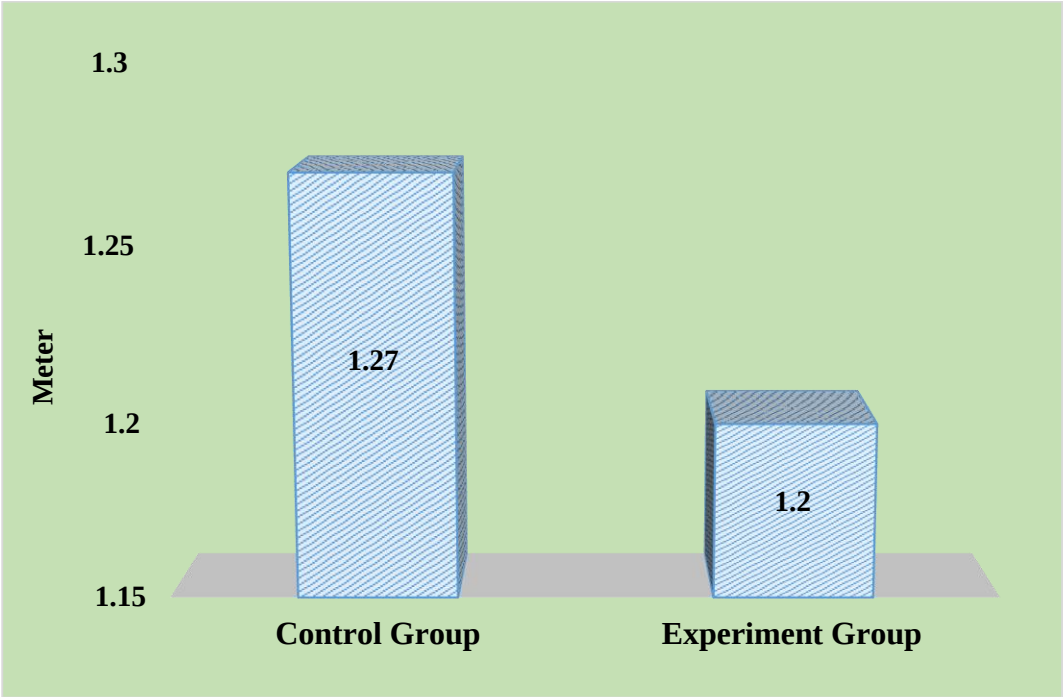


Fig. - 9: Performance of motor fitness (SBJ) for Control &Experiment Gr. (Before Exp.)

Figures 8 and 9 show that, prior to the experiment, the motor fitness performances of the control and experimental groups were remarkably similar. Bent knee sit-up experiment participants scored higher than the control group, though. On the other hand, the experiment and control groups performed similarly when it came to side-stepping, but the control group outperformed the latter. Both the control and experiment groups performed similarly on the modified pull-up, however, the experiment group outperformed the control group. The performance of the control and experiment groups during the squat thrust was almost identical, however, the experiment group outperformed the control group. And in Fig. 9, the control group outperformed the experiment group in the standing broad jump.

4.2.2.2. MOTOR CREATIVITY:

A total of five test items were considered to test Motor Creativity. The items are: Item no.-I (Different type of movements of the upper part of the body), Item no.-II (Different ways one can move from line AB to CD), Item no.-III (Different type of movements on the narrow bench), Item no.-IV (Different ways hit the ball on the wall using any part of the body), Item no.-V (Different body movements from four different position). The information has been displayed in table 08.

Table No-08: Comparison of Motor Creativity between Control & Experiment group (Before Experiment)

Motor Creativity	Control Group	Experiment Group	t-value	p-value	Normality p-value
	Mean & SD (No)	Mean & SD (No)			
Item no.-I (Different type of movements of the upper part of the body)	16.43 ±4.25	16.87 ±5.80	1.22	0.23	0.032
Item no.-II (Different ways one can move from line AB to CD)	15.57 ±4.40	15.70 ±4.90	0.25	0.80	0.003
Item no.-III (Different type of movements on the narrow bench)	15.37 ±3.11	15.63 ±3.78	0.33	0.74	0.28
Item no.-IV (Different ways hit the ball on the wall using any part of the body)	11.43 ±1.36	11.70 ±1.52	0.69	0.49	0.45
Item no.-V (Different body movements from four different position)	19.03 ±3.35	19.27 ±5.67	0.19	0.85	0.17
Total Motor Creativity	77.8 ±8.41	79.1 ±9.74	0.78	0.44	0.34

df= 58 **Table value=2.00** ***Significant level at 0.05**

i. Item no.-I:

From the said table the mean and SD score Item no.-I (Different type of movements of the upper part of the body) in the Motor Creativity for Control and Experiment Groups (before exp.) were 16.43 ±4.25 and 16.87 ±5.80 respectively.

Calculated t-test and p-value for comparing the Item no.-I (Different type of movements of the upper part of the body) before experiment between the Control and Experiment Groups were 1.22 and 0.23 respectively.

ii. Item no.-II:

The mean and SD score from the above table Item no.-II (Different ways one can move from line AB to CD) in the Motor Creativity for Control and Experiment Groups (before exp.) were 15.57 ±4.40 and 15.70 ±4.90 respectively.

Calculated t-test for comparing the Item no.-II (Different ways one can move from line AB to CD) before experiment between Control and Experiment Groups were 0.25 and p-value were 0.80 respectively.

iii. Item no.-III:

Before experiment, the score of mean and SD of Item no.-III (Different type of movements on the narrow bench) in the Motor Creativity for Control and Experiment Groups were 15.37 ±3.11 and 15.63 ±3.78 respectively.

Calculated t-test and p-value for comparing the Item no.-III (Different type of movements on the narrow bench) before experiment between Control and Experiment Groups were 0.33 and p-value were 0.74 respectively.

iv. Item no.-IV:

Table-08 shows the mean and SD score of Item no.-IV (Different ways hit the ball on the wall using any part of the body) in the Motor Creativity for Control and Experiment Groups (before exp.) were 11.43 ±1.36 and 11.70 ±1.52 respectively.

Before experiment the calculated t-test and p-value for comparing the Item no.-IV (Different ways hit the ball on the wall using any part of the body) before experiment between the Control and Experiment Groups were 0.69 and 0.49 respectively.

v. Item no.-V:

It is also seen from table-08 the mean and SD score of Item no.-V (Different body movements from four different position) in the Motor Creativity for Control and Experiment Groups (before exp.) were 19.03 ±3.35 and 19.27 ±5.67 respectively.

Calculated t-test for comparing the Item no.-V (Different body movements from four different position) before experiment between the Control and Experiment Groups were 0.19 and p-value were 0.85 respectively.

vi. Total Motor Creativity:

From the preceding table-08 the mean and SD score of Total Motor Creativity for Control and Experiment Groups (before exp.) were 77.8 ±8.41 and 79.1 ±9.74 respectively.

Calculated t-test for comparing the Total Motor Creativity before experiment between the Control and Experiment Groups were 0.78 and p-value were 0.44 respectively.

The graphical representation of Motor Creativity (all five items and total MC) for Control Group and Experiment Groups are presented in figure no.-10 & 11

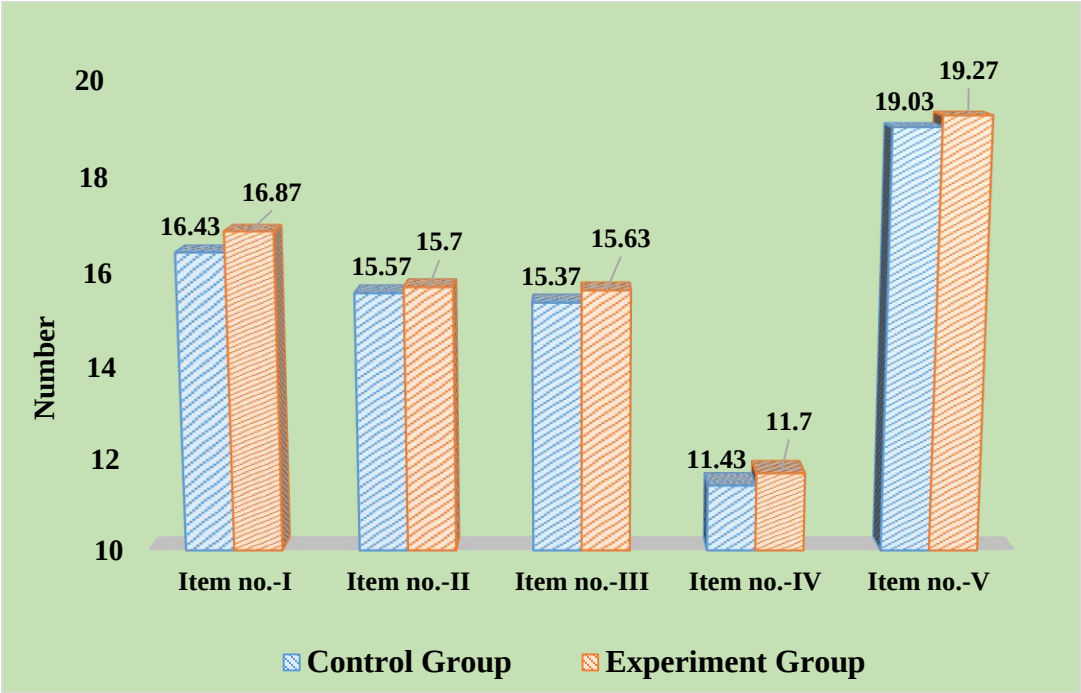


Fig.-10: Performance of motor creativity for Control &Experiment Gr. (Before Exp.)

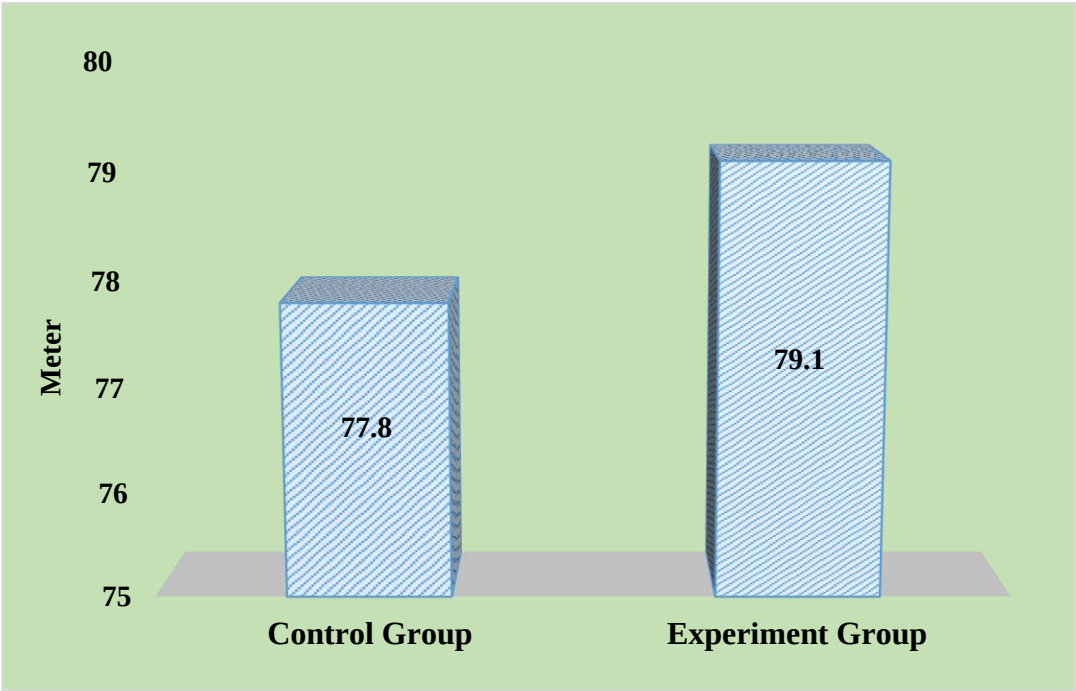


Fig.-11: Performance of motor creativity (Total MC) for Control &Experiment Gr. (Before Exp.)

From above figure no- 10 & 11, it was observed that before experiment the performance of motor creativity (Item no-I, II, III, IV, V and total motor creativity) of control and experiment

groups were almost similar. But in motor creativity (item no-I, II, III, IV, V and total motor creativity) of experiment group was higher than control group.

4.2.2.3. ENJOYMENT AND ATTITUDE:

There are so many psychological factors that affect human performance. Here only two factors i.e. Enjoyment and Attitude were considered. Before experiment the data have been presented in following table no.-09.

Table No-09: Comparison of Enjoyment and Attitude of the Control and Experiment Group (Before Experiment)

Variables	Control Group	Experiment Group	t-value	p-value	Normality p-value
	Mean & SD	Mean & SD			
Enjoyment (Value)	54.53 ±5.15	53.16 ±8.93	0.66	0.51	0.1356
Attitude (Value)	18.44 ±1.19	18.30 ±4.14	0.16	0.87	0.07534

df= 58 Table value=2.00 *Significant level at 0.05

From above table considering enjoyment the value of mean and SD for Control and Experiment Groups (before experiment) were 54.53±5.15 and 53.16±8.93 respectively. In case of attitude the said values were 18.44±1.19 and 18.30±4.14 respectively.

The t-test and p-value for comparing the Enjoyment between the Control and Experiment Groups were 0.66 and 0.51 respectively. On the other hand the calculated t-test and p-value for comparing the Attitude between the Control and Experiment Groups were 0.16 and 0.87 respectively.

The graphical representation of Enjoyment and Attitude for Control and Experiment Groups are presented in figure no.-12 & 13

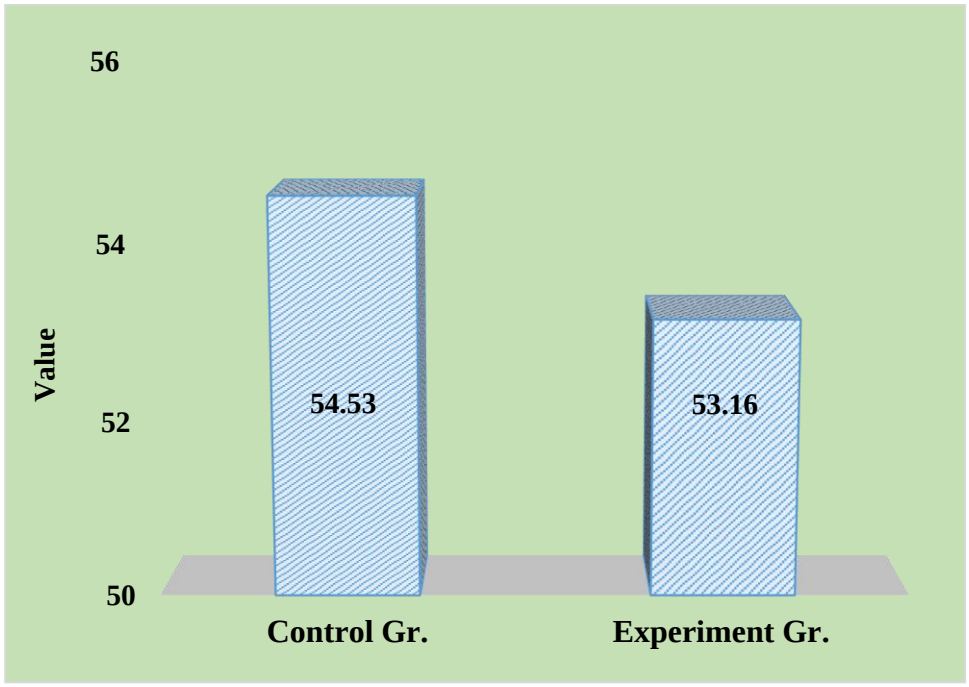


Fig.-12: Performance of Enjoyment for Control &Experiment Gr. (Before Exp.)

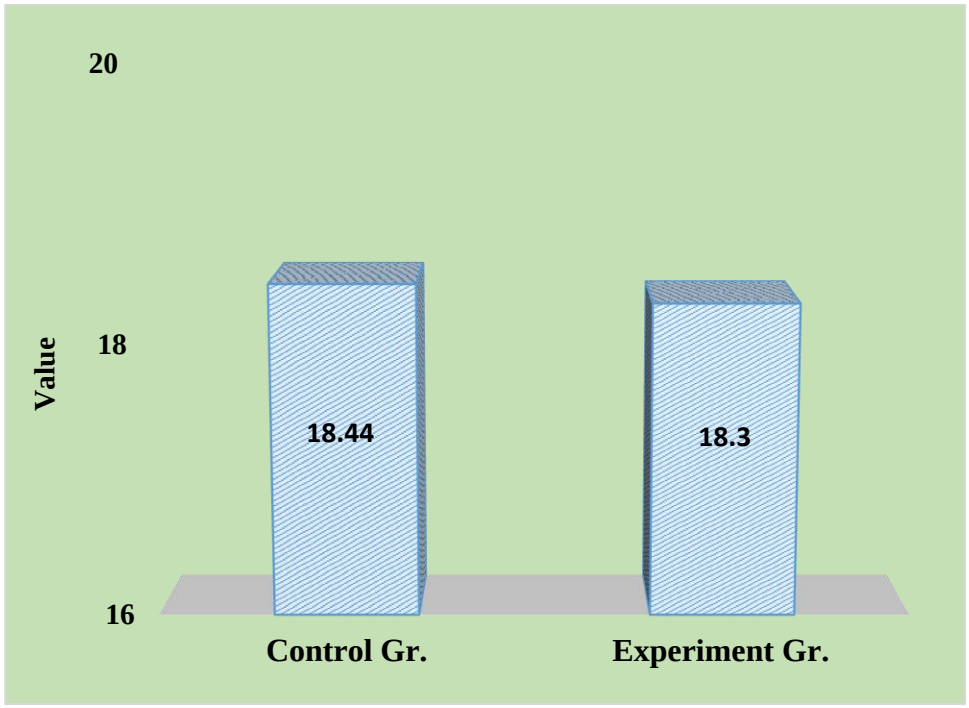


Fig.-13: Performance of Attitude for Control &Experiment Gr. (Before Exp.)

According to Fig. 12, the enjoyment scores for the control and experiment groups were remarkably similar prior to the experiment. The control group, however, scored higher on enjoyment than the experiment group.

Figure 13 demonstrates that the attitude scores before the experiment for the control and experiment groups were remarkably similar. Additionally, the control group's attitude score was greater than the experiment group's.

4.2.2.4. PERSONALITY TRAIT:

To judge personality four factors i.e. neuroticism, self-sufficiency, introversion and dominance were considered and mean, SD, t-value & p-value have been presented in the following table no. - 10.

Table No-10: Comparison of Personality Trait between Control & Experiment group (Before Experiment)

Personality Trait (value)	Control Group	Experiment Group	t-value	p-value	Normality p-value
	Mean & SD	Mean & SD			
Neuroticism	2.63 ±21.83	6.13 ±22.18	0.66	0.51	0.2921
Self-Sufficiency	-3.20 ±14.48	-3.20 ±13.03	0.00	1.00	0.5839
Introversion	-0.83 ±12.80	3.60 ±12. 07	1.38	0.18	0.2479
Dominance	10.40 ±12.81	5.67 ±14.34	1.41	0.17	0.5023

df= 58 Table value=2.00 *Significant level at 0.05

i. Neuroticism:

In table-10 the mean and SD score of neuroticism in personality Trait for Control and Experiment Groups (before experiment) were 2.63±21.83 and 6.13±22.18 respectively.

For comparing the neuroticism prior to the experiment between the Control and Experime nt Groups, the t-test and p-value were 0.66 and 0.51, respectively.

ii. Self-Sufficiency:

From the above table the mean and SD of self-sufficiency in personality trait for Control and Experiment Groups were -3.20±14.48 and -3.20±13.03 respectively.

The estimated t-test with a p-value of 0.00 for compared the self-sufficiency before to the experiment between the Control and Experiment Groups was 1.00.

iii. Introversion:

From the abovementioned table before experiment the mean and SD score of introversion in personality trait for Control and Experiment Groups were -0.83±12.80 and 3.60±12.07 respectively.

For comparing Introversion between the Control and Experiment Groups, the t-test and p-value were 1.38 and 0.18, respectively.

iv. Dominance:

Table-10 shows the mean and SD score of dominance in personality trait for Control and Experiment Groups (before experiment) were 10.40±12.81 and 5.67 ±14.34 respectively.

The estimated t-test with a p-value of 0.17 for comparing the dominance between the Control and Experiment Groups was 1.41.

Figure no. 14 shows a graphical representation of personality traits for the Control and Experiment Groups.

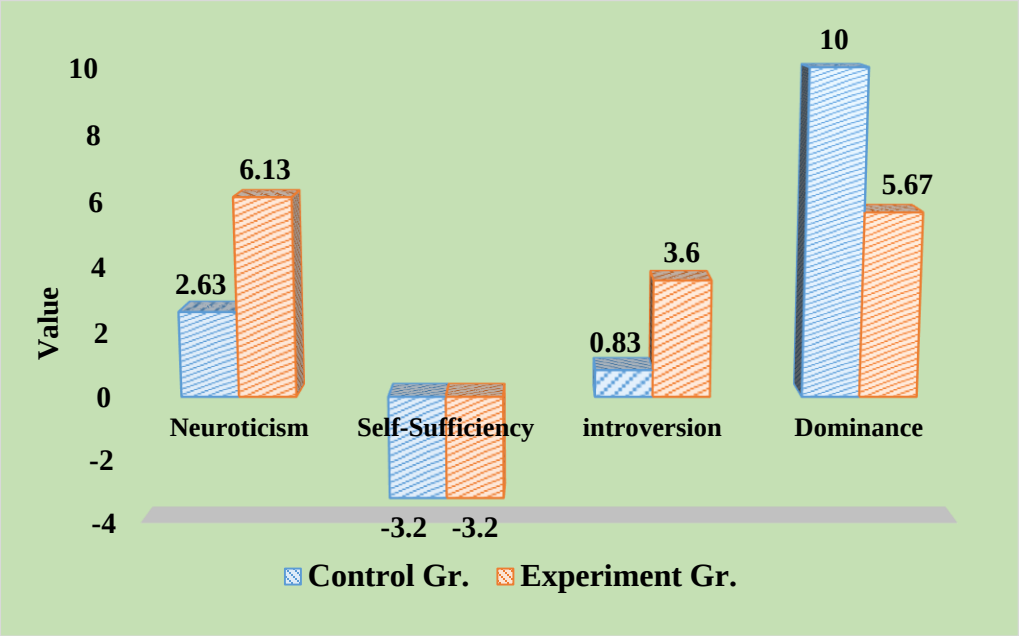


Fig.-14: Performance of Personality for Control &Experiment Gr. (Before Exp.)

Figure 14 shows that there were some differences between the control and experiment groups' personality scores (neuroticism, self-sufficiency, introversion, and dominance) before the experiment. The experiment group scored higher on neuroticism than the control group, whereas the results on self-sufficiency were comparable between the two groups. The experiment group outperformed the control group in terms of introversion, whereas the control group outperformed the experiment group in terms of dominance.

4.2.3. PRESENTATION OF DATA AFTER EXPERIMENT AGAINST DIFFERENT VARIABLES FOR CONTROL AND EXPERIMENT GROUP:

After experiment the Motor Fitness, Motor Creativity, Enjoyment, Attitude and Personality for Control and Experiment Groups data have been presented in the following section.

4.2.3.1. MOTOR FITNESS:

Considering Motor Fitness five test items have been used in this study and the test items are: Item no.-I: Bent Knee Sit-up (abdominal muscular strength endurance and speed), Item no.-II: Side Stepping (agility, endurance and speed), Item no.-III: Standing Broad Jump (leg explosive strength), Item no.-IV: Modified Pull-up (arm and shoulder girdle strength endurance and speed) and Item no.-V: Squat Thrust (endurance, agility and speed). The statistics are shown in table No. 11 after a twelve-week course of treatment.

Table No-11: Comparison of Motor Fitness between Control & Experiment group (After Experiment)

Motor Fitness Components	Test Items	Control Group	Experiment Group	t-value	p-value
		Mean & SD	Mean & SD		
Abdominal Muscular Strength Endurance and Speed	Item no.-I: Bent Knee Sit-up (No)	10.37 ±2.55	15.47±3.42	**6.79**	<0.001*
Agility, Endurance and Speed	Item no.-II: Side Stepping (No)	13.47 ±1.67	18.60±2.44	**10.77**	<0.001*
Leg Explosive Strength	Item no.-III: Standing Broad Jump(meter)	1.29 ±0.11	1.31±0.14	0.77	0.450
Arm and Shoulder Girdle Strength Endurance and Speed	Item no.-IV: Modified Pull-up (No)	12.80 ±1.82	14.87±2.98	**2.89**	0.007*
Endurance, Agility and Speed	Item no.-V: Squat Thrust (No)	11.9±1.67	14.13±2.21	**5.25**	<0.001*

df= 58 Table value=2.00 *Significant level at 0.05 level

i. Item no.-I: Bent Knee Sit-up:

According to table-11 the mean and SD score of Bent Knee Sit-up for Control and Experiment Groups (after experiment) were 10.37±2.55 and 15.47±3.42 respectively.

Calculated t-value and p-value for comparing of Bent Knee Sit-up between Control and Experiment Groups were 6.79 and <0.001 respectively.

ii. Item no.-II: Side Stepping:

From the above table the mean and SD of Side Stepping for Control and Experiment Groups (after experiment) were 13.47±1.67 and 18.60±2.44 respectively.

From the mentioned table the calculated t-value and p-value for comparing the Side Stepping before experiment between the Control and Experiment Groups were 10.77 and <0.001 respectively.

iii. Item no.-III: Standing Broad Jump:

Following the experiment, Standing Broad Jump mean and SD for the Control and Experiment Groups were 1,29±0.11 and 1,31±0.14, respectively.

For comparing the Standing Broad Jump between the Control and Experiment Groups, the calculated t- and p-values were 0.77 and 0.45, respectively.

iv. Item no.-IV: Modified Pull-up:

Abovementioned table the mean and SD score of Modified Pull-up for Control and Experiment Groups (after exp.) were 12.80±1.82 and 14.87±2.98 respectively.

The t-test for comparing the Modified Pull-up between Control and Experiment Groups were 2.89 and p-value were 0.007 respectively.

v. Item no.-V: Squat Thrust:

In this table-11 shows the mean and SD score of Squat Thrust for control group and Experiment Groups (after experiment) were 11.9±1.67 and 14.13±2.21 respectively.

Calculated t-test and p-value for comparing the Squat Thrust between Control and Experiment Groups were 5.25 and p <0.001 respectively.

The graphical representation of Bent Knee Sit-up, Side Stepping, Modified Pull-up, Squat Thrust and Standing Broad Jump for Control and Experiment Groups are presented in figure no- 15 & 16

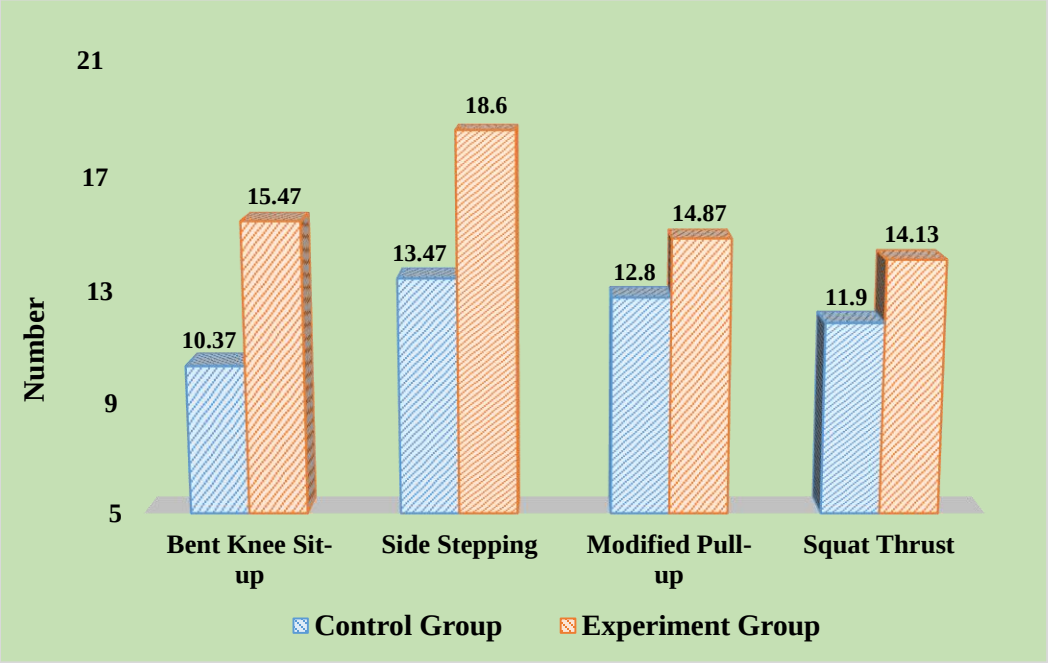


Fig. -15: Performance of Motor Fitness (BNS, SS, MP, ST) for Control &Experiment Gr. (After Exp.)

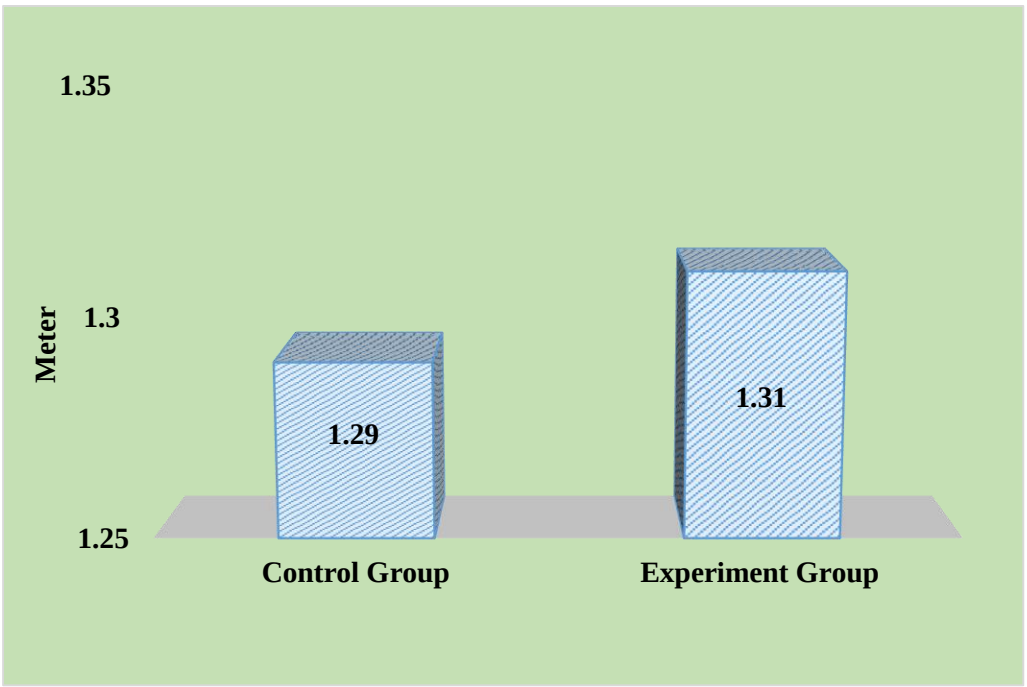


Fig. –16: Performance of Motor Fitness (SBJ) for Control &Experiment Gr. (After Exp.)

From the Fig.-15, it was observed that after experiment the performance of motor fitness (bent knee sit-up, side stepping, modified pull-up and squat thrust) of control and experiment groups were changed. After the experiment, the performance of bent knee sit-ups for the experiment group was increased and it was higher than the control group. At the same time, the

experiment group's side-stepping performance improved and outperformed that of the control group. After the experiment, the experiment group's modified pull-up performance also improved, and its values were greater than those of the control group. The experiment group performed better than the control group when squat thrust was taken into account. On the other hand, Fig. 16 showed that the experiment group's standing broad jump performance was much better than the control group's following the experiment.

4.2.3.2. MOTOR CREATIVITY:

Motor Creativity was measured with five standard different test items and the test items are: Item no.-I (Different type of movements of the upper part of the body), Item no.-II (Different ways one can move from line AB to CD), Item no.-III (Different type of movements on the narrow bench), Item no.-IV (Different ways hit the ball on the wall using any part of the body), Item no.-V (Different body movements from four different position). The following table No. 12 contains the data that were obtained after the experiment.

Table No-12: Comparison of Motor Creativity between Control & Experiment group (After Experiment)

Motor Creativity	Control Group	Experiment Group	t-value	p-value
	Mean and SD (No)	Mean and SD (No)		
Item no.-I (Different type of movements of the upper part of the body)	16.57±3.91	19.97±7.50	**4.41**	<0.001*
Item no.-II (Different ways one can move from line AB to CD)	15.9±3.76	19.8±5.41	**7.45**	0.001*
Item no.-III (Different type of movements on the narrow bench)	15.63±2.93	18.27±3.70	**3.37**	0.002*
Item no.-IV (Different ways hit the ball on the wall using any part of the body)	11.96±1.30	15.37±1.75	**10.07**	<0.001*
Item no.-V (Different body movements from four different position)	20.10±3.34	22.23±4.97	1.96	0.06
Total Motor Creativity	80.13±8.03	95.63±10.08	0.79	0.44

df= 58 Table value=2.00 *Significant level at 0.05 level

i. Item no.-I:

Table no.-12 shows the mean and SD score of Item no.-I (Different type of movements of the upper part of the body) in Motor Creativity for Control and Experiment Groups (after exp.) were 16.57±3.91 and 19.97±7.50respectively.

After experiment the calculated t-value and p-value for comparing the Item no.-I between the Control and Experiment Groups were 4.41 and <0.001 respectively.

ii. Item no.-II:

The mean and SD score of Item no.-II (Different ways one can move from line AB to CD) in Motor Creativity for Control and Experiment Groups (after experiment) were 15.90±3.76 and 19.8±5.41 respectively.

Calculated t-and p-value for comparing the Item no.-II before experiment between the Control and Experiment Groups were 7.45 and 0.001 respectively.

iii. Item no.-III:

According to the above data, the mean and SD scores for Motor Creativity Item No. III (Different sorts of movements on the narrow bench) for the Control and Experiment Groups were respectively 15.63±2.93 and 18.27±3.70.

After experiment the calculated t-test and p-value for comparing the Item no.-III between the Control and Experiment Groups were 3.37 and p-value were 0.002 respectively.

iv. Item no.-IV:

Preceding table shows the mean and SD score of Item no.-IV (Different ways hit the ball on the wall using any part of the body) in Motor Creativity for Control and Experiment Groups (after experiment) were 11.96±1.30 and 15.37±1.75 respectively.

Calculated t-test and p-value for comparing the Item no.-IV after experiment between the Control and Experiment Groups were 10.07 and <0.001 respectively.

v. Item no.-V:

As the above table shows the mean and SD score of Item no.-V (Different body movements from four different position) in Motor Creativity for Control and Experiment Groups were 20.10±3.34 and 22.23±4.97respectively.

After experiment the calculated t-test for comparing the Item no.-V between the Control and Experiment Groups were 1.96 and p-value were 0.06 respectively.

vi. Total Motor Creativity:

In this table-12, mean and SD score of total motor creativity for Control and Experiment Groups (after experiment) were 80.13±8.03 and 95.63±10.08 respectively.

Calculated t-test for comparing the motor creativity between the Control and Experiment Groups were 0.79 and p-value were 0.44 respectively.

The graphical representation five test items of motor creativity and the total motor creativity for Control Group and Experiment Groups are presented in figure no.-17 &18

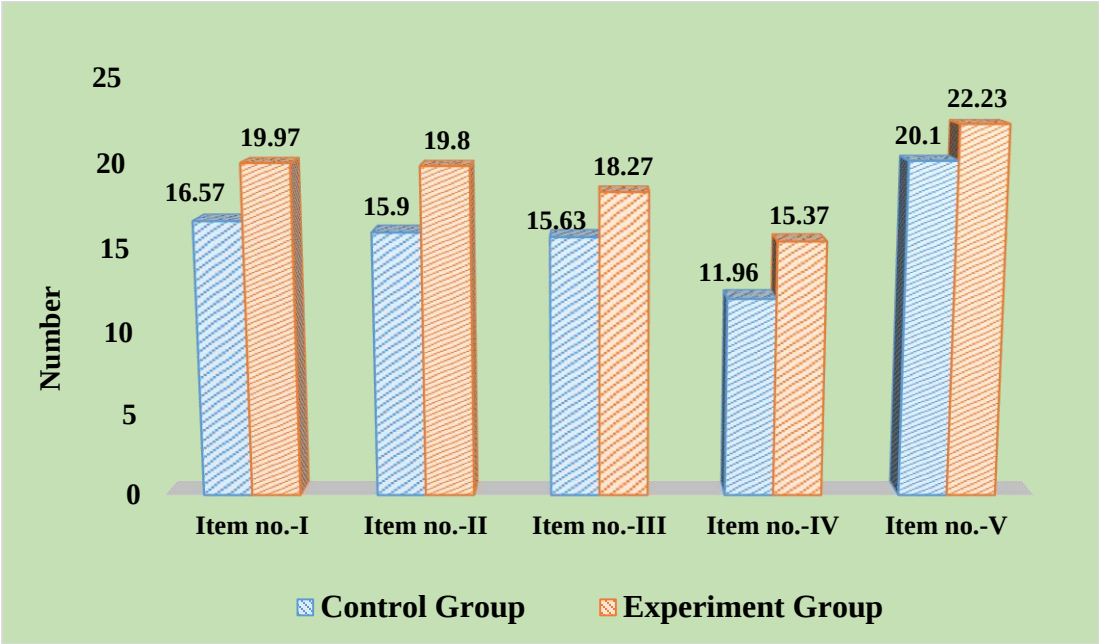


Fig.-17: Performance of Motor Creativity (Item no-I, II, III, IV, V) for Control & Experiment Gr. (After Exp.)

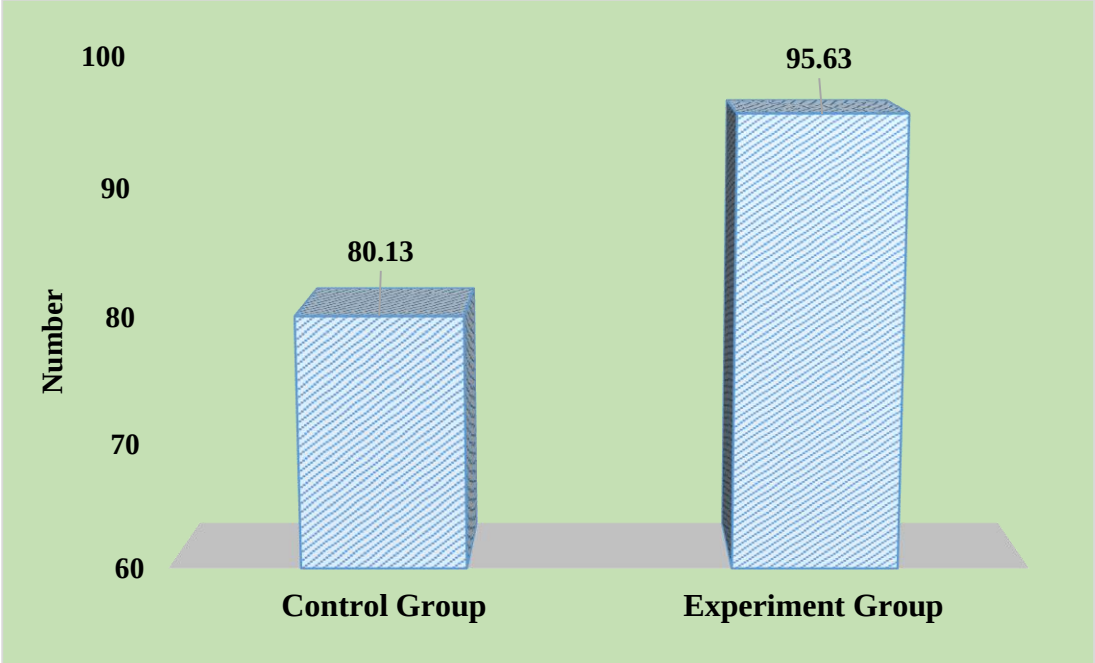


Fig.-18: Performance of Motor Creativity (Total MC)) for Control & Experiment Gr. (After Exp.)

From above Fig.-17 & 18, it was observed that after experiment the performance of motor creativity (item no-I, II, III, IV, V and total motor creativity) of experiment group were increased for every test items than control group.

4.2.3.3. ENJOYMENT AND ATTITUDE:

From the different psychological factors the Enjoyment and Attitude were considered. After experiment the mean, SD, t-value and p-value for Control and Treatment Groups have been presented in table no.-13.

Table No-13: Comparison of Enjoyment & Attitude between Control & Experiment group (After Experiment)

Psychological Variables	Control Group Mean & SD	Experiment Group Mean & SD	t-value	p-value
Enjoyment (value)	57.40 ±6.96	56.13 ±7.15	0.69	0.49
Attitude(value)	17.70 ±2.72	18.87 ±1.48	1.21	0.24

df= 58 **Table value=2.00** ***Significant level at 0.05**

After experiment the table-13 shows the mean and SD score of enjoyment for control and experiment groups were 57.40±6.956 and 56.133±7.152 respectively. And the Attitude for control and experiment group were 17.70 ±2.72 and 18.87 ±1.48 respectively.

The estimated t-test for comparing the attitude and enjoyment between the control and experiment groups was 0.69 and 1.21 based on the aforementioned table. And for the control and experiment groups, the p-values were 0.49 and 0.24, respectively.

Figures 19 and 20 show a graphical representation of attitudes and enjoyment for the control and experiment groups.

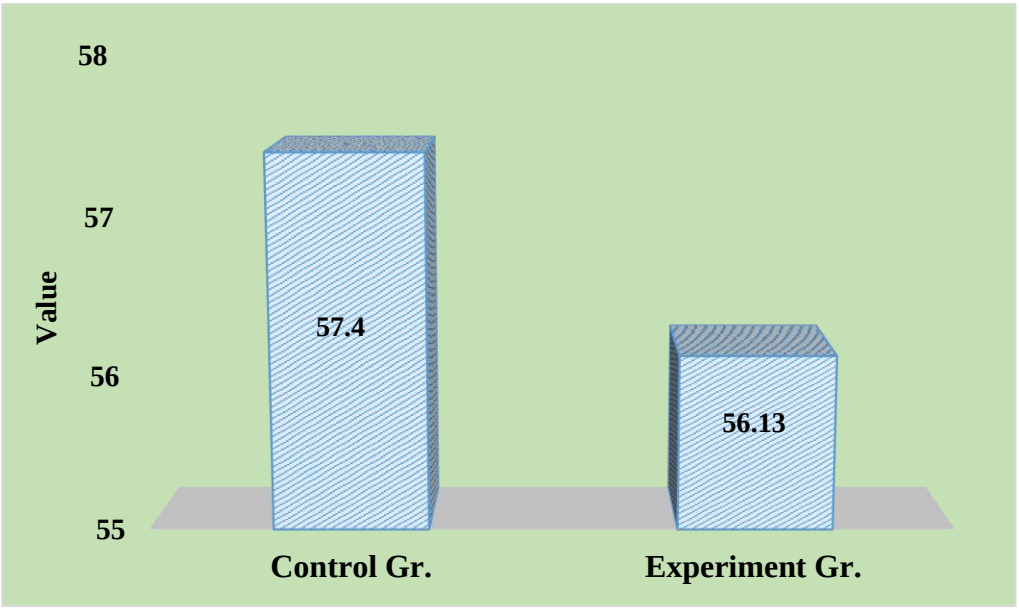


Fig.-19: Performance in Enjoyment of Control &Experiment Gr. (After Exp.)

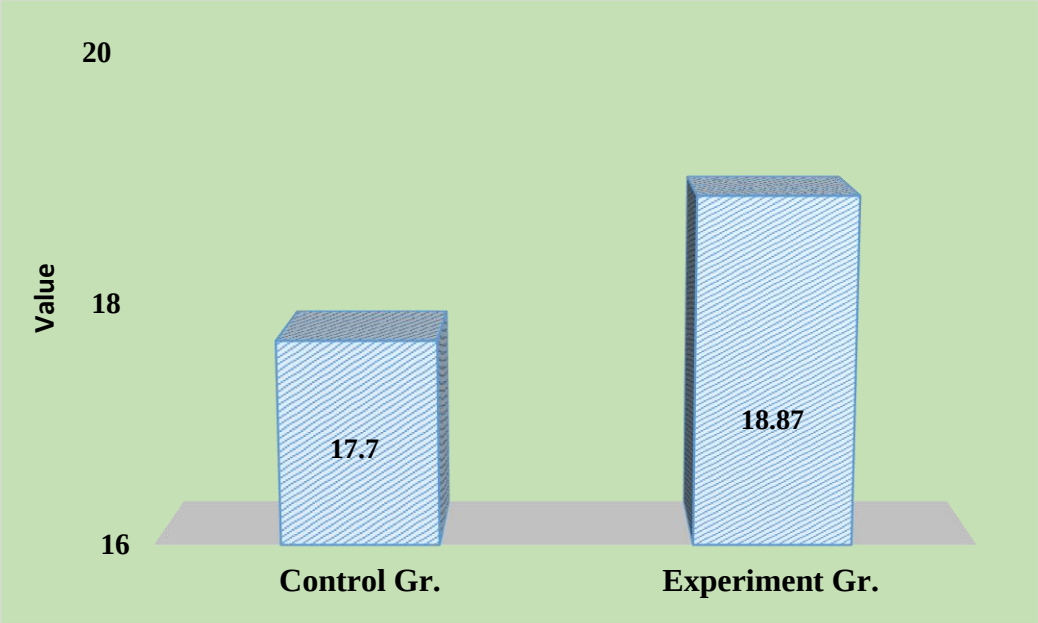


Fig.-20: Performance of Attitude for Control &Experiment Gr. (After Exp.)

According to fig.-19 & 20, it was shown that the after experiment the score of enjoyment and attitude of control and experiment groups were nearly similar. But in enjoyment the control group was higher than experiment group. But after experiment the attitude score of experiment group was higher than control group.

4.2.3.4. PERSONALITY TRAIT:

In personality trait many factors are there and the neuroticism, self-sufficiency, introversion and dominance were considered as a personality trait of this study. After experiment the mean, SD, t-score and p-value of personality for Control and Treatment Groups have been presented in table no.-14.

Table No-14: Comparison of Personality Trait between Control & Experiment group (After Experiment)

Personality Trait (value)	Control Group Mean and SD	Experiment Group Mean and SD	t-value	p-value
Neuroticism	4.00 ±20.38	17.47 ±22.45	**2.12**	0.04*
Self-Sufficiency	-11.17 ±14.69	-14.87 ±14.56	0.88	0.38
Introversion	0.30 ±13.02	7.87 ±12.00	1.95	0.06
Dominance	1.30 ±14.21	-6.20 ±13.97	**2.01**	0.05*

df= 58 **Table value=2.00** ***Significant level at 0.05**

i. Neuroticism:

Table-14 shows the mean and SD score of neuroticism in personality trait for control and experiment groups (after exp.) were 4.00±20.38 and 17.47±22.45 respectively.

Calculated t-test for comparing the neuroticism between the control and experiment groups were 2.12 and p-value were 0.04 respectively.

ii. Self-Sufficiency:

After experiment the mean and SD score of self-sufficiency in personality trait for control and experiment groups were -11.17±14.69 and -14.87±14. 56 respectively.

From the said table the calculated t-value and p-value for comparing the Self-Sufficiency between the control and experiment groups were 0.88 and 0.38 respectively.

iii. Introversion:

According to this table the mean and SD score of introversion in personality trait for control and experiment groups (after exp.) were -0.30 ±13.02 and 7.87 ±12.00 respectively.

Calculated t- and p-value for comparing Introversion after experiment between the control and experiment groups were 1.95 and 0.06 respectively.

iv. Dominance:

From the earlier table shows the mean and SD score of dominance in personality trait for control and experiment groups (after exp.) were 1.30±14.21 and -6.20±13.97 respectively.

Calculated t-test and p-value for comparing the Dominance after experiment between the control and experiment groups were 2.01 and 0.05 respectively.

The graphical representation of all four factors in personality for Control Group are presented in figure no.-21

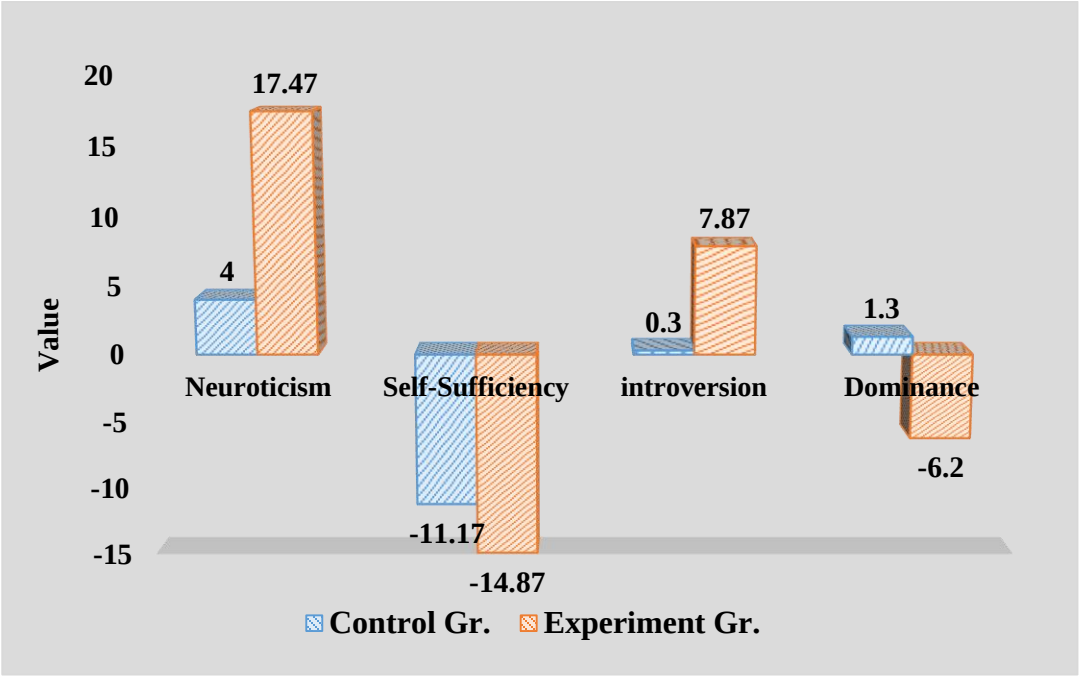


Fig.-21: Performance of Personality for Control & Experiment Gr. (After Experiment)

According to Fig. 21, there were differences between the control and experiment groups' personality scores (neuroticism, self-sufficiency, introversion, and dominance) following the experiment. The experiment group scored higher on the neuroticism scale than the control group, whereas the control group scored higher on the self-sufficiency scale. Both the dominance value of the control group and the introversion score of the experiment group were greater than those of the control group.

4.2.4. PRESENTATION OF PRE AND POST EXPERIMENT DATA AGAINST DIFFERENT VARIABLES FOR CONTROL AND EXPERIMENT GROUPS SEPARATELY:

Before and after experiment the Motor Fitness, Motor Creativity, Enjoyment, Attitude and Personality for Control and Experiment Groups data have been presented separately in the following sections.

4.2.4.1. MOTOR FITNESS:

Five test items considering as Motor Fitness in this study and the test items are: Item no.-I: Bent Knee Sit-up (abdominal muscular strength endurance and speed), Item no.-II: Side

Stepping (agility, endurance and speed), Item no.-III: Standing Broad Jump (leg explosive strength), Item no.-IV: Modified Pull-up (arm and shoulder girdle strength endurance and speed) and Item no.-V: Squat Thrust (endurance, agility and speed). Before and after experiment of twelve weeks the control and experiment group's data have been separately presented in the following tables.

I. MOTOR FITNESS FOR CONTROL GROUP:

The difference between pre and post-test of Motor Fitness for Control Group are presented in the following table no.-15

Table-15: Comparison of Motor Fitness between pre & post-test for Control Group

Motor Fitness Components	Test Items	Test	Mean and SD	t-test	p-value
Abdominal Muscular Strength Endurance and Speed	Item no.-I: Bent Knee Sit-up (No)	Pre-test	10.10 ±3.13	1.19	0.24
		Post-test	10.37±2.55		
Agility, Endurance and Speed	Item no.-II: Side Stepping (No)	Pre-test	13.33 ±1.73	0.64	0.52
		Post-test	13.47±1.67		
Leg Explosive Strength	Item no.-III: Standing Broad Jump (meter)	Pre-test	1.27 ±0.13	**2.15**	0.04*
		Post-test	1.29±0.11		
Arm and Shoulder Girdle Strength Endurance and Speed	Item no.-IV: Modified Pull-up (No)	Pre-test	12.43 ±2.19	**2.08**	0.04*
		Post-test	12.80±1.82		
Endurance, Agility and Speed	Item no.-V: Squat Thrust (No)	Pre-test	11.73 ±1.61	0.70	0.73
		Post-test	11.90±1.67		

df= 29 Table value=2.045 *Significant level at 0.05

i. Item no.-I: Bent Knee Sit-up:

Table-15 shows that the mean and SD score of Bent Knee Sit-up of pre and post experiment for Control Group were 10.10 ±3.13 and 10.37±2.55 respectively.

Calculated paired t-test for comparing the pre and post-test results shown that the t-test of Bent Knee Sit-up for the Control Group were 1.19 and p-value were 0.24 respectively.

ii. Item no.-II: Side Stepping:

In this the mean and SD score of Side stepping of pre and post experiment for Control Group were 13.33 ±1.73 and 13.47±1.67 respectively.

Calculated paired t-test for comparing the pre and post-test results shown that the t-test of Side stepping for the Control Group were 0.64 and p-value were 0.52 respectively.

iii. Item no.-III: Standing Broad Jump:

According to this table the mean and SD score in the component of Motor Fitness that is Standing Broad Jump for Control group (pre- and post-test) were 1.27±0.13 and 1.29±0.11 respectively.

Calculated paired t-test for comparing the pre and post-test results shown that the t-test of Standing Broad Jump for the Control Group were 2.15 and p-value were 0.04 respectively.

iv. Item no.-IV: Modified Pull-up:

The mean and SD score in the component of Motor Fitness that is Modified Pull-up for Control Group of pre- and post-test were 12.43±2.19 and 12.80±1.82 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Modified Pull-up for the Control Group were 2.08 and p-value were 0.04 respectively.

v. Item no.-V: Squat Thrust:

From the abovementioned table the means and SD score in the component of Motor Fitness that is Squat Thrust for Control group (pre- and post-test) were 11.73±1.61 and 11.90±1.67 respectively.

Calculated paired t-test for comparing the Squat Thrust of pre- and post-test for Control Group were 0.70 and p-value were 0.73 respectively.

The graphical representation of Motor Fitness (all five items) for Control Groups are presented in figure no.-22 & 23

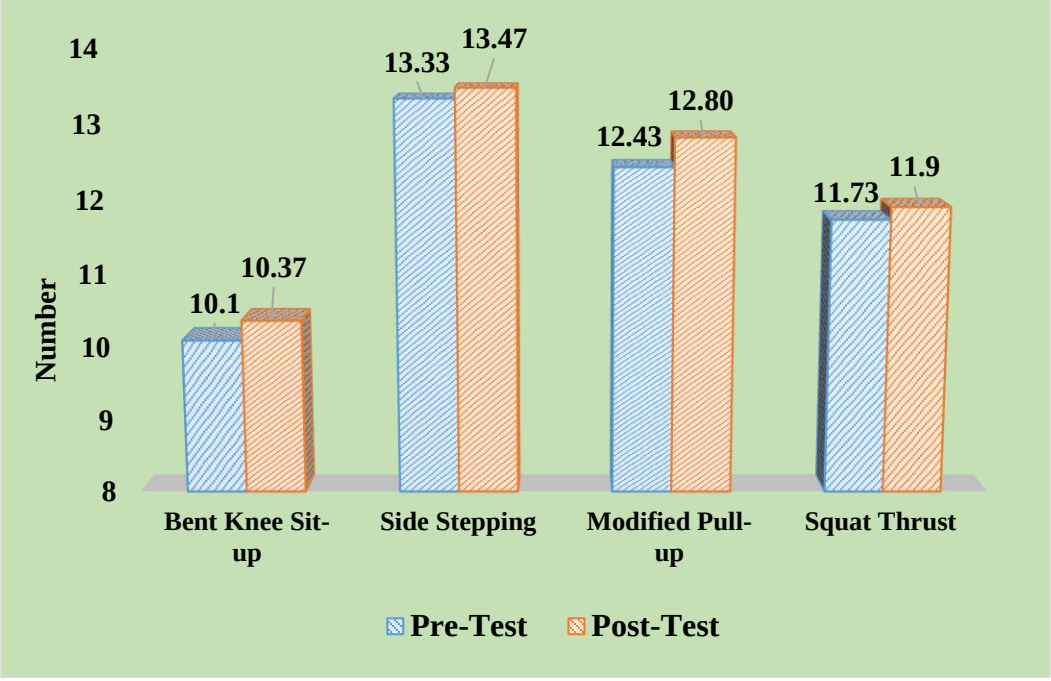


Fig.-22 - Performance of Motor Fitness (BKS, SS, MP, ST) for Control group

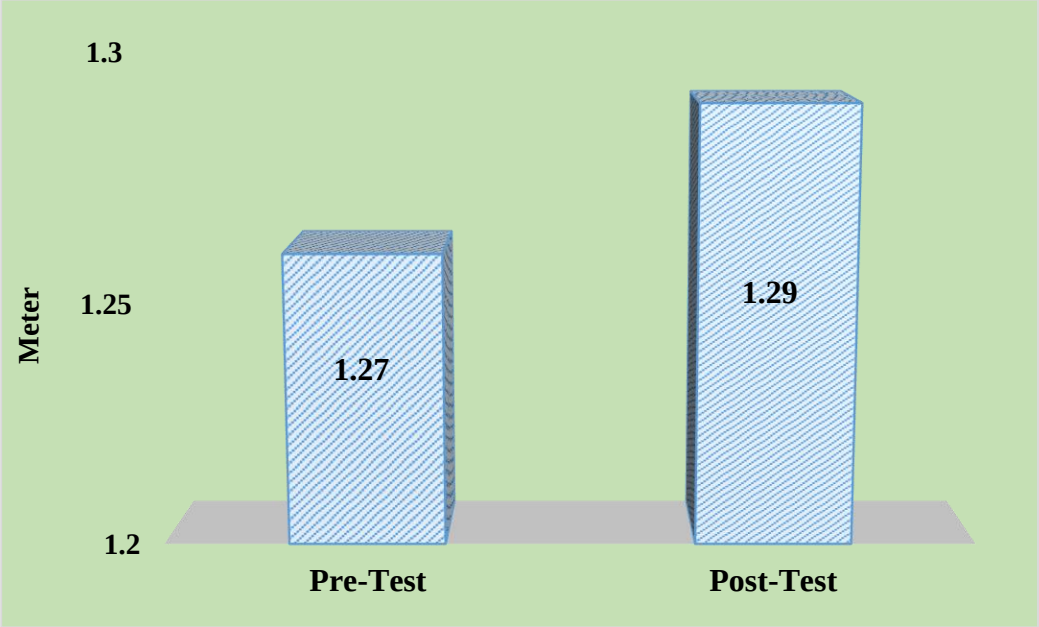


Fig.-23: Performance of Motor Fitness (SBJ) for Control group

From the Fig.-22 & 23, it was observed that pre- and post-test of the control group the performance of motor fitness (bent knee sit-up, side stepping, standing broad jump, modified pull-up and squat thrust) were almost similar. After experiment post-test performance were slightly increased for every test items of motor fitness.

II. MOTOR FITNESS FOR EXPERIMENT GROUP:

The comparison between pre- and post-test of Motor Fitness for Experiment Group are presented here in the following table no.-16

Table-16: Comparison of Motor Fitness between pre- & post-test for Experiment Group

Motor Fitness Components	Test Items	Test	Mean & SD	t-test	p-value
Abdominal Muscular Strength Endurance and Speed (No)	Item no.-I: Bent Knee Sit-up	Pre-test	10.47 ±2.86	**11.05**	<0.001*
		Post-test	15.47 ±3.42		
Agility, Endurance and Speed (No)	Item no.-II: Side Stepping	Pre-test	13.27 ±2.18	**18.98**	<0.001*
		Post-test	18.60 ±2.44		
Leg Muscle Power (m)	Item no.-III: Standing Broad Jump	Pre-test	1.20 ±0.14	**3.97**	<0.001*
		Post-test	1.31 ±0.14		
Arm and Shoulder Girdle Strength Endurance and Speed (No)	Item no.-IV: Modified Pull-up	Pre-test	12.67 ±2.52	**8.20**	<0.001*
		Post-test	14.87±2.30		
Endurance, Agility and Speed (No)	Item no.-V: Squat Thrust	Pre-test	12.23 ±2.03	**10.11**	<0.001*
		Post-test	14.13 ±2.21		

df= 29 Table value=2.045 *Significant level at 0.05 level

i. Item no.-I: Bent Knee Sit-up:

Table-16 shows the mean and SD score of Item no.-I: Bent Knee Sit-up for Experiment Group of pre- and post-test were 10.47±2.86 and 15.47±3.42 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Item no.-I: Bent Knee Sit-up for the Experiment Group were 11.05 and p-value were <0.001 respectively.

ii. Item no.-II: Side Stepping:

In this table the mean and SD score of Item no.-II: Side Stepping for Control Group of pre- and post-test were 13.27±2.18 and 18.60±2.44 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Item no.-II: Side Stepping for the Experiment Group were 18.98 and p-value were <0.001 respectively.

iii. Item no.-III: Standing Broad Jump:

According to this table the mean and SD score of Item no.-III: Standing Broad Jump for Experiment Group of pre- and post-test were 1.20±0.14 and 1.31±0.14 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Item no.-III: Standing Broad Jump for Experiment Group were 3.97 and p-value were <0.001 respectively.

iv. Item no.-IV: Modified Pull-up:

The mean and SD of Item no.-IV: Modified Pull-up for Experiment Group were 12.67±2.52 and 14.87±2.98 respectively.

Calculated paired t-test for comparing the pre and post-test results shown that the t-test of Item no.-IV: Modified Pull-up for the Experiment Group were 8.20 and p-value were <0.001 respectively.

v. Item no.-V: Squat Thrust:

Table shows that the mean and SD score of Item no.-V: Squat Thrust for Experiment Group (pre- and post-test) were 12.23±2.03 and 14.13±2.21 respectively.

Calculated paired t-test for comparing the Item no.-V: Squat Thrust for the Experiment Groups were 10.11 and p-value were <0.001 respectively.

The graphical representation of Motor Fitness for Experiment Group are presented in figure no.-24 & 25

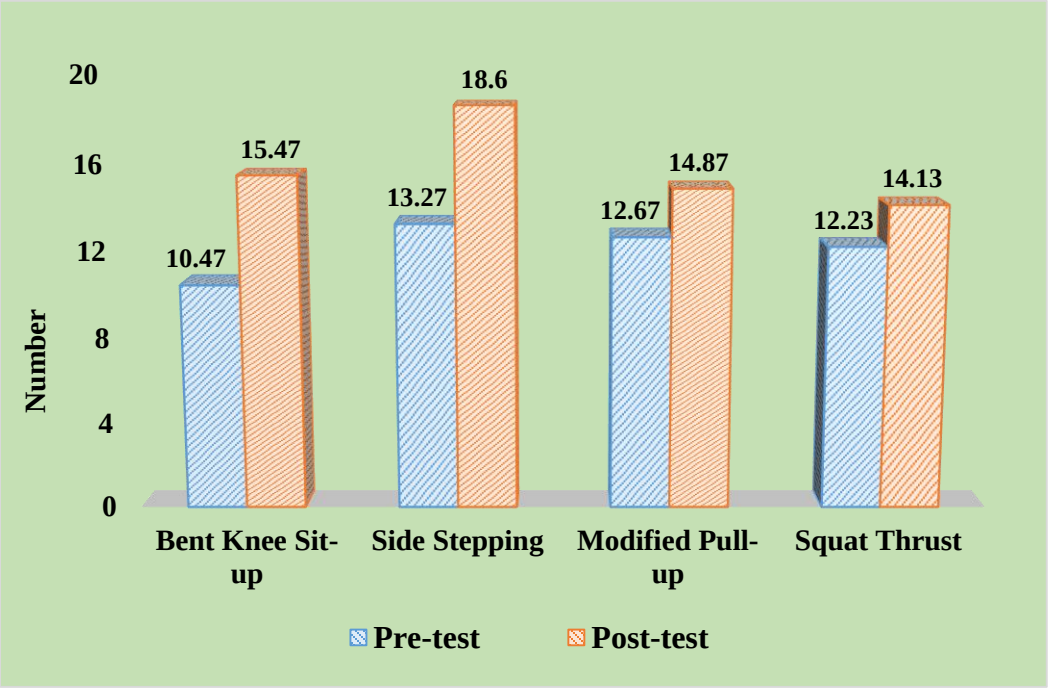


Fig.-24: Performance of Motor Fitness (BKS, SS, MP, ST) for Experiment Group

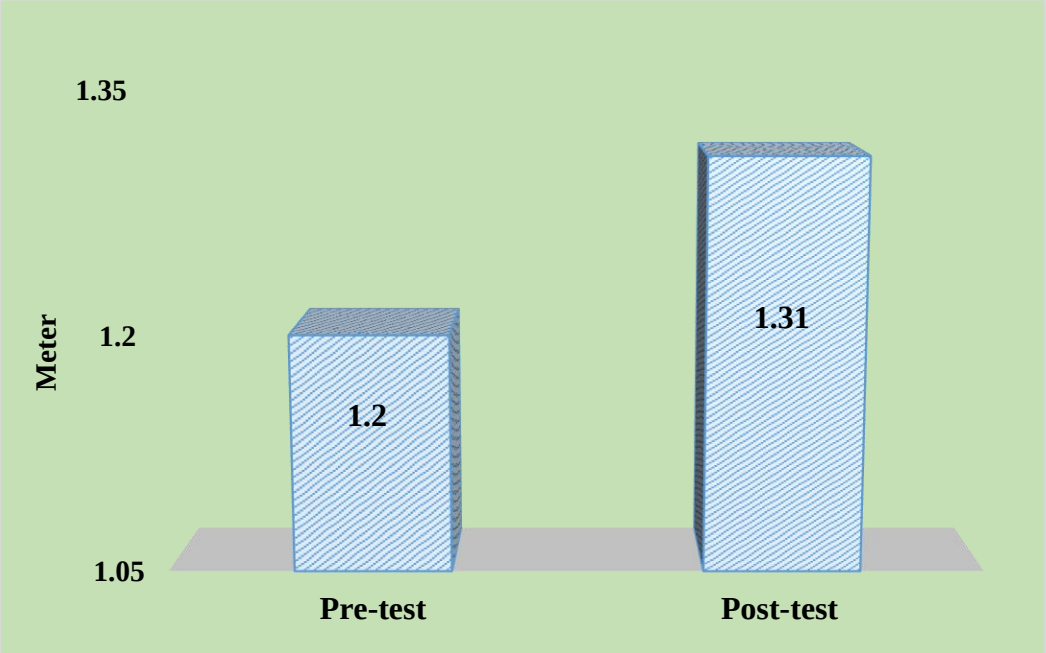


Fig.- 25: Performance of Motor Fitness (SBJ) for Experiment Group

From the Fig.-24 & 25, it was observed that pre- and post-test of experiment group the performance of motor fitness (bent knee sit-up, side stepping, standing broad jump, modified pull-up and squat thrust) were changes were found. After recreational games training post-test performance of experiment group were increased for every test items of motor fitness.

4.2.4.2. MOTOR CREATIVITY:

Motor Creativity there was Five standard different test items have been used in this research work and the test items are: Item no.-I (Different type of movements of the upper part of the body), Item no.-II (Different ways one can move from line AB to CD), Item no.-III (Different type of movements on the narrow bench), Item no.-IV (Different ways hit the ball on the wall using any part of the body), Item no.-V (Different body movements from four different position). Before and after experiment for control and experiment groups data have been presented in the following tables.

I. MOTOR CREATIVITY FOR CONTROL GROUP:

The compare between pre- and post-experiment of Motor Creativity for Control Group are presented here in the following table no.-17.

Table-17: Comparison of Motor Creativity between pre- & post experiment for Control Group

Motor Creativity	Test	Mean & SD	t-test	p-value
Item no.-I (Different type of movements of the upper part of the body)	Pre-test	16.43 ±4.25	0.72	0.47
	Post-test	16.57±3.91		
Item no.-II (Different ways one can move from line AB to CD)	Pre-test	15.57±4.40	1.41	0.17
	Post-test	15.90±3.76		
Item no.-III (Different type of movements on the narrow bench)	Pre-test	15.37±3.11	**1.22**	0.23
	Post-test	15.63±2.93		
Item no.-IV (Different ways hit the ball on the wall using any part of the body)	Pre-test	11.43±1.36	**2.90**	0.007*
	Post-test	11.96±1.30		
Item no.-V (Different body movements from four different position)	Pre-test	19.03±3.35	**2.45**	0.002*
	Post-test	20.10±3.34		
Total Motor Creativity	Pre-test	77.80±8.41	**8.49**	<0.001*
	Post-test	80.14±8.03		

df= 29 Table value=2.045 *Significant level at 0.05

i. Item no.-I:

Table-17 shows that the mean and SD score Item no.-I (Different type of movements of the upper part of the body) in the Motor Creativity for Control Group (pre- and post-experiment) were 16.43±4.25 and 16.57±3.91 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Item no.-I (Different type of movements of the upper part of the body) for the Control Group were 0.72 and p-value were 0.47 respectively.

ii. Item no.-II:

The mean and SD score Item no.-II (Different ways one can move from line AB to CD) in the Motor Creativity for Control Group (pre- and post-experiment) were 15.57±4.40 and 15.9±3.76 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Item no.-II (Different ways one can move from line AB to CD) for the Control Group were 1.41 and p-value were 0.17 respectively.

iii. Item no.-III:

In table-17, the mean and SD score Item no.-III (Different type of movements on the narrow bench) in the Motor Creativity for Control Group (pre- and post-experiment) were 15.37±3.11 and 15.63±2.93 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Item no.-III (Different type of movements on the narrow bench) for the Control Group were 1.22 and p-value were 0.23 respectively.

iv. Item no.-IV:

According to this table the mean and SD score Item no.-IV (Different ways hit the ball on the wall using any part of the body) in the Motor Creativity for Control Group (pre- and post-experiment) were 11.43±1.36 and 11.96±1.30 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Item no.-IV (Different ways hit the ball on the wall using any part of the body) before experiment for the Control Group were 2.90 and p-value were 0.007 respectively.

v. Item no.-V:

In table-17 the mean and SD score of Item no.-V (Different body movements from four different position) in the Motor Creativity for Control Group (pre- and post-experiment) were 19.03±3.35 and 20.10±3.34 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Item no.-V (Different body movements from four different position) before experiment for the Control Group were 2.45 and p-value were 0.002 respectively.

vi. Total Motor Creativity:

On the basis of table-17 the mean and SD score Total Motor Creativity for Control Group (pre- and post-experiment) were 77.80±8.41 and 80.14±8.03 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Total Motor Creativity for the Control Group were 8.49 and p-value were <0.001 respectively.

The graphical representation of Motor Creativity (all five items and total MC) for Control Group are presented in figure no.-26 & 27

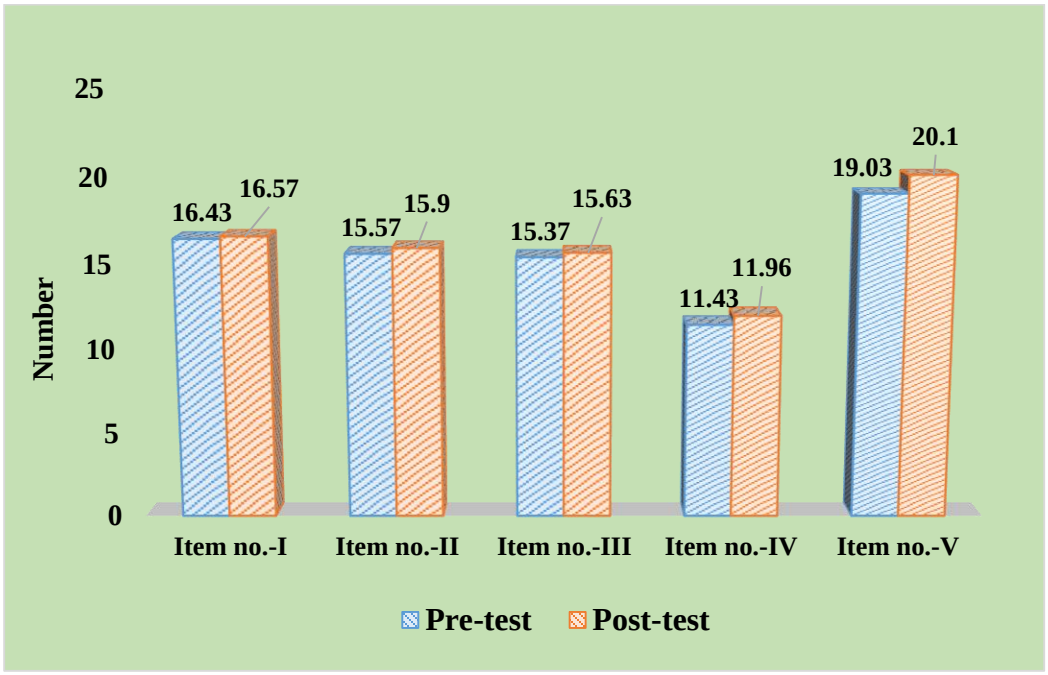


Fig.-26: Performance of Motor Creativity (Item no-I, II, III, IV, V) for Control Group

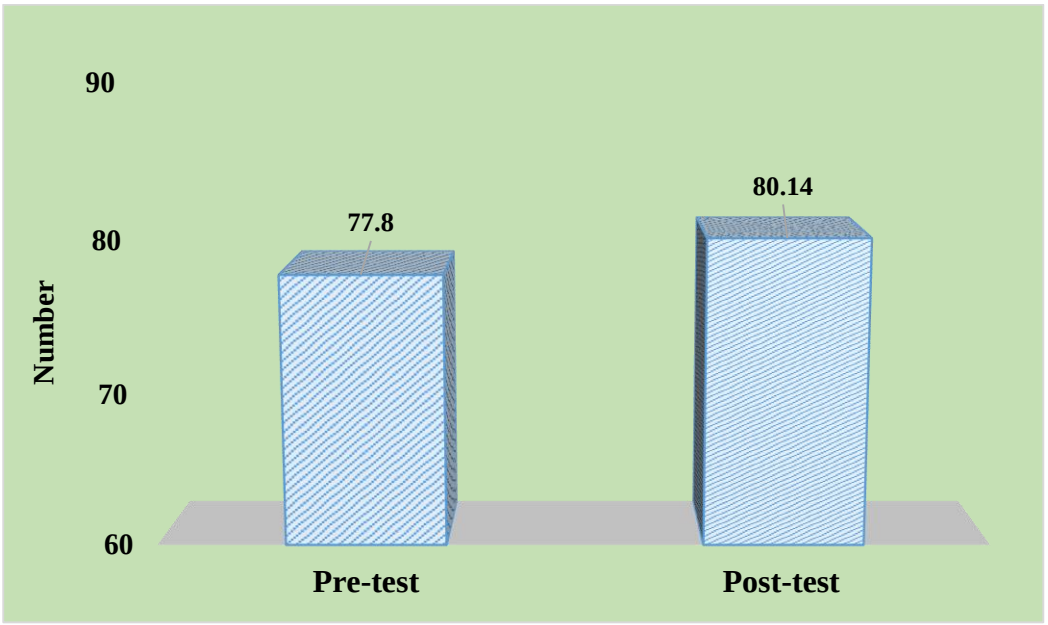


Fig.-27: Performance of Motor Creativity (Total MC) for Control Group

In Fig.-26 & 27, shown that pre and post-test the performance of motor creativity (Item no-I, II, III, IV, V and total motor creativity) of control group were almost similar. After three months it was slightly increase every test items of motor creativity of control group.

II. MOTOR CREATIVITY FOR EXPERIMENT GROUP:

The compare between pre- and post-experiment of Motor Creativity for Experiment Group are presented here in the following table no.-18.

Table-18: Comparison of Motor Creativity between pre- & post experiment for Experiment Group

Motor Creativity	Test	Mean and SD	t-value	p-value
Item no.-I (Different type of movements of the upper part of the body)	Pre-test	16.87±5.80	**7.13**	<0.001*
	Post-test	19.97±7.50		
Item no.-II (Different ways one can move from line AB to CD)	Pre-test	15.70±4.90	**19.41**	<0.001*
	Post-test	19.80±5.41		
Item no.-III (Different type of movements on the narrow bench)	Pre-test	15.63±3.78	**8.98**	<0.001*
	Post-test	18.27±3.70		
Item no.-IV (Different ways hit the ball on the wall using any part of the body)	Pre-test	11.70±1.52	**15.40**	<0.001*
	Post-test	15.37±1.75		
Item no.-V (Different body movements from four different position)	Pre-test	19.27±5.67	**9.72**	<0.001*
	Post-test	22.23±4.97		
Total Motor Creativity	Pre-test	79.10±9.74	**25.72**	<0.001*
	Post-test	95.63±10.08		

df= 29 Table value=2.045 *Significant level at 0.05

i. Item no.-I:

Table-18 shows that the mean and SD score Item no.-I (Different type of movements of the upper part of the body) in the Motor Creativity for Experiment Group (pre- and post-experiment) were 16.87±5.80 and 19.97±7.50 respectively.

Calculated paired t-test for comparing the pre and post-test results shown that the t-test of Item no.-I (Different type of movements of the upper part of the body) for Experiment Group were 7.13 and p-value were <0.001 respectively.

ii. Item no.-II:

The mean and SD score Item no.-II (Different ways one can move from line AB to CD) in the Motor Creativity for Control and Experiment Groups (pre- and post-experiment) were 15.70±4.90 and 19.80±5.41 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Item no.-II (Different ways one can move from line AB to CD) for the Experiment Group were 19.41 and p-value were <0.001 respectively.

iii. Item no.-III:

In table-18, the mean and SD score Item no.-III (Different type of movements on the narrow bench) in the Motor Creativity for Control and Experiment Groups (pre- and post-experiment) were 15.63±3.78 and 18.27±3.70 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Item no.-III (Different type of movements on the narrow bench) for Experiment Group were 8.98 and p-value were <0.001 respectively.

iv. Item no.-IV:

Table-18 shows that the mean and SD score Item no.-IV (Different ways hit the ball on the wall using any part of the body) in the Motor Creativity for Experiment Group (pre- and post-experiment) were 11.70±1.52 and 15.37±1.75 respectively.

Calculated paired t-test for comparing the pre and post-test results shown that the t-test of Item no.-IV (Different ways hit the ball on the wall using any part of the body) for the Experiment Group were 15.40 and p-value were <0.001 respectively.

v. Item no.-V:

According to table-18 the mean and SD score Item no.-V (Different body movements from four different position) in the Motor Creativity for Experiment Groups (pre- and post-experiment) were 19.27±5.67 and 22.23±4.97respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Item no.-V (Different body movements from four different position) for the Experiment Group were 9.72 and p-value were <0.001 respectively.

vi. Total Motor Creativity:

Table-18 shows that the means and SD score Total Motor Creativity in the Motor Creativity for Experiment Group (pre- and post-experiment) were 79.10±9.74 and 95.63±10.08 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Total Motor Creativity for Experiment Group were 25.72 and p-value were <0.001 respectively.

The graphical representation of Motor Creativity (all five items and total MC) for Experiment Group are presented in figure no.-28 & 29

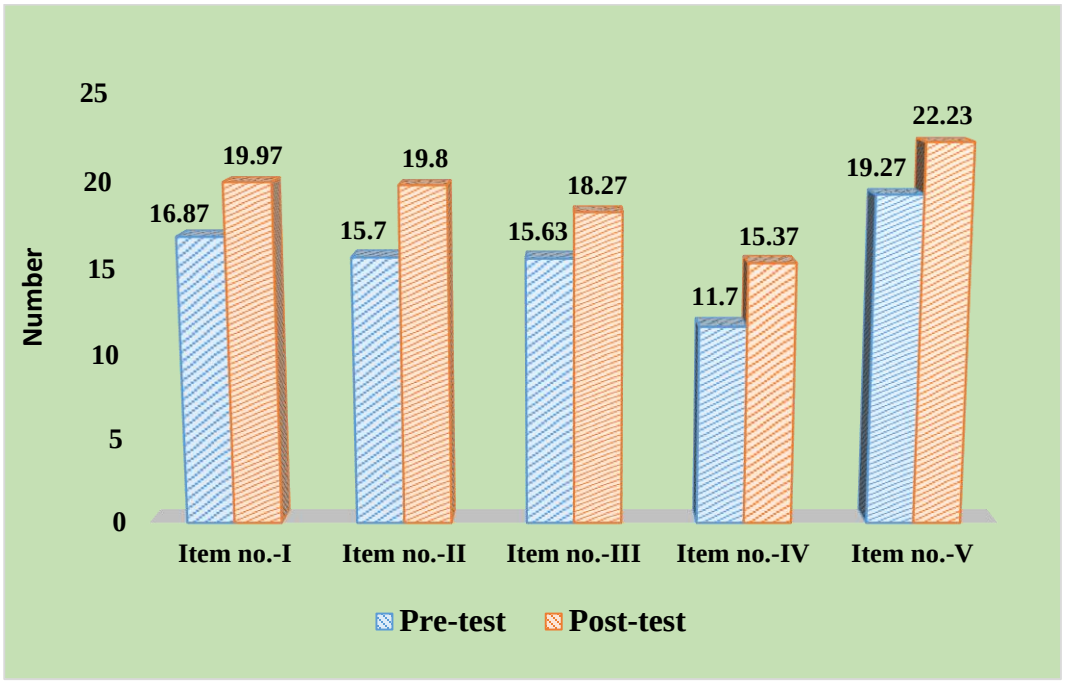


Fig.-28: Performance of Motor Creativity (Item no- I, II, III, IV. V) for Experiment Gr.

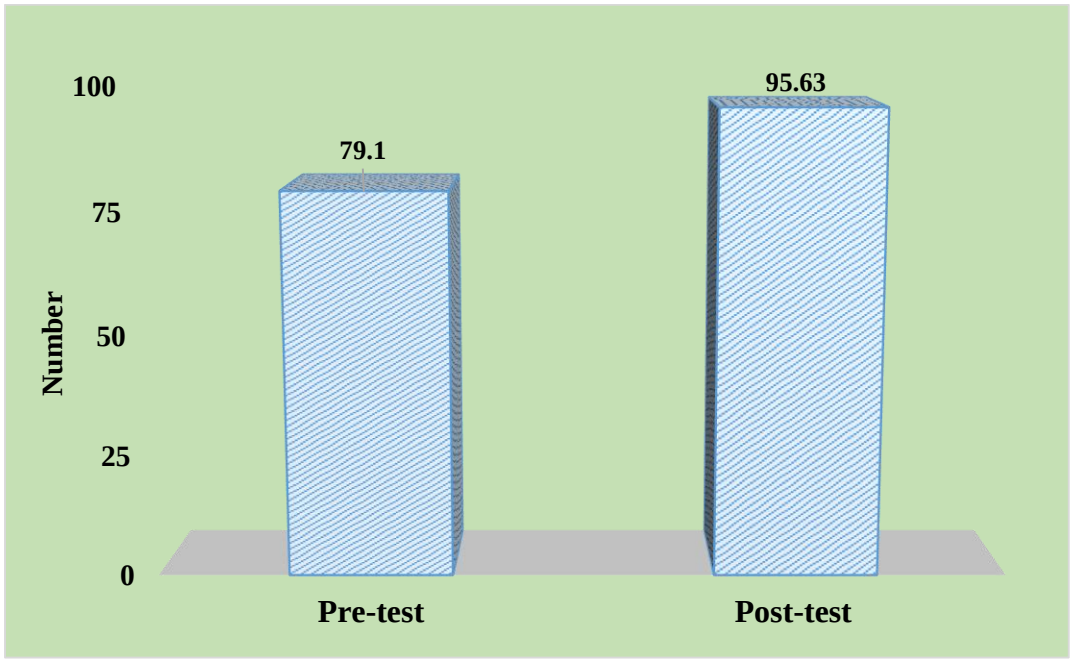


Fig.-29: Performance of Motor Creativity (Total MC) for Experiment Gr.

The Fig.-28 & 29, it was observed that pre- and post-test of motor creativity (item no-I, II, III, IV, V and total motor creativity) for experiment group were changed. After recreational games training (post-test) it was increased for every test items of motor creativity.

4.2.4.3. ENJOYMENT AND ATTITUDE:

The pre- and post-experiment data of Enjoyment and Attitude for Control and experiment Groups have been presented in table no.-19 and 20.

I. ENJOYMENT AND ATTITUDE FOR CONTROL GROUP:

The compare between pre- and post-test of Enjoyment and Attitude for Control Group are presented in the following table no.-19

Table-19: Comparison of Enjoyment & Attitude between pre- & post-test for Control Group

Psychological Variables	Test	Mean & SD	t-test	p-value
Enjoyment (value)	Pre-test	54.53 ±5.15	1.76	0.09
	Post-test	57.40 ±6.95		
Attitude (value)	Pre-test	18.44 ±1.19	1.39	0.17
	Post-test	17.70 ±2.72		

df= 29 Table value=2.045 *Significant level at 0.05 level

Preceding table-19 shows that the mean and SD score of Enjoyment for Control Group (pre- and post-experiment) were 54.53±5.15 and 57.40±6.95 respectively. On the other hand the Attitude for Control Group were 18.43 ±1.19 and 17.70 ±2.72 respectively.

Calculated paired t-test and p-value for comparing the pre- and post-test results shown that the t-test of Enjoyment for Control Group were 1.76 and 0.09 respectively. And the Attitude were 1.39 and 0.17 respectively.

The graphical representation of Enjoyment and Attitude for Control Group are presented in figure no.-30 & 31

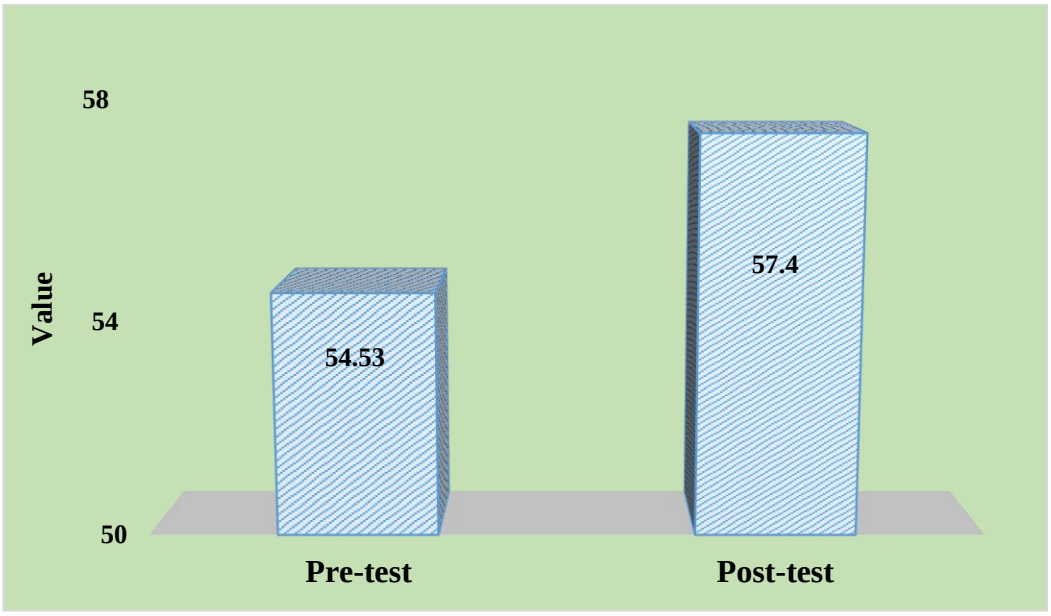


Fig.-30: Performance of Enjoyment for Control Gr.

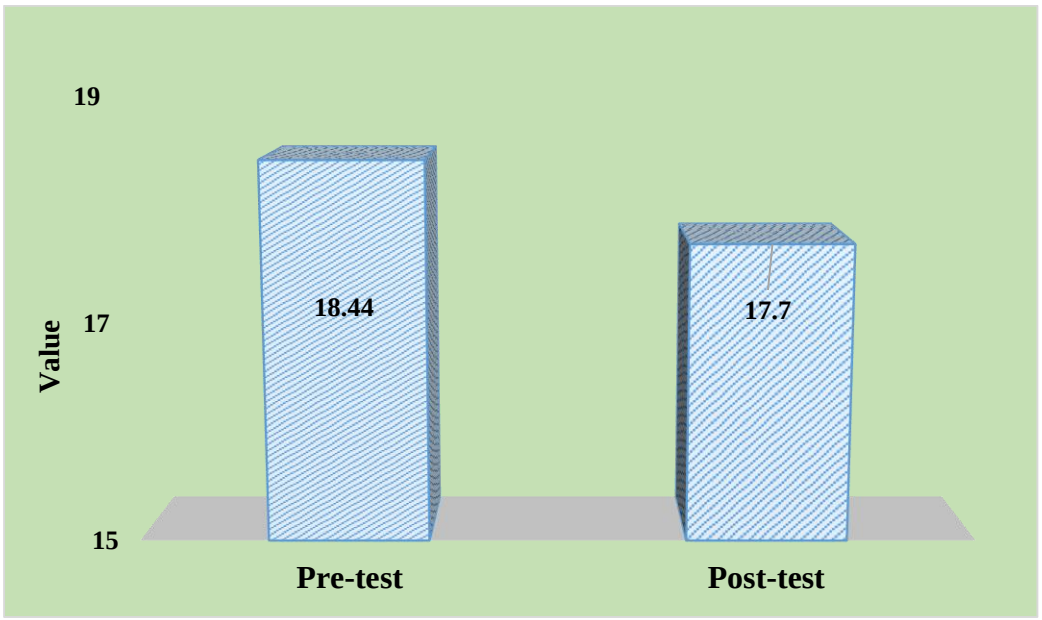


Fig.-31: Performance of Attitude for Control Gr.

From Figure.-30&31, shown that the score of enjoyment of pre- and post-test for control group were almost similar and the post-test score was higher than pre-test. On the other hand the score of attitude of pre- and post-test for control group were also almost similar. But pre-test score of attitude was higher than post-test.

II. ENJOYMENT AND ATTITUDE FOR EXPERIMENT GROUP:

The comparison between pre- and post-test of Enjoyment and Attitude for Experiment Group are presented here in the following table no.-20

Table-20: Comparison of Enjoyment and Attitude between pre- & post experiment for Experiment Group

Psychological Variable	Test	Mean & SD	t-test	p-value
Enjoyment (value)	Pre-test	53.20 ±8.93	1.39	0.18
	Post-test	56.13 ±7.15		
Attitude (value)	Pre-test	18.30 ±4.14	0.72	0.48
	Post-test	18.86 ±1.48		

df= 29 **Table value=2.045** ***Significant level at 0.05**

From the abovementioned table-20 the mean and SD score of Enjoyment for Experiment Group (pre- and post-experiment) were 53.20±8.93 and 56.13±7.15 respectively. And the Attitude were 18.30 ±4.14 and 18.86 ±1.48 respectively.

Calculated paired t-test and p-value for comparing the pre- and post-test results of Enjoyment for Experiment Group were 1.39 and 0.18 respectively. And the Attitude were 0.72 and 0.48 respectively.

The graphical representation of Enjoyment and Attitude for Experiment Group are presented in figure no.-32 & 33.

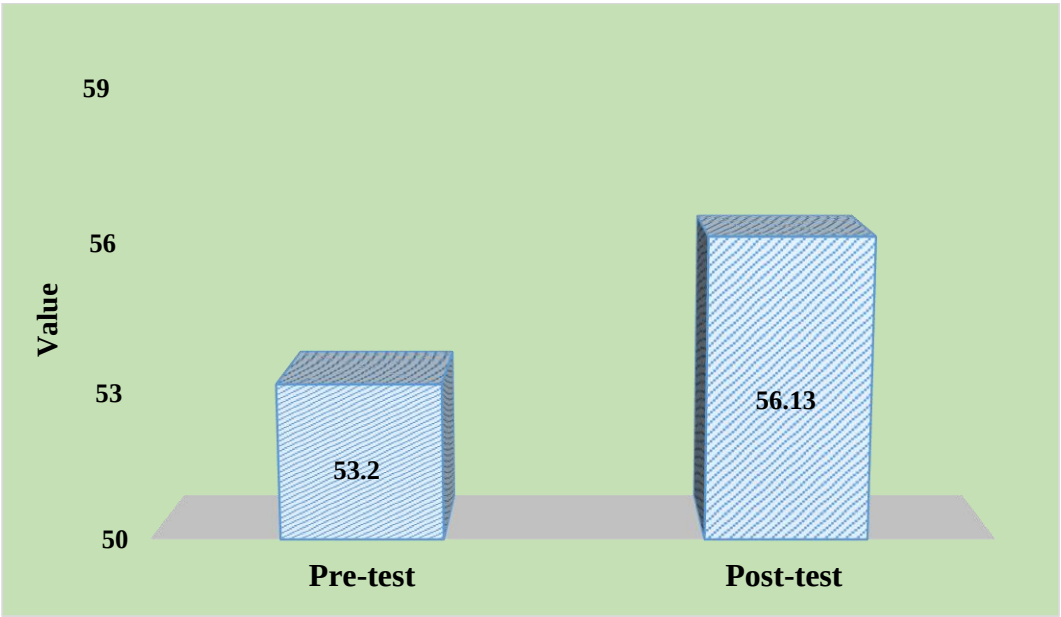


Fig.-32: Performance of Enjoyment for Experiment Gr.

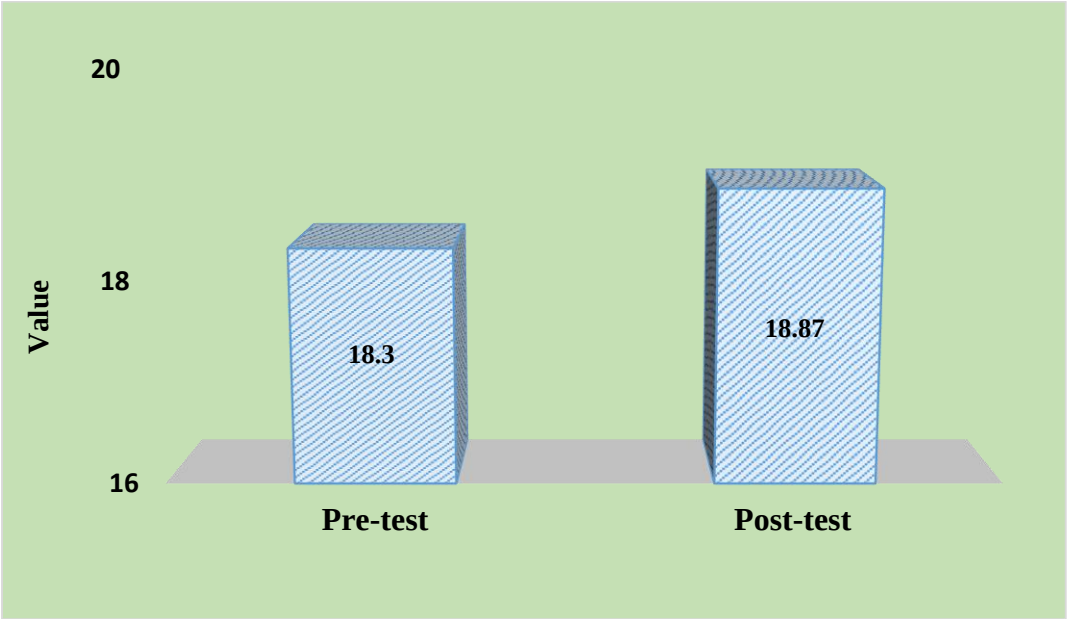


Fig.-33: Performance of Attitude for Experiment Gr.

From the Fig.-32 & 33, shown that the pre- and post-test score of enjoyment and attitude of experiment group were nearly similar. But in enjoyment the post-test was higher than pre-test. And post-test score of attitude was higher than pre-test.

4.2.4.4. PERSONALITY TRAIT:

For better presentation Personality Trait test between pre- and post-experiment for Control and Treatment Groups data have been presented in the table no.-21.

I. PERSONALITY FOR CONTROL GROUP:

The compare between pre- and post-test of Personality for Control Group are presented in the following table no.-21.

Table-21: Comparison of Personality Trait between pre- & post-experiment for Control Group

Personality Trait (Value)	Test	Mean & SD	t-value	p-value
Neuroticism	Pre-test	2.63±21.83	0.31	0.76
	Post-test	4.00±20.38		
Self-sufficiency	Pre-test	-3.20±14.48	1.94	0.06
	Post-test	-11.17±14.69		
Introversion	Pre-test	-0.83±12.80	0.38	0.70
	Post-test	0.30±13.02		
Dominance	Pre-test	10.40±12.81	**2.78**	0.009*
	Post-test	1.30±14.21		

df= 29 Table value=2.045 *Significant level at 0.05

i. Neuroticism:

Table-21 shows that the mean and SD score Neuroticism in Personality Trait for Control Group (pre- and post-experiment) were 2.63±21.83 and 4.00±20.38 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Neuroticism for the Control Group were 0.31 and p-value were 0.76 respectively.

ii. Self-Sufficiency:

Table shows that the mean and SD score Self-Sufficiency in Personality Trait for Control Group (pre- and post-experiment) were -3.20±14.48 and -11.17±14.69 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Self-Sufficiency for the Control Group were 1.97 and p-value were 0.06 respectively.

iii. Introversion:

According to this table the mean and SD score Introversion in Personality Trait for Control Group (pre- and post-experiment) were -0.83 ±12.80 and 0.30±13.02 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Introversion for the Control Group were 0.38 and p-value were 0.70 respectively.

iv. Dominance:

Table-21 shows that the mean and SD score Dominance in Personality Trait for Control Group (pre- and post-experiment) were 10.40±12.81 and 1.30 ±14.21 respectively.

Calculated paired t-test for comparing the pre- and post-test results shown that the t-test of Dominance for the Control Group were 2.78 and p-value were 0.009 respectively.

The graphical representation of Personality for Control Group are presented in fig. no.-34

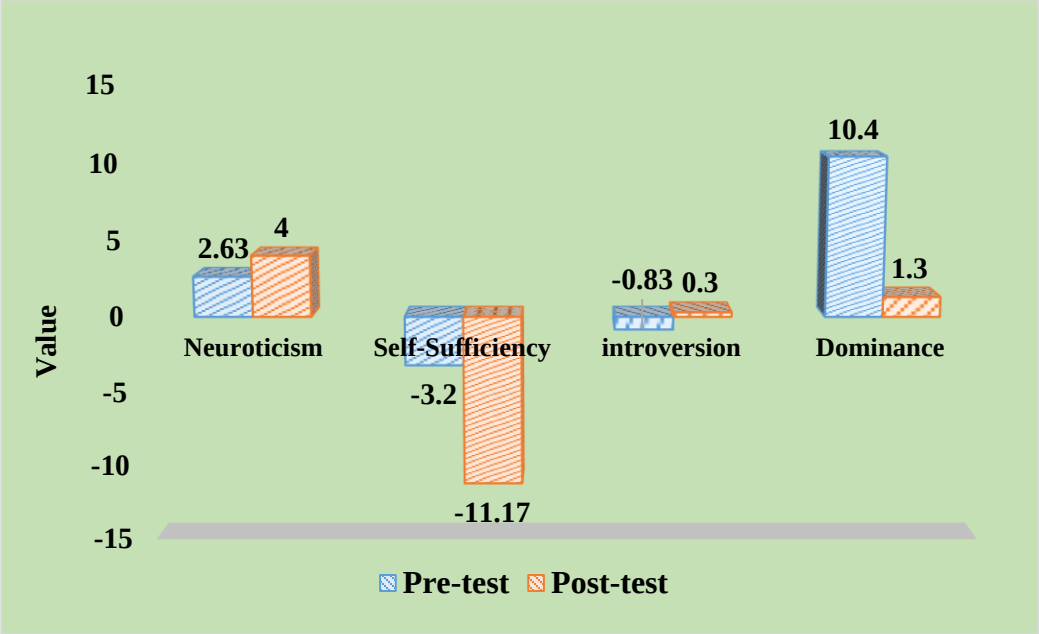


Fig.-34: Performance of Personality for Control Gr.

In Figure-34, it was observed that the pre- and post-test score of personality (neuroticism, self-sufficiency, introversion and dominance) of control group there were some differences found. The post-test of neuroticism was higher than pre-test, in self-sufficiency score of post-test was higher than pre-test. In introversion score of post-test was also higher than pre-test and the dominance score of pre-test was higher than post-test.

II. PERSONALITY FOR EXPERIMENT GROUP:

The compare between pre- and post-test of Personality for Experiment Group are presented in the following table no.-22

Table-22: Comparison of Personality Trait between pre- & post experiment for Treatment Group

Personality Trait (Value)	Test	Mean and SD	t-value	p-value
Neuroticism	Pre-test	6.13±22.18	1.87	0.07
	Post-test	17.47±22.45		
Self-sufficiency	Pre-test	-3.20±13.03	**3.31**	0.002*
	Post-test	-14.87±14.56		
Introversion	Pre-test	3.60±12.07	1.25	0.22
	Post-test	7.87±12.00		
Dominance	Pre-test	5.67±14.34	**3.08**	0.004*
	Post-test	-6.20±13.97		

df= 29 **Table value=2.045** ***Significant level at 0.05**

i. Neuroticism:

Table-22 shows that the mean and SD score Neuroticism in Personality Trait for Experiment Group (pre- and post-experiment) were 6.13±22.18 and 17.47±22.45 respectively.

Calculated paired t-test for comparing the Neuroticism for Experiment Group were 1.87 and p-value were 0.07 respectively.

ii. Self-Sufficiency:

In table-22, the mean and SD score Self-Sufficiency in Personality Trait for Experiment Group (pre- and post-experiment) were -3.20±13.03 and -14.87±14. 56 respectively.

Calculated paired t-test for comparing the Self-Sufficiency for the Experiment Group were 3.31 and p-value were 0.002 respectively.

iii. Introversion:

According to this table the mean and SD score Introversion in Personality Trait for Experiment Group (pre- and post-experiment) were 3.60±12.07 and 7.87±12.00 respectively.

Calculated paired t-test for comparing Introversion before experiment for the Experiment Group were 1.25 and p-value were 0.22 respectively.

iv. Dominance:

Table-22 shows that the mean and SD score Dominance in Personality Trait for Experiment Group (pre- and post-experiment) were 5.67±14.34 and -6.20±13.97 respectively.

Calculated paired t-test for comparing the Dominance before experiment between the Experiment Groups were 3.08 and p-value were 0.004 respectively.

The graphical representation of Personality for Experiment Groups are presented in fig. no.-35

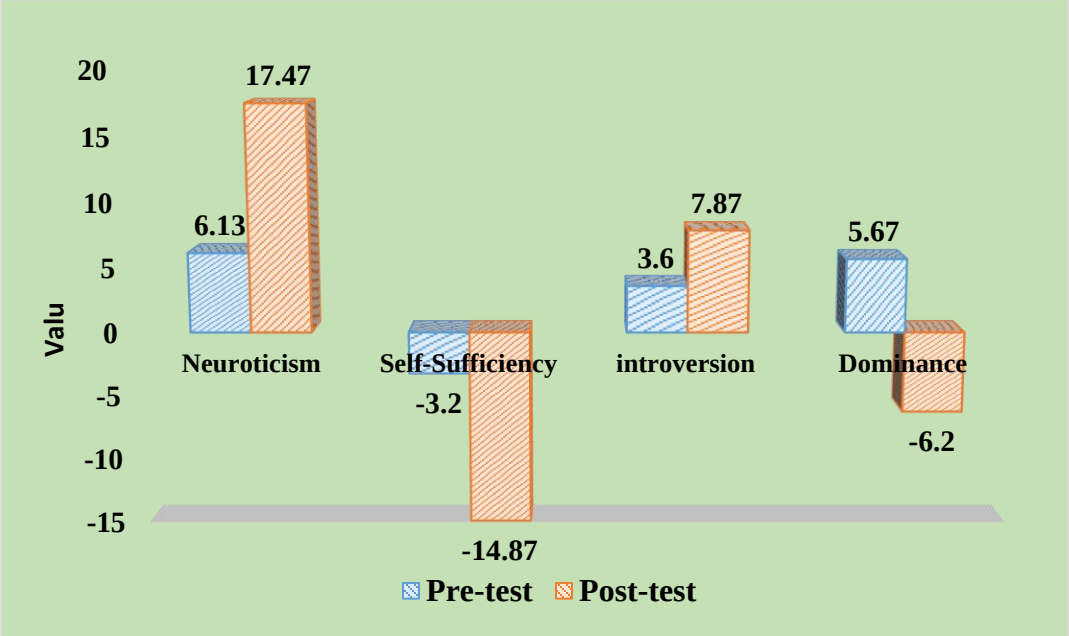


Fig.-35: Performance of Personality for Experiment Gr.

The figure-35, it was observed that the pre and post-test score of personality (neuroticism, self-sufficiency, introversion and dominance) of experiment group there were some differences found. In neuroticism the post-test was higher than pre-test, similarly in self-sufficiency score of post-test was higher than pre-test. In introversion score of post-test was also higher than pre-test and the dominance score of pre-test was higher than post-test.

4.3. THE RESULTS:

On the basis of analysis of data following results were obtained-

A. Results regarding Motor Fitness:

Motor Fitness was measured using North Carolina Motor Fitness test. There were five (5) motor fitness components measured using different motor fitness test. According to the results before experiment there were no significance difference between Control & Experiment Groups in any of these five motor fitness components.

But post experiment results indicated that the Experiment Group was significantly better than the Control Group in abdominal strength endurance (Sit-up), agility, endurance & speed (Side Stepping), leg explosive strength (Standing Broad Jump), arm & shoulder girdle strength endurance and speed (Modified Pull-ups), and endurance, agility and speed (Squat Thrust).

B. Results regarding Motor Creativity:

Comparison of Motor Creativity between Control and Experiment Groups indicates that there was no statistically significant difference before experiment in all the five (5) components of motor creativity and total motor creativity.

After experiment it is also appeared that the treatment group had significantly greater value of motor creativity in all five (5) components of motor creativity.

C. Results regarding Enjoyment and Attitude:

Analysis of data indictes that there was no statistically significant difference between control and experiment groups in Enjoyment and Attitude.

Comparison the parameters after experiment also indicates that there was no statistically significant difference between the groups.

D. Results regarding Personality Trait:

Analysis of data for Personality trait was completed in four (4) components of personality- Neuroticism, Self-Sufficiency, Introversion and Dominance. Results indicates that there was no statistically significant difference between control and experiment groups in any of this four personality traits in pre-experiment condition.

But comparison of data in all these personality factors indicates that the experiment group was significantly better in Neuroticism and Dominance.

4.4. DISCUSSION OF RESULTS:

On the basis of results-

A. Result Discussion Regarding Motor Fitness:

Results of the study indicated that participation in recreational games as a treatment improve motor fitness in components of abdominal strength endurance (Sit-up), agility, endurance and speed (Side Stepping), leg explosive strength (Standing Broad Jump), arm and shoulder girdle strength endurance and speed (Modified Pull-up), and endurance, agility and speed (Squat Thrust). Similar result have been reported by **Beunen et al.(1983), Mukhopadhyay (1999), Wu et al., (2021), Vandoni et al. (2021)** all the research had been shown effectiveness of different training programme for improvement of motor fitness of the children.

This may due to the fact the participation in regular physical activity increases Motor Fitness as a natural consequence. This has been more relevant for the sample group of pre-adolescence girls in the present study.

B. Result Discussion Regarding Motor Creativity:

The results indicated that the Motor Creativity increased due to participation in recreational activities in all five areas- Item no.-I (Different type of movements of the upper part of the body), Item no.-II (Different ways one can move from line AB to CD), Item no.-III (Different types of movements on the narrow bench), Item no.-IV (Different ways hit the ball on the wall using any part of the body), Item no.-V (Different body movements from four different position). Similar results have been reported by **Wyrick(1968), Mukhopadhyay (1999), Bournelli et al.(2009), Scibinetti et al. (2011)** all the research had been shown the positive effect of training for improvement of motor creativity.

These may be due to fact that participation in recreational activities inspire participation to think logically about the dynamic situation for better adaptation. This may increase their Motor Creativity.

C. Result Discussion Regarding Enjoyment and Attitude:

Results of the study indicated no changes were found in enjoyment and attitude due to participation in recreational games. Similar researches done by other researchers reported by **Kendzierski(1991), Austin & Huberty (1993), Mukhopadhyay (1999), Moore et.al (2009), Cruz et al. (2021)** all the research had been shown that due to different training for improvement of enjoyment and attitude there was changes and sometimes no changes were found.

D. Result Discussion Regarding Personality Trait:

Results indicated that participation in recreational games significantly improve the personality components in Neuroticism and Dominance. Similar researches done by others researchers reported by **Mukhopadhyay (1999), Chapman et al. (2011), Matthews et al. (2006)** all the research work had been shown the improvement of personality through the different type of training programme.

This may be due to the fact that in participation in recreational games help to develop self-control and self-reliance. This also helps to develop leadership quality of the participation to improve their Dominance.

4.5. TESTING OF HYPOTHESIS:

Present study was based on four hypotheses. The hypothesis can be tested in following section-

H_0^1: According to the first hypothesis it was assumed that there would be no significant improvement in Motor Fitness (bent knee sit-up, side stepping, SBJ, modified pull-ups, squat

thrust) due to training of recreational games. Results of the study shows after participation in recreational games positive changes on Motor Fitness were found. So on the basis of the result the first hypothesis was rejected.

H_1^2: In the second hypothesis it was assumed that the training using recreational games would significantly improve motor creativity (Item no-I, II, III, IV & V). The results of the study shows due to recreational games there were significant improvement in motor creativity. So according to the results the second hypothesis was accepted.

H_2^3: According to the third hypothesis it was assumed that the Training using recreational games would significantly improve enjoyment level. The results of the study shows after participation of recreational games there were no significantly improve the level of enjoyment. So on the basis of the result the hypothesis was rejected.

H_3^4: In the fourth hypothesis it was assumed that Training using recreational games would significantly improve enjoyment and attitude level. But the results shows due to recreational games there were no significant improvement of enjoyment and attitude level. So on the basis of the results the fourth hypothesis was rejected.

H_4^5: The last hypothesis of the study it was assumed that the training using recreational games would significantly improve personality traits. Results shows after participation of recreational games there were significantly improve in personality trait. So on the basis of the result the hypothesis was accepted.

CHAPTER-V

SUMMARY, CONCLUSION AND

RECOMMENDATION

CHAPTER-V

SUMMARY, CONCLUSION AND RECOMMENDATION

In this chapter, the summary of all previous chapters has been included. Conclusions drawn on the basis of the results obtained have also been presented in this section. Recommendations of the study for future research as well as for practical application have also been included here.

5.1. SUMMARY

Humans are physically similar and related to the great ape but differ by a higher develop brain and a consequent ability for clear technology. Until 10,000 years ago, most people were hunter-gatherers. They did not live in one place but moved around with the change of seasons. During this period they always had to be mentally and physically prepared because of the apprehension of animal attack. At that time people and animals would fight for survival equally.

Physical Activity was a biological imperative in primitive societies. It had been noticed that participation in physical activity has been a part of human civilization at every phase of development. But the purpose was different. Humans had run to hunt for food and survive against natural calamities. Today human has to keep themselves fit even in this highly mechanized world just to maintain their posture.

Initially play refers to spontaneous, fun, and independent activities, especially in children. Play is not only an innate quality of human beings, it can also be observed in other animals. But the way people express themselves during play is not noticeable in the use of other animals, but in their body language, it is understood that they share happiness and joy. In the primitive age people as well as animals also liked to play and animals used to play with people.

On the other hand, a game is an activity in which more than one group of individuals competes against another team of the same nature whose purpose is to achieve the title of excellence. Games are group competitions and each team works according to a specific plan, games are- Football, Basketball, Volleyball, Handball, etc.

Recreation is a leisure activity, where leisure is defined as a free time activity. In both human biology and psychology, the "need to do something for recreation" is a crucial component. Recreational activities are regarded as "fun" because they are frequently performed for amusement, enjoyment, or pleasure. Recreation is a vital component of human life and takes on a variety of shapes that are naturally influenced by both personal interests and the social

structures around us. Recreational pursuits can be social or lonely, active or passive, outside or indoors, beneficial or damaging to society. The list of usual activities is practically extensive and includes a wide range of human activities. A few examples include reading, music-making, watching TV or movies, gardening, hunting, sports, and studies. Gambling, drinking, and other delinquent behaviors are a few examples of leisure activities that cannot always be deemed sensible, healthy, socially acceptable, or productive.

Motor fitness is the ability of an athlete to perform effectively during sports or other physical activities. The motor fitness of an athlete is a combination of components, each of which is essential for high-level performance. Motor fitness refers to how an athlete can perform in his or her sports. All elements of fitness are essential for high-level competition and are seen as an essential part of any athlete's training system.

Every person has some instincts, feelings, and a unique specialization from birth. One of nature's special gifts is creativity. The ability to see things differently, uncover hidden patterns, link seemingly unconnected events, and come up with solutions are all examples of creativity. Thinking and producing are the two processes that create creativity. Motor creativity is the act of expressing one's creativity through movement. It has fresh strategies for adapting to novel circumstances. Despite the fact that motor creativity in children is a crucial component of motor development, very few exercise regimens support this process.

When a person engages in an event or action that satisfies a want, objective, or need—such as, but not limited to, pleasure, money, safety, security, sustenance, respect, belonging, or love—they feel enjoyment and a pleasant emotional state.

Attitude affects how people act toward others, and events, feelings, behaviors, and preferences become potent predictors of behavior that may be altered, molded, taught, adjusted, or even replaced. One of the most significant predictor variables for behavioral intentions connected to physical activity is attitude.

Insofar as people's personality qualities don't drastically alter from day to day, this is a pretty steady trait. However, long-term alterations happen as a result of deliberate treatments or natural causes (physiological aging). Personal traits that are largely stable within a person's personality are what make them unique, yet alterations can be brought on by accident or on purpose. Characteristics of the human phenotype that reflect both hereditary and environmental effects include personality traits.

There has been a lot of research on recreational games in other countries and that research has been effective. During the review collection, the researcher found that most of the

work done so far in our country is on college students and adults, not on children. This idea has inspired the researcher to adopt the current research work. The aim was to spread to everyone in the country about the value of recreational games. That is the justification for selecting such a problem.

This result instigated the present researcher to analyze and understand whether there were any such differences or not of school children at adolescent age and the problem of research was stated as **"EFFECT OF RECREATIONAL GAMES ON MOTOR FITNESS AND PSYCHOLOGICAL PROFILE OF SCHOOL CHILDREN".**

A total of sixty (60) girls (10 to 13 years) were selected as subjects for the study. The subjects from the age of 10 to 13 years, studying in class V-VII at Kankinara, North 24 Parganas, West Bengal were selected randomly. Such categories of students were denoted as Upper Primary standard. A total of sixty (60) girls were divided into two groups, the first group was called the experimental group and the second group was called the control group, there were thirty (30) subjects in each group.

Responses from the subjects, Mean, and Standard Deviation (SD) were calculated as the measure of central tendency and variability respectively. The significance of the difference between the two means was tested by t-test.

5.2. CONCLUSION

On the basis of the analysis of data and interpretation of results following conclusions were drawn.

i. After the participation of twelve weeks in recreational games (only the experiment group), positive changes were found in motor fitness (sit-up, side stepping, standing board jump, modified pull-up, and squat thrust)**.**

ii. After twelve weeks (without recreational games), the performance of motor fitness for a control group, there were some positive changes found in two motor fitness components (SBJ and modified pull-ups). But no significant differences were found in the three motor fitness components (bent knee sit-ups, side stepping, and squat thrust).

iii. Due to participation in recreational games (for the experiment group), there were positive changes found in creativity and increase motor responses i.e. motor creativity.

iv. After twelve weeks (without recreational games), the performance of motor creativity there were significant differences found in motor creativity (item no-IV, V, and total MC). But in some test items (items no-I, II, III) for the control group was no statistically significant difference found.

v. Due to recreational games, the level of enjoyment was least changed but no significant difference was found.

vi. After participation in recreational games, the level of attitude was the least changed but no significant was found.

vii. Due to recreational games (experiment group), there were statistically significant differences found in neuroticism and dominance of level personality traits, but no significant difference was found in self-sufficiency and introversion of personality traits.

It may be concluded that participation in recreational games (treatment group) or without recreational games (control group) significantly improves some of the tests on motor fitness, motor creativity, enjoyment, attitude, and personality. In pre-adolescence age, they were naturally increased due to their natural growth pattern. It happened for the control group may be some extraneous factors (age, intelligence level, motivation, excitement, recall of previous experience) that could not control by the researcher.

5.3. RECOMMENDATION

Considering the various aspects of the present study, the following recommendation may be made:

i. A similar study may be conducted with varied recreational games.

ii. A similar study may be carried out with different age groups and sexes.

iii. The present study was limited to a small number of samples, so attempts should be made to work with a large no of subjects.

iv. Studies may be extended for a longer duration of the training period.

v. A similar study may also be conducted for motor fitness for school-going children.

vi. To prepare training schedule of the study may be applied for further research.

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APPENDIX

PERSONAL DATA

NAME: AVANTIKA SHAW

ANTHROPOMETRIC MEASUREMENT

Age (yrs.)	Height (cm)	Weight (kg)	Waist circumference(cm)	Hip circumference(cm)
11.3	153	40	74	66

MOTOR FITNESS

Bent Knee Sit-up (no.)	Side Stepping (no.)	Standing Broad Jump (meter)	Modified Pull-up (no.)	Squat Thrust (no.)
15	14	1.2	12	9

MOTOR CREATIVITY

Item no. I (no.)	Item no. II (no.)	Item no. III (no.)	Item no. IV (no.)	Item no. V (no.)
22	14	17	9	16

PSYCHOLOGICAL PARAMETER

Enjoyment (value)	Attitude (value)	Personality (value)			
		Neuroticism	Self-sufficiency	Introversion	Dominance
63	15	46	-5	28	5

PERSONAL DATA SHEET (CONTROL GROUP)

S. L. No	Name of the students	Age	Height	Weight	waist circumference	Hip circumference
1						
2						
3						
4						
5						
6						
7						
8						
-						
30						

PERSONAL DATA SHEET (CONTROL GROUP)

S. L. No	Name of the students	Age	Height	Weight	waist circumference	Hip circumference
1						
2						
3						
4						
5						
6						
7						
8						
-						
30						

MOTOR FITNESS (CONTRL GROUP)

S.L. no	Name of the students	Bent Knee Sit-up	Side Stepping	Standing Broad Jump			Modified Pull-up	Squat Thrust
				I	II	III		
1								
2								
3								
4								
5								
6								
7								
8								
-								
30								

MOTOR FITNESS (EXPERIMENT GROUP)

S.L. no	Name of the students	Bent Knee Sit-up	Side Stepping	Standing Broad Jump			Modified Pull-up	Squat Thrust
				I	II	III		
1								
2								
3								
4								
5								
6								
7								
8								
-								
30								

MOTOR CREATIVITY (CONTRL GROUP)

S.L. no	Name of the students	Item No.-I	Item No.-II	Item No.-III	Item No.-IV	Item No.-V
1						
2						
3						
4						
5						
6						
7						
8						
-						
30						

MOTOR CREATIVITY (EXPERIMENT GROUP)

S.L. no	Name of the students	Item No.-I	Item No.-II	Item No.-III	Item No.-IV	Item No.-V
1						
2						
3						
4						
5						
6						
7						
8						
-						
30						

PICTURES

Pic-1: Experiment & Control Groups

Pic-2: Passing the Ball through Chanel

Pic-3: Skipping Race

Pic-4: Bent Knee Sit-up

Pic-5: Standing Broad Jump

Pic-6: Modified Pull-ups

Pic-7: Squat Thrust

Pic-8: Item no.-I (Motor Creativity)

Pic-9: Item no.-IV (Motor Creativity)

Pic-10: Item no.-V, Sitting Position (Motor Creativity)

Pic-11: Item no.-V, Standing Position (Motor Creativity)

Pic-11: Paper Pen Test

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This is to certify that **Nurun Nabi**, Daughter of Abdus Salam, Research Scholar of Department of Physical Education, Jadavpur University, has successfully completed her three months recreational games training programme and research title as **"Effect of Recreational Games on Motor Fitness and Psychological Profile of School Children".** She has done experiment on girls students for her research purpose from our school.

During this period of research programme we found her very sincere, curious, analytical and hard working. I wish her all the success in her future.

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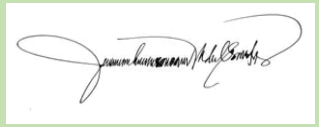

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