

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

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

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INDIA  
AUGUST 2023**

## INTRODUCTION

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. **(Little & Blumler, 2015)**

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)**

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. **(A. K. Bhattacharyya, 2012)**

Games became more complex, more organized, more Competition-oriented, the structure becomes more rigid and institutionalized, and evolved into sport. 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. **(A. K. Bhattacharyya, 2012)**

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. 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. **(Uppal & Satyanarayana, 2019)**

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)**

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 an alone thing, but a combination of factors such as body type or structure, kinetic energy, flexibility and bio-functionality. **(Gaur & Nigam, 2011)**

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)**

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. **(Moore et al., 2009)**

Attitude is a psychological structure, a mental entity that inheres in 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. Attitudes are usually expressed by thoughts and feelings. Attitudes usually give rise to ideas about human behavior. Attitudes can be formed from a person's past and present. Children show their love for certain actions by their specific attitude. **(Perloff, 2016)**

The term "personality" means to the entire collection of one's distinct and individual thoughts, feelings, 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)**

A lot of research work has been done on recreational games in other countries and that was 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.

The purpose of the present study was to analyze the effect of recreation games on the motor fitness and selected psychological parameters of school children. Accordingly the problem was stated as **"EFFECT OF RECREATIONAL GAMES ON MOTOR FITNESS AND PSYCHOLOGICAL PROFILE OF SCHOOL CHILDREN"**.

#### **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) to know the changes in the level of enjoyment due to participation in recreational games;
- iv) to know the difference in the level of attitude through participation in recreational games;
- v) to know the changes in the level of personality trait due to participation in recreational games and
- vi) to know the improvement of motor fitness, motor creativity, enjoyment, attitude and personality trait due to participation in selected recreational games.

#### **DELIMITATION OF THE STUDY:**

The present study was delimited to the following conditions:

- 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.

#### **LIMITATION OF THE STUDY:**

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.

### **HYPOTHESIS:**

The present investigation was based on the following hypotheses.

H<sub>0</sub>: there would be no significant improvement in Motor Fitness due to training of recreational games;

H<sub>1</sub>: training using recreational games would significantly improve motor creativity;

H<sub>2</sub>: training using recreational games would significantly improve enjoyment level;

H<sub>3</sub>: training using recreational games would significantly improve attitude level and

H<sub>4</sub>: training using recreational games would significantly improve personality traits.

### **SIGNIFICANCE OF THE STUDY:**

It was believed that the result of the study would help us to know the following aspects:

- 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 help 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) recreational games included to prepare exercise schedules or training protocols for children.

## **REVIEW OF RELATED LITERATURE**

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.

**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.

**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.

**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.

**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.

**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.

## **METHODOLOGY**

### **SELECTION OF SUBJECTS:**

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

### **ORIENTATION OF SUBJECTS:**

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



## **SELECTION OF VARIABLES:**

The research scholar had gone through the analysis of motor fitness, motor creativity and psychological variables from different sources and also consulted the experts in these areas. Along with the literature and expert opinion, the administrative feasibility in terms of availability of instruments and expertise for measuring and recording of data was also given due consideration while selecting independent and dependent variables. The independent variable was recreational games and the dependent variables were motor fitness (bent knee sit-up, side stepping, standing broad jump, modified pull-ups and squat thrust), motor creativity (Item no. I, II, III, IV and V), enjoyment, attitude and personality traits.

## **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 literature the following standardized tests were selected and used to relevant data on the selected variables and they are height (cm): stadiometer, weight (kg): weighing machine, BMI ( $\text{kg}/\text{m}^2$ ): age, height and weight, waist-hip ratio (cm): measuring tape (waist and hip circumference).

## **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.

## **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.

## **TRAINING PROGRAMME:**

The recreational games training protocol was set-up by the researcher for the experimental group. The duration of training schedule was three (3) days in a week for twelve (12) weeks and after the training with respective protocol post-test was administrated. 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- Memory game, Cat and Mouse, Circle weaving race, knee-bend balance, Ball Roll Relay, Telephone Game, Catch the Fox's Tail, Poison Circle, Human Obstacle, Touch and Run etc.

### **EXPERIMENTAL DESIGN:**

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.

### **ADMINISTRATION OF TEST:**

The tests for personal data (anthropometric), motor fitness, motor creativity and psychological variables were conducted at the class rooms and school ground. Before the conduct of every test, the subjects were assembled at the testing venue and the procedure of the test was explained to them.

#### **Motor fitness:**

**Bent Knee Sit-up:** 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. 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.

**Side Stepping:** 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. 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.

**Standing Broad Jump:** 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. The

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

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

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

**Motor Creativity:**

**Item no-I:** 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. 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.

**Item no-II:** 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. One point for each accepted movement from the line AB to the CD line.

**Item no-III:** 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. Total number of new movements was counted with one mark for each recognized movement.

**Item no-IV:** 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. 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.

**Item no-V:** 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. The motor creativity score from this test item was the sum of the responses obtained from the four locations.

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

**Enjoyment:** On the testing day, researcher administered the questionnaires to students who were assembled in a classroom. 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.

**Attitude:** A standardized and reliable Bengali version questionnaire on trait of attitude scale was used to measure behavioral attitudes of the subjects. 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.

**Personality trait:** 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.

#### **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.

## **PRESENTATION OF DATA:**

On the basis of analysis of data following results were obtained

**Personal Data:** Mean and SD value of age, height and weight for control group were  $11.23 \pm 0.81$ ,  $141.66 \pm 6.01$  and  $31.71 \pm 6.09$  and the experiment group were  $11.62 \pm 0.77$ ,  $145.28 \pm 7.95$  and  $32.56 \pm 4.82$  respectively.

Mean and SD value of BMI and waist-hip ratio for Control Group were  $16.00 \pm 3.22$  and  $0.81 \pm 0.06$  and the Experiment Group were  $16.23 \pm 2.00$  and  $0.80 \pm 0.03$  respectively.

### **Before Experiment**

#### **Motor Fitness:**

There were five test items in Motor Fitness and the test items are: Item no.-I: Bent Knee Sit-up, Item no.-II: Side Stepping, Item no.-III: Standing Broad Jump, Item no.-IV: Modified Pull-up and Item no.-V: Squat Thrust. Before and after experiment of twelve weeks the control and experiment group's data have been presented here.

##### **i. Bent Knee Sit-up:**

Mean and SD score of Bent Knee Sit-up for Control and Experiment Group (before exp.) were  $10.10 \pm 3.13$  and  $10.47 \pm 3.86$  respectively. And t-value and p-value were 0.39 and 0.69, respectively.

The mean and SD score of Bent Knee Sit-up for Control and Experiment Groups (after exp.) were  $10.37 \pm 2.55$  and  $15.47 \pm 3.42$  respectively. Calculated t-value and p-value were 6.79 and  $<0.001$  respectively.

The mean and SD score of Bent Knee Sit-up of pre- and post-experiment for Control Group were  $10.10 \pm 3.13$  and  $10.37 \pm 2.55$  and calculated paired t-value and p-value were 1.19 and 0.24 respectively.

The mean and SD score of Bent Knee Sit-up for Experiment Group of pre- and post-test were  $10.47 \pm 2.86$  and  $15.47 \pm 3.42$  respectively. Calculated paired t-value and p-value were 11.05 and  $<0.001$  respectively.

##### **ii. Side Stepping:**

Mean and SD score of Side Stepping for Control and Experiment Groups (before exp.) were  $13.33 \pm 1.73$  and  $13.27 \pm 2.18$  respectively. Calculated t and p-value were 0.18 and 0.85 respectively.

Mean and SD of Side Stepping for Control and Experiment Groups (after exp.) were  $13.47 \pm 1.67$  and  $18.60 \pm 2.44$  respectively. The calculated t-value and p-value were 10.77 and  $<0.001$  respectively.

Mean and SD score of Side stepping of pre- and post-experiment for Control Group were  $13.33 \pm 1.73$  and  $13.47 \pm 1.67$  respectively. Calculated paired t-value, p-value were 0.64 and 0.52 respectively.

The mean and SD score of Side Stepping for experiment Group of pre- and post-test were  $13.27 \pm 2.18$  and  $18.60 \pm 2.44$  respectively. Calculated paired t-value and p-value were 18.98 and  $<0.001$  respectively.

### **iii. Standing Broad Jump:**

Mean and SD of Standing Broad Jump for Control group Experiment Groups (before exp.) were  $1.27 \pm 0.13$  and  $1.20 \pm 0.14$  respectively. Calculated t-value was 1.57 and the p-value was 0.13 respectively.

The Standing Broad Jump, mean and SD for the Control and Experiment Groups (after exp.) were  $1.29 \pm 0.11$  and  $1.31 \pm 0.14$ , respectively. The calculated t- and p-values were 0.77 and 0.45, respectively.

The mean and SD score in the component of Motor Fitness that is Standing Broad Jump for Control group (pre- and post-test) were  $1.27 \pm 0.13$  and  $1.29 \pm 0.19$  respectively. Calculated paired t-value and p-value were 2.15 and 0.04 respectively.

Mean and SD score of Standing Broad Jump for Experiment Group of pre- and post-test were  $1.20 \pm 0.14$  and  $1.31 \pm 0.14$  respectively. Calculated paired t-test and p-value were 3.97 and  $<0.001$  respectively.

### **iv. Modified Pull-up:**

Mean and SD score of Modified Pull-up for Control and Experiment Groups (before exp.) were  $12.43 \pm 2.19$  and  $12.67 \pm 2.52$  respectively. And the t-value and p-value were 0.37 and 0.71 respectively.

The mean and SD score of Modified Pull-up for Control and Experiment Groups (after experiment) were  $12.80 \pm 1.82$  and  $14.87 \pm 2.98$  respectively. The t-test and p-value were 2.89 and 0.007 respectively.

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  $12.43 \pm 2.19$  and  $12.80 \pm 1.82$  respectively. Calculated paired t-test and p-value were 2.08 and 0.04 respectively.

The mean and SD of Modified Pull-up for Experiment Group of pre- and post-test were  $12.67 \pm 2.52$  and  $14.87 \pm 2.98$  and calculated paired t-test and p-value were 8.20 and  $<0.001$  respectively.

**v. Squat Thrust:**

Mean and SD score of Squat Thrust for control group and Experiment Groups were  $11.73 \pm 1.61$  and  $12.23 \pm 2.03$  respectively. Calculated t-test was 1.11 and p-value were 0.28 respectively.

The mean and SD score of Squat Thrust for control group and Experiment Groups (after experiment) were  $11.9 \pm 1.67$  and  $14.13 \pm 2.21$  and calculated t-test and p-value were 5.25 and  $<0.001$  respectively.

The mean and SD score in the component of Motor Fitness that is Squat Thrust for Control group (pre- and post-test) were  $11.73 \pm 1.61$  and  $11.90 \pm 1.67$  and calculated paired t-test and p-value were 0.70 and 0.73 respectively.

The mean and SD score of Squat Thrust for Experiment Group (pre- and post-test) were  $12.23 \pm 2.03$  and  $14.13 \pm 2.21$  respectively. Calculated paired t-test and p-value were 10.11 and  $<0.001$  respectively.

**Motor Creativity:**

**i. Item no.-I:**

Mean and SD score Item no.-I in the Motor Creativity for Control and Experiment Groups (before exp.) were  $16.43 \pm 4.25$  and  $16.87 \pm 5.80$  respectively. Calculated t-test and p-value were 1.22 and 0.23 respectively.

Mean and SD score of Item no.-I in Motor Creativity for Control and Experiment Groups (after exp.) were  $16.57 \pm 3.91$  and  $19.97 \pm 7.50$  respectively. The calculated paired t-value and p-value were 4.41 and  $<0.001$  respectively.

Mean and SD score Item no.-I in the Motor Creativity for Control Group (pre- and post-experiment) were  $16.43 \pm 4.25$  and  $16.57 \pm 3.91$  respectively. Calculated paired t-test were 0.72 and p-value were 0.47 respectively.

Mean and SD score Item no.-I in the Motor Creativity for Experiment Group (pre- and post-experiment) were  $16.87 \pm 5.80$  and  $19.97 \pm 7.50$  respectively. Calculated paired t-value and p-value were 7.13 and  $<0.001$  respectively.

**ii. Item no.-II:**

The mean and SD score of Item no.-II in the Motor Creativity for Control and Experiment Groups (before exp.) were  $15.57 \pm 4.40$  and  $15.70 \pm 4.90$  respectively. And t-value was 0.25 and p-value was 0.80 respectively.

The mean and SD score of Item no.-II in Motor Creativity for Control and Experiment Groups (after exp.) were  $15.9 \pm 3.76$  and  $19.8 \pm 5.41$  and calculated t- and p-value were 7.45 and 0.001 respectively.

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  $15.57 \pm 4.40$  and  $15.9 \pm 3.76$  respectively. Calculated paired t-test were 1.41 and p-value were 0.17 respectively.

The mean and SD score Item no.-II in the Motor Creativity for Control and Experiment Groups (pre- and post-experiment) were  $15.70 \pm 4.90$  and  $19.80 \pm 5.41$  and calculated paired t-test were 19.41 and p-value were  $<0.001$  respectively.

**iii. Item no.-III:**

The score of mean and SD of Item no.-III in the Motor Creativity for Control and Experiment Groups (before exp.) were  $15.37 \pm 3.11$  and  $15.63 \pm 3.78$  respectively. And the Calculated t-test and p-value were 0.33 and p-value were 0.74 respectively.

The mean and SD scores for Motor Creativity Item No. III for the Control and Experiment Groups (after exp.) were  $15.63 \pm 2.93$  and  $18.27 \pm 3.70$  and the calculated t-value and p-value were 3.37 and p-value were 0.002 respectively.

The mean and SD score Item no.-III in the Motor Creativity for Control Group (pre- and post-experiment) were  $15.37 \pm 3.11$  and  $15.63 \pm 2.93$  respectively. Calculated paired t-test were 1.22 and p-value were 0.23 respectively.

The mean and SD score Item no.-III in the Motor Creativity for Control and Experiment Groups (pre- and post-experiment) were  $15.63 \pm 3.78$  and  $18.27 \pm 3.70$  respectively. Calculated paired t-test were 8.98 and p-value were  $<0.001$  respectively.



**iv. Item no.-IV:**

Mean and SD score of Item no.-IV in the Motor Creativity for Control and Experiment Groups (before exp.) were  $11.43 \pm 1.36$  and  $11.70 \pm 1.52$  respectively. The calculated t-test and p-value were 0.69 and 0.49 respectively.

The mean and SD score of Item no.-IV in Motor Creativity for Control and Experiment Groups (after exp.) were  $11.96 \pm 1.30$  and  $15.37 \pm 1.75$  respectively. Calculated paired t-test and p-value were 10.07 and  $<0.001$  respectively.

Mean and SD score Item no.-IV in the Motor Creativity for Control Group (pre- and post-exp.) were  $11.43 \pm 1.36$  and  $11.96 \pm 1.30$  respectively. Calculated paired t-test were 2.90 and p-value were 0.007 respectively.

Mean and SD score Item no.-IV in the Motor Creativity for Experiment Group (pre and post exp.) were  $11.70 \pm 1.52$  and  $15.37 \pm 1.75$  and the calculated paired t-test were 15.40 and p-value were  $<0.001$  respectively.

**v. Item no.-V:**

The mean and SD score of Item no.-V in the Motor Creativity for Control and Experiment Groups (before exp.) were  $19.03 \pm 3.35$  and  $19.27 \pm 5.67$  respectively. The calculated t-value was 0.19 and p-value was 0.85 respectively.

The mean and SD score of Item no.-V in Motor Creativity for Control and Experiment Groups (after exp.) were  $20.10 \pm 3.34$  and  $22.23 \pm 4.97$  respectively. The calculated paired t-test and p-value were 1.96 and 0.06 respectively.

The mean and SD score of Item no.-V in the Motor Creativity for Control Group (pre- and post-exp.) were  $19.03 \pm 3.35$  and  $20.10 \pm 3.34$  respectively. Calculated paired t-test were 2.45 and p-value were 0.002 respectively.

The mean and SD score Item no.-V in the Motor Creativity for Experiment Groups (pre- and post-experiment) were  $19.27 \pm 5.67$  and  $22.23 \pm 4.97$  respectively. The Calculated paired t-test were 9.72 and p-value were  $<0.001$  respectively.

**vi. Total Motor Creativity:**

Mean and SD score of Total Motor Creativity for Control and Experiment Groups (before exp.) were  $77.8 \pm 8.41$  and  $79.1 \pm 9.74$  respectively. Calculated t-value was 0.78 and p-value was 0.44 respectively.

Means and SD score of total motor creativity for Control and Experiment Groups (after exp.) were  $80.13 \pm 8.03$  and  $95.63 \pm 10.08$  and calculated t-value and p-value were 0.79 and 0.44 respectively.

Mean and SD score Total Motor Creativity for Control Group (pre and post experiment) were  $77.80 \pm 8.41$  and  $80.14 \pm 8.03$  respectively. Calculated paired t-test were 8.49 and p-value were  $<0.001$  respectively.

The mean and SD score Total Motor Creativity in the Motor Creativity for Experiment Group (pre- and post-experiment) were  $79.10 \pm 9.74$  and  $95.63 \pm 10.08$  and the calculated paired t-test were 25.72 and p-value were  $<0.001$  respectively.

### **Enjoyment and Attitude:**

The value of mean and SD for Control and Experiment Groups (before exp.) were  $54.53 \pm 5.15$  and  $53.16 \pm 8.93$  respectively and the t-value and p-value were 0.66 and 0.51 respectively. In case of attitude the said values were  $18.44 \pm 1.19$  and  $18.30 \pm 4.14$  respectively and the calculated t-test and p-value were 0.16 and 0.87 respectively.

The mean and SD score of enjoyment for control and experiment groups were  $57.40 \pm 6.956$  and  $56.133 \pm 7.152$  and the estimated t-value and p-value were 0.69 and 0.49. On the other hand, the Attitude for control and experiment group were  $17.70 \pm 2.72$  and  $18.87 \pm 1.48$  respectively. The estimated t-test and p-values were 1.21 0.24 respectively.

The mean and SD score of Enjoyment for Control Group (pre- and post-exp.) were  $54.53 \pm 5.15$  and  $57.40 \pm 6.95$  and the calculated paired t-test and p-value was 1.76 and 0.09. On the other hand the Attitude for Control Group were  $18.43 \pm 1.19$  and  $17.70 \pm 2.72$  and the calculated t-test and p-value were 1.39 and 0.17 respectively.

Mean and SD score of Enjoyment for Experiment Group (pre- and post-exp.) were  $53.20 \pm 8.93$  and  $56.13 \pm 7.15$  and the calculated paired t-test and p-value were 1.39 and 0.18 respectively. On the other side the Attitude were  $18.30 \pm 4.14$  and  $18.86 \pm 1.48$  respectively. Calculated paired t-test and p-value were 0.72 and 0.48 respectively.

### **Personality Trait:**

#### **i. Neuroticism:**

Mean and SD score of neuroticism in personality Trait for Control and Experiment Groups (before exp.) were  $2.63 \pm 21.83$  and  $6.13 \pm 22.18$  and the t-test and p-value were 0.66 and 0.51, respectively.

The mean and SD score of neuroticism in personality trait for control and experiment groups (after exp.) were  $4.00 \pm 20.38$  and  $17.47 \pm 22.45$  respectively. Calculated t-test for comparing the neuroticism between the control and experiment groups were 2.12 and p-value were 0.04 respectively.

The mean and SD score Neuroticism in Personality Trait for Control Group (pre- and post-experiment) were  $2.63 \pm 21.83$  and  $4.00 \pm 20.38$  and calculated paired t-test for were 0.31 and p-value were 0.76 respectively.

Mean and SD score Neuroticism in Personality Trait for Experiment Group (pre- and post-experiment) were  $6.13 \pm 22.18$  and  $17.47 \pm 22.45$  and the Calculated paired t-test were 1.87 and p-value were 0.07 respectively.

#### **ii. Self-Sufficiency:**

Before experiment the mean and SD of self-sufficiency in personality trait for Control and Experiment Groups (before exp.) were  $-3.20 \pm 14.48$  and  $-3.20 \pm 13.03$  and calculated t-test were 0.00 and p-value were 1.00 respectively.

After experiment the mean and SD score of self-sufficiency in personality trait for control and experiment groups were  $-11.17 \pm 14.69$  and  $-14.87 \pm 14.56$  respectively. The calculated t-value and p-value were 0.88 and 0.38 respectively.

Mean and SD score Self-Sufficiency in Personality Trait for Control Group (pre- and post-experiment) were  $-3.20 \pm 14.48$  and  $-11.17 \pm 14.69$  respectively. Calculated paired t-test were 1.97 and p-value were 0.06 respectively.

The mean and SD score Self-Sufficiency in Personality Trait for Experiment Group (pre- and post-experiment) were  $-3.20 \pm 13.03$  and  $-14.87 \pm 14.56$  respectively. The Calculated paired t-test were 3.31 and p-value were 0.002 respectively.

#### **iii. Introversion:**

Before experiment the mean and SD score of introversion in personality trait for Control and Experiment Groups were  $-0.83 \pm 12.80$  and  $3.60 \pm 12.07$  and the t-test and p-value were 1.38 and 0.18, respectively.

The mean and SD score of introversion in personality trait for control and experiment groups (after exp.) were  $-0.30 \pm 13.02$  and  $7.87 \pm 12.00$  respectively. Calculated paired t- and p-value were 1.95 and 0.06 respectively.

The mean and SD score Introversion in Personality Trait for Control Group (pre- and post-experiment) were  $-0.83 \pm 12.80$  and  $0.30 \pm 13.02$  and calculated paired t-test were 0.38 and p-value were 0.70 respectively.

The mean and SD score Introversion in Personality Trait for Experiment Group (pre and post experiment) were  $3.60 \pm 12.07$  and  $7.87 \pm 12.00$  and 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:**

The mean and SD score of dominance in personality trait for Control and Experiment Groups (before experiment) were  $10.40 \pm 12.81$  and  $5.67 \pm 14.34$  and the t-value was 0.17 and p-value was 1.41.

The means and SD score of dominance in personality trait for control and experiment groups (after exp.) were  $1.30 \pm 14.21$  and  $-6.20 \pm 13.97$  and the calculated t-value and p-value were 2.01 and 0.05 respectively.

The mean and SD score Dominance in Personality Trait for Control Group (pre- and post-experiment) were  $10.40 \pm 12.81$  and  $1.30 \pm 14.21$  respectively. The Calculated paired t-test were 2.78 and p-value were 0.009 respectively.

Mean and SD score Dominance in Personality Trait for Experiment Group (pre and post experiment) were  $5.67 \pm 14.34$  and  $-6.20 \pm 13.97$  respectively. Calculated paired t-test were 3.08 and p-value were 0.004 respectively.

### **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 indicates 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.

### **TESTING OF HYPOTHESIS:**

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

**H<sub>0</sub><sup>1</sup>:** 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<sub>1</sub><sup>2</sup>:** 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<sub>2</sub><sup>3</sup>:** 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<sub>3</sub><sup>4</sup>:** 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<sub>4</sub><sup>5</sup>:** 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.

### **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.

1. 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).
2. 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).
3. 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.
4. 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.
5. Due to recreational games, the level of enjoyment was least changed but no significant difference was found.

6. After participation in recreational games, the level of attitude was the least changed but no significant was found.
7. 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:

1. A similar study may be conducted with varied recreational games.
2. A similar study may be carried out with different age groups and sexes.
3. The present study was limited to a small number of samples, so attempts should be made to work with a large no of subjects.
4. Studies may be extended for a longer duration of the training period.
5. A similar study may also be conducted for motor fitness for school-going children.
6. To prepare training schedule of the study may be applied for further research.

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