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and computer sciences involved in sports. It also provides an International forum for the communication and evaluation of data, methods and findings in Physical education and Computer science in sports. The Indian Federation of Computer Science in Sports has been set up the objectives of Dissemination of scientific knowledge concerning computer science in sport and Physical Education. Providing a forum for the exchange of ideas among the Physical Educationists, Coaches, Sports Experts, Sports Science Professionals Etc. It is a Peer Reviewed (Refereed) International Research Journal.

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Research Article

Effects of roasted garlic with jogging on total cholesterol, LDL, and high-density lipoprotein among men

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ABSTRACT

The purpose of the study was to investigate “Effects Of Roasted Garlic with Jogging on Selected Lipid Profile Status Among Men.” Selection of Variables: The following variables were selected for this study. I. Dependent variables: 1. Total cholesterol, 2. high-density lipoprotein, and 3. low-density lipoprotein and II. independent variables: 1. Jogging and 2. roasted garlic with jogging, and III. control group. Experimental Design: The subject were selected for this study through the random group design consisting of pre- and post-test, 45 men randomly divided into three groups, the group was assigned as an experimental group S and control group. Training schedules: During the training period, the experimental groups underwent their Jogging program period of 8 weeks for all days roasted garlic with jogging. Statistical technique: Analysis of covariance statistical technique was used, to test the significant difference among the treatment groups. If the adjusted post-test results were significant, the Scheffe’s *post hoc* test was used to determine the paired mean significant difference thirumalaisamy R. (2004). Conclusion: After incorporate statistical technique, it was found that a significant decrease in total cholesterol and low density and greater increased in high-density lipoprotein in experimental group II (roasted garlic with jogging) and also found that high-density lipoprotein had significantly increase due to 8 weeks of roasted garlic with jogging practice.

ROASTED GARLIC

Many studies show that roasted garlic may lead to modest reductions in blood sugar and cholesterol. It may also have antioxidant and anti-inflammatory effects and protect against arsenic toxicity. Roasted garlic is also highly nutritious and should be beneficial for people who are lacking in essential nutrients.

HEALTH BENEFITS OF GARLIC

Garlic has the unique ability to add great taste and flavor to any dish. Along with playing the role of increasing the flavor profile of a dish, garlic also comes with numerous health benefits. It is widely used for several conditions linked to the blood system and heart, including atherosclerosis (hardening of the arteries), high cholesterol, heart attack, coronary heart disease, and hypertension.

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STATEMENT OF THE PROBLEM

The purpose of the study was to investigate “Effects of Roasted Garlic with Jogging on Selected Lipid Profile Status among Men.”

SELECTION OF VARIABLES

The following variables were selected for this study. I. Dependent variables: 1. Total cholesterol, 2. high-density lipoprotein, and 3. low-density lipoprotein, and II. independent variables: 1. Jogging and 2. roasted garlic with jogging, and III. control group.

EXPERIMENTAL DESIGN

The subject was selected for this study through the random group design consisting of pre- and post-test, 45 men randomly divided into three groups, the group was assigned as an experimental group-I (jogging), experimental group-II (roasted garlic with jogging), and control group.

Table 1: Computation of analysis of covariance of total cholesterol

Means	Exp-I	Exp-II	Con	S.V	S.S	D.F	M.S	O.F	T.F
Pre-test Mean	198.3	200.9	198.3	B	67.6	2	33.8	0.52	3.23
				W	2721.6	42	64.8		
Post-test mean	188.3	173.8	188.3	B	8448.5	2	4224.2	24.05	
				W	7376.6	42	175.6		
Adj. Mean	188.9	172.5	188.9	B	9184.8	2	4592.4	31.03	
				W	6068.6	41	148.0		

SUPPLEMENTATION

During the training period, the experimental groups underwent their training and natural intake program period of 8 weeks for all days. Statistical Technique: Analysis of covariance statistical technique was used, to test the significant difference among the treatment groups. If the adjusted post-test results were significant, the Scheffe’s *post hoc* test was used to determine the paired mean significant difference thirumalaisamy R. (2004).

COMPUTATION OF ANALYSIS OF COVARIANCE

The following tables illustrate the statistical results of effects of roasted garlic with jogging on total cholesterol among men and ordered adjusted means and the difference between the means of the groups under study [Table 1 and Figure 1].

DISCUSSIONS AND FINDINGS OF TOTAL CHOLESTEROL

This result indicated that the effect of roasted garlic with jogging had significantly reduced the total cholesterol among men, when compared with control group in terms of means. Further, findings of the study indicated that roasted garlic with jogging with had greater reduction in total cholesterol than the jogging group.

Experimental group had implementing the roasted garlic with jogging prescription which is influenced the significant reduction in total cholesterol, when compare to the control group. It is all due to the supplementing the natural products, which is influenced and converted the excess cholesterol spent as energy for stamina and so it may avoid to formation of bad cholesterol in the body [Table 2 and Figure 2].

DISCUSSION ON FINDINGS OF HIGH-DENSITY LIPOPROTEIN

From these analyses, it is found that the results obtained from the experimental groups had increase in the high-density lipoprotein level when compared with the one from the control

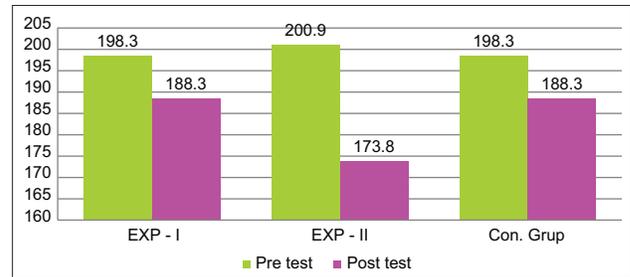


Figure 1: Final mean difference of total cholesterol

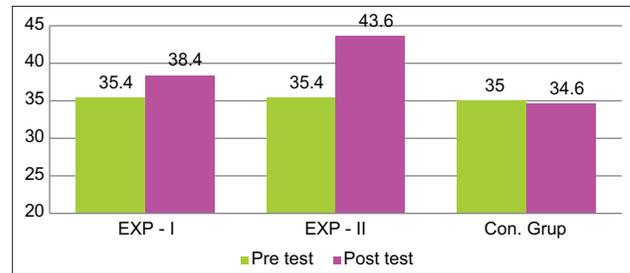


Figure 2: Final mean difference of HDL

group. This is due to the inclusion of roasted garlic with jogging in the analyses on experimental groups.

Experimental group had implemented the roasted garlic with jogging prescription which is influenced the significant increase in high-density lipoprotein, when compare to the control group. It is all due to the supplementing the natural products, which is influenced and converted the excess bad cholesterol spent as energy for stamina and it avoid to formation of cholesterol in the body and also high-density lipoprotein is transport to bring back the excess bad cholesterol to the liver and the liver is converting and utilized as energy for working muscle. Hence, automatically the bad cholesterol once reduced and good cholesterol may increase [Table 3 and Figure 3].

DISCUSSION ON FINDINGS OF LOW-DENSITY LIPOPROTEIN

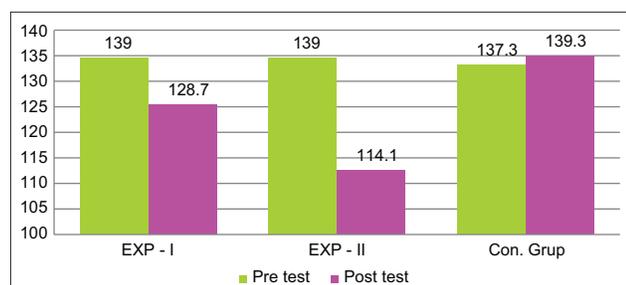
From these analyses, it is found that the results obtained from the experimental groups had significant reduction in the low-density lipoprotein level when compared with the one from

Table 2: Computation of analysis of covariance of HDL

Means	Exp-I	Exp-II	Con. Grup	S.V	S.S	D.F	M.S	O. F
Pre-test Mean	35.4	35.4	35.0	B	1.3	2	0.6	0.17
				W	170.2	42	4.0	
Post-test Mean	38.4	43.6	34.6	B	2	301.9	77.08	23.59
				W	164.5	42	3.9	
Ad. post test mean	38.3	43.5	34.7	B	585.5	2	292.7	86.85
				W	138.2	41	3.3	

Table 3: Computation of analysis of covariance of LDL

Means	EXP - I	EXP - II	Con.Group	S.V	S.S	D.F	M.S	O. F
Pre-test Mean	139	139	137.3	B	27.7	2	13.8	0.34
				W	1691.3	42	40.2	
Post-test	128.7	114.1	139.3	B	4802.8	2	2401.4	71.94
				W	1402	42	33.3	
Adj. Post test Mean	128.6	114.0	139.4	B	4808.6	2	2404.3	71.13
				W	1385.8	41	33.8	

**Figure 3:** Final mean difference of LDL

the control group. This is due to the inclusion of roasted garlic with jogging in the analyses on experimental groups.

It is interesting to note that the results obtained from experimental group II had more effect than experimental group I on the reduction of low-density lipoprotein level. This is due to the implementation of roasted garlic with jogging in experimental group II.

These results are found to be in good agreement with the earlier works done by different researchers. Coggan *et al.* (1990) have proved that the supplementations with walk causes a decreased reliance on low-density lipoprotein as an energy source during exercise performed at the same absolute intensity due to a lower rate of appearance, disappearance, and clearance. After supplementations with walk, steady state low-density lipoprotein turnover, over a period of 8 Week.

It is concluded that the bad cholesterol LDL is always block and build up waxy substances deposited in the arteries. Hence, due to this reason, we have to maintain that the normal level of LDL in the body is always good for the internal systems.

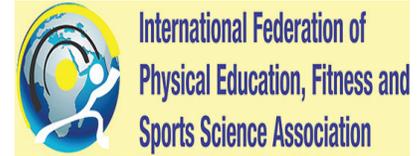
RESULTS

Within the limitations of the study, the following conclusions were drawn:

1. Experimental group II (roasted garlic with jogging) showed greater reduction on total cholesterol, low-density lipoprotein than that of experimental group I (Jogging) of training at the end of 8 weeks period of time.
2. Experimental group II (roasted garlic with jogging) showed significant improvement on high-density lipoprotein than that of experimental group I (jogging) at the end of 8 weeks period of time.

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Research Article

Effect of circuit training for development of abdominal strength among men kabaddi players of Warangal rural district

K. Bhavani

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ABSTRACT

The purpose of the present study is to find out the effect of circuit training for development of abdominal strength among men kabaddi players of Warangal rural district. The subject was chosen at random from a group of boys between the ages of 21 and 23 years old. $n = 20$ Experimental group I and $n = 20$ control group II are included in the study's sample. Sit-ups test was utilized in the study as a pre-test and post-test to determine abdominal strength in both groups. Experiment group I received circuit training on alternate days for 8 weeks, while control group II received general warm-up training. The experimental group's performance on the sit-ups improved from pre-test to post-test. It is concluded that significant effect in experimental group I, whereas the control group exhibits a reduction in their performance.

INTRODUCTION

Kabaddi is a contact team sport with origins in Tamil Nadu, India Ancient India. Played between two teams of seven players, the objective of the game is for a single player on offence, referred to as a "raider," to run into the opposing team's half of a court, touch out as many of their defenders as possible, and return to their own half of the court, all without being tackled by the defenders, and in a single breath.^[4] Points are scored for each player tagged by the raider, while the opposing team earns a point for stopping the raider. Players are taken out of the game if they are touched or tackled, but are brought back in for each point scored by their team from a tag or tackle. It is popular in the Indian subcontinent and other surrounding Asian countries. Although accounts of kabaddi appear in the histories of ancient India, the game was popularized as a competitive sport in the 20th century. It is the national sport of Bangladesh. It is the state game of the Indian states of Tamil Nadu, Andhra Pradesh, Bihar, Haryana, Karnataka, Kerala, Maharashtra, Odisha, Punjab, Telangana, and Uttar Pradesh. There are two major disciplines

of Kabaddi: "Punjabi Kabaddi," also referred to as "circle styles," comprises traditional forms of the sport that are played on a circular field outdoors, while the "standard style," played on a rectangular court indoors, is the discipline played in major professional leagues and international competitions such as the Asian Games.

Circuit training is a form of body conditioning that involves endurance training, resistance training, high-intensity aerobics, and exercises performed in a circuit, similar to high intensity interval training. It targets strength building and abdominal endurance. An exercise "circuit" is one completion of all set exercises in the program. When one circuit is completed, one begins the first exercise again for the next circuit. Conventionally, the time between exercises in circuit training is short and often with rapid movement to the next exercise.

P Punitha, Dr. A Mahboobjan (2017) study was to find out the effect of 6 weeks circuit training on physical fitness of inter collegiate women kabaddi players. A total of 30 women kabaddi players were selected from Department of Physical Education, Bharathidasan University, Tiruchirappalli, Tamil Nadu. The age of the subjects ranged from 17 to 21 years. The subjects were randomly assigned to two equal groups of 15 each and named as Group "A" experimental group and Group "B" control group. Group "A" were undergoing circuit training for 3 days/week

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for a period of 6 weeks for Group “B,” there was no specific training. All the subjects were tested on the selected physical fitness variables such as leg strength, leg explosive power, and abdominal strength endurance before and after 6 week of circuit training. The data pertaining to the physical fitness variables was statistically analyzed with analysis of covariance. In all cases, 0.05 level of confidence was fixed as a level of confidence to test the hypothesis. The finding of the study reveals that the experimental group had made a significant difference in all the selected physical fitness variables such as leg strength, leg explosive power, and abdominal strength endurance when compared to control group. Hence, it was concluded that 6 week of circuit training improved the selected physical fitness variables of inter college women kabaddi players.

Objective of the Study

The objective of the study is to find out the effect of circuit training on the development of abdominal strength among kabaddi players of rural Warangal district.

Hypothesis

It was hypothesized that there would be a significant difference in circuit training development abdominal strength among kabaddi players of rural Warangal district.

METHODS

The purpose of the present study is to find out the effect of Circuit training for development of abdominal strength among men kabaddi players of rural Warangal district. The subject was chosen at random from a group of boys between the ages of 21 and 23 years old. $n = 20$ Experimental group I and $n = 20$ control group II are included in the study's sample.

Tools

Sit-Ups

Purpose of the Test: To measure Abdominal strength

RESULTS AND DISCUSSION

The experimental group and the controlled group were given pre- and post-tests to see if there was an improvement in abdominal strength after 8 weeks of circuit training, while the controlled group received general training.

The analysis of the data reveals that the subjects with the circuit training have shown improvement in the performance of sit-ups test from pre- to post-test mean S. D experimental group pre-test result shown (32.8000) and controlled group (32.8500) after 8 weeks of specific of circuit training, there is improvement in the subject's experimental group (34.4000), circuit training, and controlled group (32.7250).

<i>t</i> -test					
Paired Samples Statistics					
Sit Ups Wrestlers' players		Mean	<i>n</i>	Std. Deviation	Std. Error Mean
Control Group	Pre-test	32.8500	20	0.63037	0.14096
	Post-test	32.7250	20	0.80255	0.17945
Experimental Group	Pre-test	32.8000	20	0.65695	0.14690
	Post-test	34.4000	20	0.50262	0.11239

CONCLUSIONS

It was concluded that after the 8 weeks of circuit training, there is improvement in experiment group, as it was analyzed in the results mention that the circuit training has shown excellent effect in the improvement abdominal strength. The aim of formulating the effect of circuit training to the betterment and enhance their performance as well as a guideline for kabaddi players coaches at various level in preparing and designing quality and effective training program.

RECOMMENDATIONS

The following suggestions are made for the benefit of players, coach's academicians, and sports scientists. The researcher suggests the part of the coach to use the above-said development of the circuit training program for kabaddi players. The study helps the physical educationist and coaches for selecting the athletes.

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Review Article

Various psychological factors affecting physical and sports performance

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ABSTRACT

Sports psychology helps professional and amateur athletes to solve their problems, improve their performance, and achieve goals. Sports psychology can even help people off the field. Sports psychology, which is essential for success in most sports, can help all athletes improve their performance, cope with stress, recover from injuries, continue their fitness program, and enjoy sports. This concept considers the common psychological factors that influenced sports performance and sport.

Keywords: Physical education, Psychological factors, Psychology, Sports psychology, Sports

INTRODUCTION

The word psychology refers to the study of human behavior, and sports psychology means a subclass of psychology that deals with the behavior of athletes and teams involved in competitive sports. Sports psychology is a branch of psychology that is closely related to human behavior on the field, in practice, and in competitive situations. Sports psychology is a multidisciplinary science that collects information from a number of related fields, such as biomechanics, physiology, kinesiology, and psychology. It includes research on how psychological factors affect performance and how participation in sports and fitness affects psychological and physical factors.^[1] In addition to improving and enhancing psychological skills, applied sports psychology may include working with athletes, coaches, and parents on injuries, rehabilitation, communication, team building, and career transition. Sports psychology primarily studies the influence of the mind on physical activity and sports performance. According to the American Psychological Association, "sports psychology deals with the interaction between psychology and sports performance, including the psychological aspects of optimal sports performance, the psychological care and well-being of athletes, sports coaches and organizations, and the physical and mental performance of athletes." Students^[2]

their motor skills, to cope with the pressures of competition, to adjust to the awareness needed for optimal performance, and to stay focused. Psychological training should be an integral part of the entire athlete training process, which is conducted in conjunction with other parts of the training. This is best achieved with coaches, sports psychologists, and athletes; however, a trained and interested trainer can learn basic psychological skills and pass them on to athletes, especially during training itself. Educational sports psychologists teach their clients to increase the effectiveness of using psychological techniques such as goal setting, energy management, relaxation skills, talking about themselves, and positive images. They usually have racism training and are certified through organizations such as Society for Applied Sports Psychology.^[3]

PSYCHOLOGICAL FACTORS AFFECTING PHYSICAL PERFORMANCE

The success of a sport no longer depends on the physiological state of the athlete. It is now clear that physical performance is influenced and improved by many psychological factors. These are important psychological factors that affect physical and athletic performance:

Personality

In the dictionary, personality refers to the nature or space of a person, but there are many early definitions of personality,

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such as “personality is the entire spiritual organization of a person at each stage of development. It includes all phases of human nature: intelligence, attitude, skills, morality and all the relationships it has created in an individual’s life.”^[4] The concept of personality is dynamic because the self is dynamic – it always works, cooperates, adapts, harmonizes, and connects. This fact is very important for understanding personality development. The human personality is a very complex structure, finely woven of motives, emotions, customs, and ideas in a pattern that balances the needs and attractiveness of the outside world.^[5] Since 1960, several extensive literature reviews have been conducted to clarify the relationship between personality and sports performance.^[6,7] However, it is good to remember that the relationship between sports performance and personality is not very clear, and it is also true that certain general conclusions can be drawn. Athletes differ from non-athletes in several ways.^[8] One study found that those athletes who played team and individual sports were more independent, objective, and less caring than non-athletes. Other studies have also shown that athletes are often smarter than average.^[10] In addition, Cooper described an athlete in his study as a person who is safer, more competitive, and socially distant from non-athletes.^[11] In general, athletes differ from non-athletes in many personality traits. For example, it may be shown that athletes tend to be more independent, more objective, and taller than non-athletes, but care less.

The sports pyramid, as shown in Figure 1, shows that athletes are more similar in traits and psychological traits. At the basic or early level of sport, athletes are very different or have different personalities. When we try to differentiate athletes with different skill levels in the middle and at the bottom of the pyramid, we will fail, but if we choose a higher level of the pyramid, the athletes will be homogeneous in their personality traits. We can confirm that there are differences in the personality of athletes in different sports.^[12] Perhaps the most obvious difference is between team sports athletes

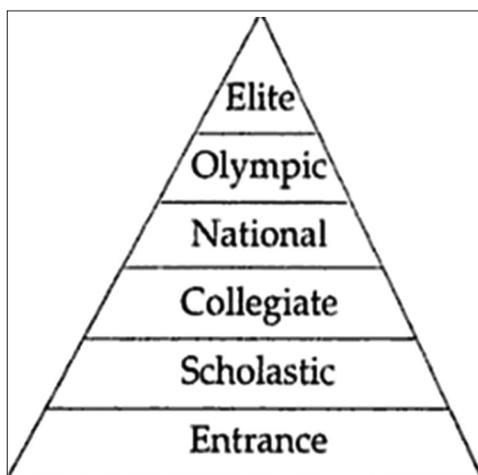


Figure 1: The personality performance athletic pyramid

and individual athletes. For example, team athletes are stretched, dependent, and more anxious than individual athletes. However, some differences in personality traits can be expected between footballers and tennis players.^[13] In many cases, it is possible to distinguish athletes who play different roles in the same team using personality traits. This is especially true of sports, where athletes have to do very different things. Basketball tips, volleyball instructors, and football or hockey goalie tips are believed to show personality traits that differ from some other professionals.^[14,15] After studying the extensive literature on female athletes and personalities and the expected differences between female and male athletes, it was carefully determined that there are differences in the personality profiles of normative and successful female athletes. In particular, athletes have personality traits similar to men and normative athletes, such as self-confidence, achievement orientation, dominance, independence, independence, aggression, intelligence, and self-control mass. In comparison with available norms, female body builders were observed to be more extraverted, more vigorous, less anxious, less neurotic, less depressed, less angry, and less confused.^[17] We can conclude that personality differences are inevitable, as two individuals cannot possess similar personality traits. Personality traits are basic to sports excellence. It is necessary to identify and cultivate those personality traits which are most conducive to the performance in sports. Hence, personality is an important psychological factor which, to a great extent determines the result of any athletic output.^[18]

Learning

It is impossible to explain behavior without reference to learning, it is a process that comprehensively includes all the interactions, experiences, and changes that a person goes through in their life and that they more or less affect. If learning is removed from human life, people will be powerless. Moreover, social behavior will not have common traits such as intolerance, anger, love, shame, envy, jealousy, and empathy, because they are all learned. There are many psychological definitions of learning. It is a process that combines cognitive, emotional, and environmental influences and experiences to acquire, strengthen, or change knowledge, skills, values, and world perspectives.^[20,21] Educational psychologists have identified a number of learning principles, also called learning laws that appear to be generally related to the learning process. These principles have been acquired, tested, and applied in practical cases. They provide more information on what motivates people to learn most effectively. Edward Thorndike developed the first three “laws of learning”: Readiness, agility, and efficiency. Since Thorndike enacted his three constitutions in the early 20th century, five additional principles have been added: Priority, modernity, economics, freedom, and demand. The first three laws and their relationship to physical activity, as described below:

Law of Readiness

Due to readiness or readiness, a person learns faster and more efficiently than usual. If a person is unwilling to do anything, he is forced to take action. When a child is ready to learn, he learns more readily and efficiently than usual. If a person is unwilling to do anything, he is forced to take action. When a child is ready to learn, he learns more willingly and effectively than anywhere else. Therefore, vigilance is one of the most important laws of learning. An individual must be physically, mentally, and emotionally mature and read to learn if he wants to truly learn. Interest is the driving force behind any learning. Therefore, every effort should be made to encourage children to engage in educational activities. Physical education teachers must arouse the interest of students to be willing to take action and do their best. The principle of practice is based on this law.^[22]

Law of Exercise

This law strongly suggests that practice makes a man perfect. With repeated repetition, the reaction becomes automatic. This law is similar to the law of use and non-use. It includes the principles of fitness and repetition or fitness or exercise. Using it we learn and appreciate, and if we do not use it we forget. Individuals learn through work. Aerobics, shooting, writing, etc., there are vivid examples of this law. Emphasizing the application of this law to physical education and sports, Charles A. Bucher said: "The law on physical education means that fitness allows for better coordination, more rhythmic movement, and lower costs. Energy, more skills and better performance".^[23]

Law of Effect

According to Thorndike,^[24] satisfaction enhances learning to a great extent. This law is also known as law of satisfaction. By effect, is meant the effective result of any activity. Activities which are accompanied by a feeling of pleasure or satisfaction are more readily and easily learned than activities which are unpleasant. The speed of learning depends on satisfaction. Children like pleasurable experience and dislike unpleasant ones. For example, play is pleasurable activity, and therefore, children engaged in it even without formal motivation and will tend to avoid those activities which are not of their choice and liking. Physical education teacher should make every attempt to provide activities that produce a feeling of gratification and satisfaction.

All the above laws, when applied to learning skills in physical education, state that the student must either be ready or must be motivated to be ready, and the act must be repeated time and again before one can become proficient. This process proceeds much more rapidly if the student experiences satisfaction, and this feeling of satisfaction can be experienced only when some success has been achieved.

INTELLIGENCE

Intelligence is aggregate mental capacity or energy of an individual to act purposefully, to think rationally, and to deal effectively with one's environment. Defining intelligence in concrete terms has all through been a challenge with psychologists, philosophers, and educationist over centuries probably, because the list of functions, operations, and activities attached to it is so exhaustive. Individuals differ from one to another in their ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, and to engage in various forms of reasoning.^[25] There are a lot of definitions of intelligence, one of them comes from Mainstream Science on Intelligence, which was signed by 52 intelligence researchers in 1994. Intelligence is a very general mental capability that, among other things, involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly, and learn from experience. The relationship between physical activity and intelligence has often been a matter of serious debate among sports psychologists. The nature of this relationship, however, often depends on how close the physical and the intellectual elements are embedded in an activity. On this issue, Digiovanna (1937) said that intelligence is exercised in the analysis of skilled movement, the more complex and the more interpretative the movement, and the greater amount of intelligence necessary to comprehend it. Intelligence in athletics also exercised in the strategy in various games. Given a series of athletic tasks, administered under the same conditions and with all other factors influencing athletic achievement to two individuals, identical in physique but differing in intellect, it is reasonable to believe that the more intellectual will prove superior. The assumption now is that intelligence plays apart in athletic achievement.^[26] Intelligence of an individual plays an important role in effecting physical performance. The more complex and the more interpretative the movement, the greater the amount of intelligence necessary to comprehend. Sports activities involve complex skilled actions. Since all skilled behavior is intelligent behavior, so the relationship between sports performance and intelligence cannot be denied.

ATTENTION AND CONCENTRATION

Everyone in life responds with concern. People, goods, supplies, and money. Attention focuses on focusing consciousness on one object rather than another. It is the process of clearly putting an object or idea in front of your mind. It helps bring alertness and mental readiness to keep a person awake and alive and try to use their mental and physical strength as effectively as possible. The best definition comes from James (1890). He said that attention in a clear and vivid form draws attention to things or through ideas that are visible at the same time. This means withdrawing from something to deal effectively with

another person.^[27] The success of exercise and exercise largely depends on attention, because all psychosomatic processes such as perception, cognition, motor memory, intelligence, and so on, closely connected. Therefore, boys and girls in school are very careful during classroom practice so as not to miss important clues that will determine the performance of an important skill or type of skill. Similarly, athletes must acquire the ability to withstand interference during training and competition and develop one-way concentration, a state in which all physical and mental energy are brought to the point of ignition.^[28] Sports coaches and exercise teachers need to be aware of individual differences in the development of selective monitoring mechanisms that are essential for storing and retrieving information related to different tasks. To this end, estimating the duration of attention can be very useful. The direction of a directive refers to the degree to which environmental stimuli are externally or internally focused on cognition and emotion. Together, these dimensions make it possible to place the attention requirements of different tasks in one of four possibilities [Figure 2]. Quality attention to skills during sports competition is important for achieving effective performance. Different cognitive strategies and intensive skill acquisition can improve the ability to focus on a task and result in better performance. There are several factors that interfere with and reduce attention and concentration and that interfere with performance.^[29]

MOTIVATION

Sporting success as motivation. In psychology, motivation means the beginning, direction, intensity, and persistence of behavior. Motivation is the basis of every sports endeavor and achievement. Without increasing your desire and determination for sports performance, all other mental factors, self-confidence, intensity, concentration, and emotions are irrelevant. To be the best athlete, you need to be motivated

to do your best to improve your abilities and achieve your goals. Simply put, motivation is defined as the ability to run a task and persevere. If you want to do your best, you need to start developing as an athlete and be willing to continue your efforts until you achieve your goals. Motivation in sports is very important because you have to be willing to work hard, such as thirst for fatigue, boredom, pain, and others. Motivation affects everything that affects your athletic performance: Physical fitness, technical-tactical training, mental preparation, and general lifestyle, including sleep, diet, school or work, and interpersonal relationships. There are two main types of motivation: Internal and external motivation. External motivation focuses on external rewards and reinforcement. External motivation can come from social sources, such as attempts to disappoint parents, or relevant rewards such as rewards and scholarships. Exclusively motivated athletes usually focus on performance or competitive performance. Excessive emphasis on external stimuli can make athletes feel that their behavior is driven by external rewards. On the other hand, athletes can still feel control over their behavior, even if there are external rewards. Internal motivation focuses on internal rewards and empowerment. Internally motivated athletes participate in sports for inherent reasons, primarily for pure pleasure and satisfaction, while internally motivated athletes are focused on improving ability and growth. One of the most important theories of motivation in the theory of needs. Maslow described this section in his pyramid of hierarchical needs [Figure 3].^[31] The lowest level of the pyramid is the basic requirements, while the more complex requirements are at the top of the pyramid. As people move along the pyramid, the needs become more and more psychological and social. Maslow stressed the importance of self-realization,^[32] which is the process of human growth and development to achieve individual potential.

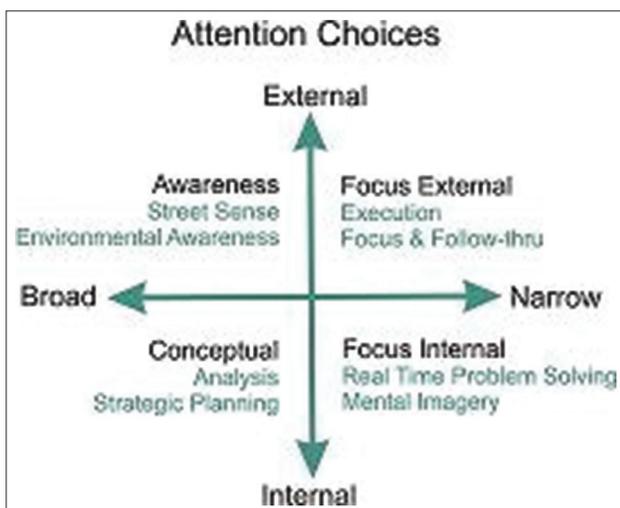


Figure 2: Dimensions of attention^[30]

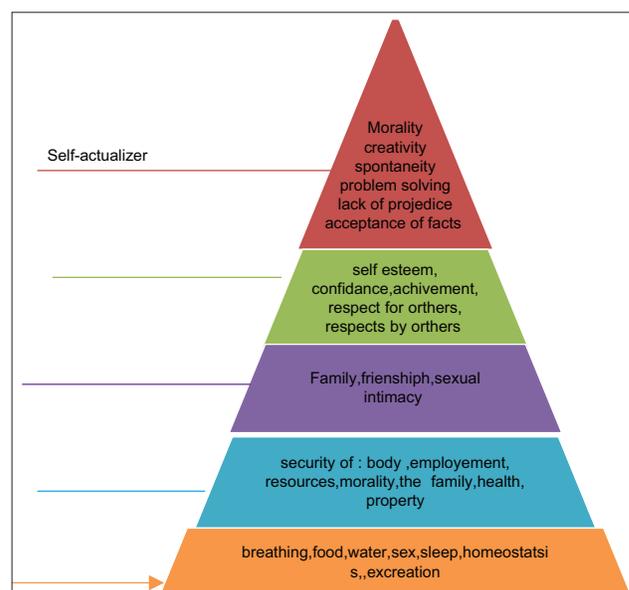


Figure 3: Maslow's Hierarchical pyramid of needs

We can conclude that motivation is a force, a drive which prompts, compels, and energizes and individual to act or behave in a particular manner, at a particular time, for attaining the specific goal or purpose. Motivation is basic to overcome the hurdles which otherwise could have influenced the performance negatively. Without proper attention, Keen interest, setting of right attitude, and the resulting optimum level of motivation, many top class athletes have failed to accomplish their task. It is thus necessary to find out ways and means of motivation athletes for better physical performance.^[33]

EMOTIONS

Emotions are our feelings. Literally, we feel them in our bodies as tingles, hot spots, and muscular tension. Emotions are biologically based adaptations that assist us in responding to particular external stimuli. We win a soccer match, we jump with joy, we lose a dear one, we feel sad, we see a beggar, we laughter, etc. Almost every case expresses emotion, and when a situation escalates, it expresses itself as emotion. There is no part of our spiritual life that is more important to the quality and purpose of our life than emotions, because emotions reveal our true feelings. According to Young's definition, emotion is a state or process that originates from a psychological state and manifests itself through significant bodily changes in the glands and smooth muscles. Emotions lie at the top of the first sports pyramid, the main sports pyramids are intentionally and logically structured. The order is based on the order of factors affecting sports performance^[34] [Figure 4]. Emotions are reactions characterized by the creation of energy in the body and soul. They give energy to face challenges. Class plays a key role in sports performance. Without the emotional turmoil of athletes, "waking up" is incomplete. Every achievement achieved always leads to an increase in sporting achievements. Emotions have a calming and exhausting effect on sports performance. In general, positive emotions, such as joy, happiness, and enthusiasm, subside. Effects on performance



Figure 4: Prime sport pyramid^[37]

and negative emotions such as anger, fear, anxiety, and over-motivation. They interfere with our behavior. The study of this issue is full of contradictions and is not final. However, several studies have shown that optimal emotions can motivate and sustain the work required for the task.^[35] This means, for example, that the athlete's anxiety levels are best before and during competition, as well as his ability to cut. Optimal emotions keep the athlete energized as a result, of which his or her level of motivation level remains high. High arousal, due either to anxiety or aggression in sports such as soccer, hockey, and basketball, may result in an increase of anaerobic power, but it possibly may reduce the level of accuracy and movement precision as emotional arousal is said to blur its vision and imping on concentration. Several studies indicate that high arousal coupled with some emotions impairs working memory.^[36] It also reduces cognitive resources available for the task or activity in hand. Emotions can have significant consequences in the sporting world.

Emotions have either positive or negative effects that can be seen when examining the role of emotions on motivational functioning, cognitive functioning, health, interpersonal functioning, and performance.^[38] Future research should examine individual differences in the consequences of certain emotions as well as how to predict performance. In summary, emotions and sport significantly impact on one another. Certain sporting situations can lead to the development of emotions and these emotions can have significant impacts on sporting aspects. Understanding these factors will aid in the prediction of emotions and the inter- and intra-personal consequences of these emotions.

INDIVIDUAL DIFFERENCES

Nature does not make two people exactly the same, or even in turn. People differ in height, weight, color, appearance, reaction speed, character, personality, behavior, and the like. It is clear that people are different. It is less clear how and why they differ and how the differences between them affect their behavior, ability to learn different skills, and career choices in life. The issue of individual differences is usually considered in the context of individual differences in psychology or differential psychology. Psychology studies people on three levels^[39] who like them in a certain way (a) like everyone else, (b) like everyone else, and (c) like everyone else. The two are not the same, but they are no different. Therefore, by studying individual differences, we seek to understand how psychologically similar people are and, above all, what psychological traits different people have. Congenital differences in humans are usually reflected in specific variables such as gender, age, ethnicity, physique, physiological functions, and psychological composition. Surface differences are mainly caused by environmental factors and occur in social status, economic status, living standards,

education, knowledge, achievements, etc. In an educational setting, understanding individual differences in curriculum design, content design, and curriculum helps students and teachers alike. The situation with physical activity is different from education.^[40] In training and sports, individual differences are an important principle of training, emphasizing that the best benefits are achieved by designing training programs that meet the special needs of individual athletes. This principle is applied in practice. Ideally, each exercise should have an individual fitness program. This will ensure that the exercises are tailored to individual needs and reduce the risk of excessive jumping and injury. In the end, we can say that every athlete is unique in itself. In addition to physiological differences such as height and weight, they are also associated with psychological differences. Some athletes may be open and tense, but other athletes may be shy, introverted, and withdrawn, and differ in their level of perception. Some athletes are born psychologically, while others are weak by nature. Weak athletes can't do the job. Individual differences in athletic achievement are therefore an inevitable phenomenon, and a teacher or coach must change their approach to the nature of each athlete.^[41]

AGGRESSION

Both animals and human beings have biologically inherited aggression as an emotional expression. While aggression in animals has limited biological motive, aggression in man has psychological and social orientation with chief motive being possession (acquisition of wealth, property, territory, etc.), expansion (making the self, community, and society grow in dimensions), and domination (showing oneself as stronger, more important, and more effective than others). To achieve for this purpose, it does not interfere with physical or mental damage. According to the Baron (1977): Attacks are all forms of behavior aimed at hurting or endangering the lives of others and are motivated to avoid such behavior. During an attack, the attack intentionally begins to hurt the other person. Hence, the deliberate and deliberate attack. The aggression has become part of the sport. Russell suggested that non-war sport may be the only environment, in which aggression among people is accepted and that they are enthusiastically praised by large sections of society. Aggressive behavior can be classified according to the main reinforcement of the action. Leonard and Cratty identified types of aggression in sport, namely, (1) Hostile, reactive, or revenge and instrumental attacks, or non-emotional and task-oriented.^[43,44] If we talk about the sources of sports aggression, according to Terry and Jackson, the intensification of violent acts may be due to (1) the direct coaching of athletes, teammates, family, and friends; (2) the structure of the game and the application of the rules of officials and administrative bodies; and (3) the views of fans, the media, the courts and society.^[45] Dollard decided to come up with a new theory to try to explain the causes of aggression. Hence, the hypothesis of frustration and aggression. This includes the main

factors of aggression that has been described as characteristic of this case. Dollard agrees that we still have an innate instinct for aggression, so this aggressive behavior will be frustrating. This generally means that aggression leads to frustration.^[46] Berkowitz further develop this argument and suggest that anger is not a direct consequence of an attack, but anger (emotion). If the frustration is unexpected or unfair, it angers him, which can trigger an attack to alleviate the frustration. If we can release the attack, we are cathartic. This is also a phase known as "rejection," where all anger and frustration are released [Figure 5]. We can conclude that aggression is part of human behavior and that it is necessary to survive and strive for higher achievements. The struggle for supremacy, supremacy, and excellence in sport obviously involves aggression. Attacks in one form or another are inevitable and unavoidable in sports activities. When hostility prevails, the situation becomes anxious and becomes antisocial behavior. Aggression can help athletes invest more in team success. Athletes need help to reduce and control their aggression to play calmly and do their best. A precise attack allowed by the rules of the game usually increases skills and improves performance; on the contrary, it is more difficult to perform lower or lower attacks and delay sports performance.

STRESS AND ANXIETY

In psychology, tension and stress depend on stress. Small amounts of stress can be desirable, beneficial, and even healthy. Positive stress helps improve athletic performance. It also has stimulating, adaptable, and sensitive factors to the environment. However, excessive stress can cause injuries. Stress can increase the risk of stroke, heart attack, ulcers, dwarfism, and mental illness such as depression. Stress can be external and environmental,^[50] but it can also be caused by internal feelings caused by individual anxiety or other negative feelings related to the situation, such as pressure and discomfort. Not every stress is bad for your performance. Stress can affect your performance in two different ways. Many factors can cause stress in athletes. This is described in two ways, the stress model and the stress response process [Figure 6]. The stress model shows the factors that contribute to stress in sports. Stress can affect performance in exactly the same way an athlete respond to stress, it can affect it,

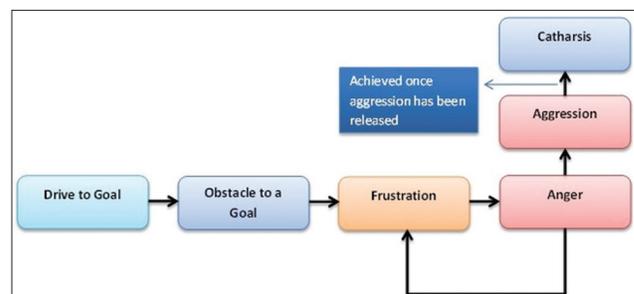


Figure 5: The frustration aggression

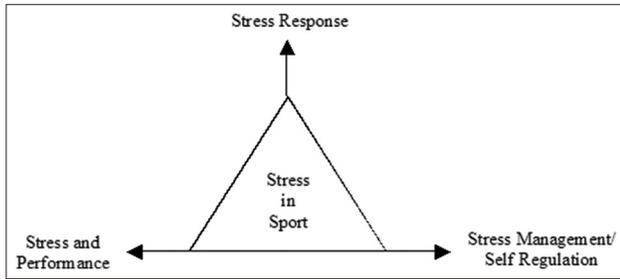


Figure 6: Stress Model, Graham-Jones and Hardy (1990)^[52]

and stress management can negatively or positively affect an athlete's stress level.^[51] Hence, stress can help you become more alert, more motivated to exercise, and gain a competitive advantage. The right amount of stress will help you prepare, focus, and function at an optimal level. On the other hand, excessive stress or bad stress can cause anxiety at work, which is detrimental to your health and does not allow you to play calmly, confidently, and focused on the competition. Every competitive athlete experiences a certain amount of stress; good and bad. Your stress can be both positive and helpful or cause anxiety and fear. If shaken before a match, some athletes may not be able to sleep well the night before the competition. Some athletes cannot eat in the morning before a big game. Due to vibrations before the race, you may feel the need to vomit. Stress is often associated with physical symptoms. One of the most common physical symptoms of stress is increased muscle tension, which can impair motor functions, such as momentum. A few things can help an athlete cope with stress. You have to eat first and sleep well, especially before a game or match. He should also learn and practice relaxation techniques, such as deep breathing, muscle relaxation, visualization, and positive self-talk. In addition, an athlete should engage in some type of physical activity other than the sport that he is currently involved in. Finally, an athlete should not expect to be perfect without mistakes. Every athlete makes mistakes from time to time.

Anxiety is a unique, everyday experience that everyone experiences from time to time. It is an emotional state that manifests as a feeling of fear, and horror or horror. Healthcare professionals sometimes define anxiety as a feeling or effect depending on whether it is explained by a person (emotion) or an outside observer (effect). The word emotion is commonly used to describe the biomechanical and perceptual changes that underlie human inner anxiety. Affect is used to describe a person's emotional state from the point of view of the observer. Anxiety is an abstract term that is so difficult to describe concretely due to its many causes and seriousness. In his definition, Johnson states that anxiety is a disorder of the body.^[53] Pikunas also notes that anxiety is an unrealistic and uncomfortable state of mind and body.^[54] Anxiety can be identified on three levels (1) cognitive – through certain

thought processes, (2) somatic – through bodily reactions, and (3) behavior – according to patterns of behavior.^[55] Athletic anxiety is a simple state of mind and body characterized by discomfort, fear, or anxiety. This is usually a conditional response to a stimulus. The direct impact of anxiety on athletic performance depends on how the athlete interprets his or her life. Unfortunately, far too many athletes accept high levels of anxiety as an inevitable part of the total sporting experience and fail to reach their potential. Its dynamic in different sports and different competition situation is of great interest to the athlete and their trainers. Sports places a wide variety of stressors on participants; it can be physically exhausting, it pitches you against superior opponents, and hostile fans might verbally abuse you. These elements may need to be overcome and your emotional frailties are constantly laid bare for all to see. When the demands of training or competition exceed one's perceived ability, anxiety is the inevitable outcome. Sports differ from one another in skill structure, play dynamics, competition procedure, and the need for physical and psychological training. Therefore, not all sports generate the same kind and the same amount of anxiety in sports persons. Traditional coaches and trainers may try to help the athlete understand why negative or anxiety-producing thoughts and feelings develop and then try to change or modify that process with limited amounts of success. Research reports on the role of anxiety in exercise and sport, and the relationship between anxiety and athletic performance has been conflicting, and often confusing, chiefly due to inconsistent terminology used and lack of agreement among the scientists over the very meaning and concept of anxiety.^[56] Finally, we can say that anxiety is one of many emotions that may arise in response to a competitive situation. An emotion is associated with a physiological change, a subjective experience, and an action tendency. As we can see anxiety includes state and trait dimensions both of which can show themselves as cognitive and somatic symptoms. An athlete with high anxiety trait (A – trait) is likely to be more anxious in stressful situations. To help the athlete control competitive anxiety, somatic techniques (relaxation) and cognitive techniques (mental imagery) can be used.

GROUP DYNAMICS

Group dynamics is a system of behavior and a psychological process that takes place within a social group (intragroup dynamics) or between social groups (intergroup dynamics). Research into group dynamics can be useful for understanding decision-making behavior, monitoring the spread of disease in the community, developing effective treatment methods, and monitoring the emergence and popularity of new ideas and technologies.^[57] The presence of other people influences human behavior. For example, studies have shown that individuals work faster and faster when others are present,

and one's performance deteriorates when others are distracted or inconsistent in the situation.^[58] Groups also influence a person's decision-making process. These include decision making, persuasion, submission, and group thinking. Group influence has both positive and negative effects on a person's behavior. This type of effect is often useful in the context of group work and sports environment. However, the influence of groups on individuals can lead to very negative behavior.^[59] The first factor in group dynamics is the development phase of the group, which is divided into four categories, namely, design, storm, standardization, and implementation. Team integration is another factor that can affect team dynamics, and a big factor is if a team can't do that, it can have a big impact on their performance. Intragroup dynamics is also an important factor in building group integration. Group integration is defined as "a measure in which a group participates in society or performs tasks socially." Group dynamics describes processes within groups and among group members. It can also be described as the energy that the group shows. Successful groups have a "chemistry" with dynamics. This is difficult to determine – it depends on the individual, but can lead to group leadership and integration. Clear goals and nurturing personality improve group dynamics. Leaders seek to identify individuals within a group who have similar characteristics and social roles, and the same group ethos is often created in the image of the leader.^[60] A sports team is made up of different athletes of different orientations and attitudes, and sometimes these differences can affect a team's performance. Better results are achieved when all staff members combine their personal feelings and abilities with teamwork. The success of a team depends on adjustment, that is, how much the team works and how they feel together. Psychological relationships among team members greatly affect performance results. Thus, team dynamics and performance interact and also affect the stability of the team working with the team. It has generally been found that better group integration yields better results.^[61]

MENTAL IMAGERY

The senses can define an image to create or create in the mind a visual experience or an image that sometimes seems just as real as one that can be seen with the physical eye. An extension of this short definition explains that images can be created in the mind without external stimuli, and images can contain one or more physical senses, and images are created in sensors, working memory, or long-term memory. The mental health literature is very instructive given the general use of images in sports. Among other things, the literature on mental practice shows that drawing is an effective cognitive process to improve learning and motor skills. Intelligent training is an important adaptation for learning almost all sports skills.^[63] The literature suggests that an athlete should spend time in their

mind practicing skills that are not physical exercises. Mental training can be reported before the training itself or when physical exercise is not possible (e.g., during travel, in the locker room, at rest). Mental health research has revealed a number of principles that increase the effectiveness of mental training.^[64] Mental abilities and images help athletes strengthen their emotional state and path to physical impact. Thanks to such mental activity, an athlete can improve the performance and accuracy of a particular skill or task by thinking and imagination. The perception of critical competitive situations is needed to increase the will to compete so that athletes can organize. Mental training in competitive situations will certainly help to improve the emotional state and physical performance of athletes. It also helps in the smooth flow of energy when needed.^[65]

CONCLUSION

There is no sport without physical education at the gross root level. The physical educator and the athletic coach face the same problems of human behavior and grapple with them almost in a similar fashion. The application of psychological concepts to understanding and conditioning behavior in activity and sport is more a matter of degree than of kind. Psychology in physical education perspective focuses on general process and procedures of learning, motivation, play, growth, development, etc., in sport perspective, its concerns become more intense and specific in consideration of the type of sport. Psychological training, coping strategies, interventions, mental skills, etc., have greater relevance in competitive sport than activity and recreational sport. In general, speaking, psychology in physical education addresses such important areas as personality, learning, intelligence, attention and concentration, motivation, emotions, individual differences, aggression, stress and anxiety, group dynamics and mental imagery with the objective to understand the real springs of activity behavior, guide behavior into realizing one's potential through activity programs, and to optimize benefits of physical activity in terms of growth and development. Hence, it is very important to all coaches, physical education teachers, and any sports trainer to be aware about all the above general psychological concepts.

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Research Article

Criterion physical fitness components relation with ball badminton player's performance

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ABSTRACT

The purpose of this study was criterion performance physical fitness components relation with ball badminton performance. The 150 male ball badminton players were selected inter-university representation in the academic year of 2016–2017, 2017–2018, 2018–2019, and 2019–2020 in Andhra Pradesh State on non-randomly by purposive sample which was used. Karl Pearson coefficient of correlation was used to analysis of the collected data on criterion performance physical fitness components were simple reaction ability (0.528*), aerobic endurance (0.423*), muscular endurance (0.291*), agility (0.328*), orientation ability (0.515*), dynamic balance (0.333*), and dynamic flexibility (0.369*) coefficient of correlation with ball badminton performance which had been positively with significant level 0.05. Remaining performance physical fitness components did not correlate on this current study.

Keywords: Ball badminton players, Performance, Physical fitness components

INTRODUCTION

Ball badminton originated in Tanjore in Tamil Nadu. It became popular, commanding the interest of the Maharaja of Tanjore. The game attracted many players from southern India and is about as well-known as cricket in that part of the country. Previously, ball badminton was an attractive game for rural boys since it required a minimum of equipment. The game drew a large number of students from South India, resulting in the formation of the Ball Badminton Federation of India in 1954. Ball badminton eventually spread to Andhra Pradesh, and the first national championship was conducted at Hyderabad in 1956. It was later introduced at the Junior and Sub-Junior levels.

Ball badminton is an indigenous sport of India. It is a racquet game played with a woolen ball on a court of fixed dimensions by two teams of five players's each. This also played by two players called Doubles and by only one player each side called singles. This game was played as early as 1856 by the royal

family in Tanjore, Capital of Thanjavur district in Tamil Nadu, India. The game is widely prevalent in India and will strike someone new to it as a mixture between volleyball, badminton, and tennis. The game attained popularity in the river basins of Cauvery, Krishna, and Godavari. It is an exceedingly fast game demanding skill, quick perception, correct judgment, agility of movement, and capacity to control the ball with proper movement of wrist. Fitness is the ability to meet the demands of a physical task. Basic fitness can be classified in four main components: Strength, speed, stamina, and flexibility. However, exercise scientists have identified nine components that comprise the definition of fitness: Strength, power, agility, balance, flexibility, local muscle endurance, strength endurance, and co-ordination. All the nine elements of fitness cardiac respiratory qualities are the most important to develop as they enhance all the other components of the conditioning equation. Boxing is combative of applied athletics and it requires well proportionate physique and great amount of physical fitness level. Training components generally classified two categories, one is health related physical fitness components and skill-related training components, in which both were so much useful for making healthful wellbeing and develop of specific game/sport fitness bodies players, but specific or performance training components may would be

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Table 1: Performance physical fitness components

S. No	Performance physical fitness components	Test
1	Complex reaction ability	Nelson reaction test
2*	Simple reaction ability	Nelson reaction test
3*	Aerobic endurance	1Mile run test
4	Speed endurance	300 M run
5*	Muscular endurance	Push-ups
6*	Agility	Shuttle run
7*	Orientation ability	Baseball throw
8	Explosive strength	Standing broad jump
9*	Dynamic balance	Balance test
10*	Dynamic flexibility	Flexibility test
11	Anaerobic endurance	Margaria-Kalamen test
13	Endurance	600 Yard run
14	Static flexibility	Sit and reach test
15	Maximum Strength	1rm Test

Table 2: Criterion performance physical fitness components association with ball badminton performance

S. No	Performance Physical Fitness Components	Coefficient of Correlation “r”
1	Complex Reaction Ability	0.187
2	Simple Reaction ability	0.528*
3	Aerobic endurance	0.423*
4	Speed endurance	0.231
5	Muscular endurance	0.291*
6	Agility	0.328*
7	Orientation ability	0.515*
8	Explosive strength	0.199
9	Dynamic balance	0.333*
10	Dynamic flexibility	0.369*
11	Anaerobic endurance	0.219
13	Endurance	0.197
14	Static flexibility	0.213
15	Maximum strength	0.193

n=150, r. 05 (150)=0.238, *Significant at 0.05 level

developed good conditioning of fitness body and to perform top performance in a specific competition.

METHODOLOGY

Purpose of the Study

This study would be decided the criterion performance physical fitness components relation with ball badminton performance.

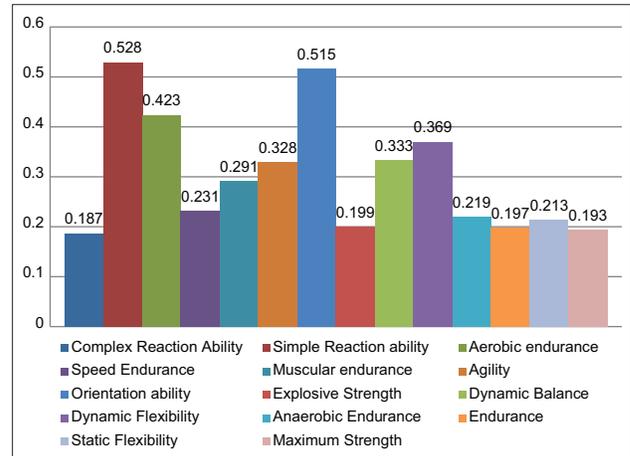


Figure 1: Criterion performance physical fitness components relation with ball badminton performance

Selection of the Subjects

One hundred and fifty male ball badminton players were selected who had been inter-university representation in the academic year of 2016–2017, 2017–2018, 2018–2019, and 2019–2020 in Andhra Pradesh State on non-randomly by purposive sample which had been used.

Collection of the Data and Tools

The data have been collected by administrating the standard procedures for taking performance physical fitness components as well as ball badminton player’s performance and tools were used stop watches, push-up stands, and flexible measuring tape for flexibility. The score has been recorded time in the nearest one tenth of the seconds and nearest centimeters.

STATISTICAL ANALYSIS AND DISCUSSIONS

To find out the relationship of criterion performance physical fitness components with ball badminton player’s performance with the Karl Pearson coefficient of correlation had been used and testing the hypothesis, the level of confidence is 0.05.

An analysis of the above table reveals that ball badminton players had been significantly related to criterion performance physical fitness components were simple reaction ability (0.528*), aerobic endurance (0.423*), muscular endurance (0.291*), agility (0.328*), orientation ability (0.515*), dynamic balance (0.333*), and dynamic flexibility (0.369*) as obtained values of correlation were greater than $r = 0.238$ the correlation to be significant at 0.05 performance physical fitness components were explosive strength, anaerobic endurance, endurance, maximum strength, static flexibility, complex reaction ability, and speed endurance as their correlation values are less than $r = 0.238$ need for significance at 0.05 level of confidence.

As for the results finally, the study exposes that ball badminton performance would be significantly related to criterion performance physical fitness components were simple reaction ability (0.528*), aerobic endurance (0.423*), muscular endurance (0.291*), agility (0.328*), orientation ability (0.515*), dynamic balance (0.333*), and dynamic flexibility (0.369*) as per the analysis, suggested that to the coaches, physical directors, physical education teachers, and physical instructors to concentrate on the above criterion performance physical fitness components while selecting or screening for ball badminton players in a basic level. It would be given effective and good performance in a specific competition.

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Research Article

Selected anthropometric measurements association with performance of ball badminton players

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ABSTRACT

The purpose of this study was relationship among anthropometric measurements and ball badminton player's performance. The 82 male ball badminton players were selected from national level representation in Andhra Pradesh on non-randomly by purposive sample which was used. Karl Pearson coefficient of correlation was used to analysis of the collected data on anthropometric measurements are height (0.585*), sitting height (0.259*), weight (0.364*), palm span (0.239*), upper arm length (0.462*), forearm length (0.299*), hand length (0.379*), upper leg length (0.627*), lower leg length (0.389*), chest circumference (0.397*), wrist circumference (0.473*), thigh circumference (0.313*), calf circumference (0.271*), shoulder diameter (0.573*), upper arm diameter(0.251*), and BMI (0.271*) coefficient of correlation with ball badminton players performance had been positively with significant level 0.05. Remaining anthropometric measurements not correlated on this present study.

Keywords: Anthropometric, Ball badminton, Measurements, Performance

INTRODUCTION

Ball badminton originated in Tanjore, in Tamil Nadu. It became popular, commanding the interest of the Maharaja of Tanjore. The game attracted many players from southern India, and is about as well-known as cricket in that part of the country. Previously, ball badminton was an attractive game for rural boys since it required a minimum of equipment. The game drew a large number of students from South India, resulting in the formation of the ball badminton federation of India in 1954. Ball badminton eventually spread to Andhra Pradesh, and the first national championship was conducted at Hyderabad in 1956. It was later introduced at the junior and sub-junior levels.

Ball badminton is an indigenous sport of India. It is a racquet game played with a woolen ball upon a court of fixed dimensions by two teams of five player's each. This is also played by two players called Doubles and by only one player

each side called singles. This game was played as early as 1856 by the royal family in Tanjore, capital of Thanjavur district in Tamil Nadu, India. The game is widely prevalent in India and will strike someone new to it as a mixture between volleyball, badminton, and tennis. The game attained popularity in the river basins of Cauvery, Krishna, and Godavari. It is an exceedingly fast game demanding skill, quick perception, correct judgment, and agility of movement and capacity to control the ball with proper movement of wrist.

In ball badminton, anthropometry and motor performance ability of players seem to be the most vital determinants of success. Anthropometric measurements have the potential to quantify the relationship between bone mass, body structure, physical characteristics, and individual players' sporting abilities thereby providing the basis for evaluating sport performance. Anthropometric measurements are often used to classify players according to their respective age or level of performance. Height is an advantage in executing attacking strokes in ball badminton.

Anthropometric profiles of elite athletes provide insight into the requirements for competing at top level in particular

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Table 1: Selected of the anthropometric measurements

Anthropometric measurements	Equipment	Criterion measures
Weight	Weighing machine	Kilograms
Height	Stadiometer	Centimeter
Sitting height	Anthropometer rod	Centimeter
Hand length	Anthropometer rod	Centimeter
Upper arm length	Anthropometer rod	Centimeter
Fore arm length	Anthropometer rod	Centimeter
Hand breadth	Anthropometer rod	Centimeter
Upper leg length	Anthropometer rod	Centimeter
Lower leg length	Anthropometer rod	Centimeter
Foot length	Flexible tape	Centimeter
Foot breath	Flexible tape	Centimeter
Chest circumference	Flexible tape	Centimeter
Upper arm circumference	Flexible tape	Centimeter
Fore arm circumference	Flexible tape	Centimeter
Wrist circumference	Flexible tape	Centimeter
Thigh circumference	Flexible tape	Centimeter
Calf circumference	Flexible tape	Centimeter
Ankle circumference	Flexible tape	Centimeter
Upper arm diameter	Flexible tape	Centimeter
Elbow diameter	Sliding Caliper	Centimeter
Shoulder diameter	Flexible tape	Centimeter
Hip diameter	Flexible tape	Centimeter
Ankle diameter	Sliding Caliper	Centimeter
BMI	Calculation	Percentages

sports. The previous reports have shown that body structure and morphological characteristics are important determinants of performance in many sports and certain physical impressions such as body composition (body fat, body mass, and muscle mass) and physique (somatotype) can significantly influence athletic performance (Carter 1984). Children experiencing early success in a particular sport, not necessarily at a (high) competitive level, might increase their chances for sustained sports participation and an active lifestyle later on. With respect to talent identification, children with a profile that matches the requirements of a specific sport from a young age on will more likely continue training and by consequence have better chances on an optimal talent development pathway. Anthropometric means the scientific study of the measurements and proportion of the human body parts either living or non-living. Anthropometric measurements as an effective role with best performance ball badminton players may to give as best as possible top form. The present study is anthropometric measurements with relation to ball badminton player's performance. Its leads to may won the match.

Table 2: Anthropometric measurements association with ball badminton playing performance

Anthropometric measurements	Coefficient of correlation "r"
Weight	0.364*
Height	0.585*
Sitting height	0.259*
Hand length	0.379*
Upper arm length	0.627*
Fore arm length	0.299*
Palm span	0.239*
Upper leg length	0.462*
Lower leg length	0.389*
Foot length	0.197
Foot breath	0.189
Chest circumference	0.397*
Upper arm circumference	0.201
Fore arm circumference	0.213
Wrist circumference	0.473*
Thigh circumference	0.313*
Calf circumference	0.271*
Ankle circumference	0.179
Upper arm diameter	0.251*
Elbow diameter	0.203
Shoulder diameter	0.573*
Hip diameter	0.117
Ankle diameter	0.113
BMI	0.271*

$n=82$, $r_{.05}(82) = 0.217$, *Significant at 0.05 level

METHODOLOGY

Purpose of the Study

This study would be decided to the anthropometric measurement's relation with ball badminton player's performance.

Selection of the Subjects

The 82 male ball badminton players were selected from national level representation in Andhra Pradesh on non-randomly by purposive sample which is used Table 1.

Collection of the Data and Tools

The data had been collected by administrating the standard procedures for taking anthropometric measurements as well as ball badminton player's performance and tools had been used weighing machine for weight, stadiometer for height and flexible measuring tape for lengths, diameters, and circumference measurements. The score is recorded weights in kgs and remaining the nearest one tenth of the centimeters.

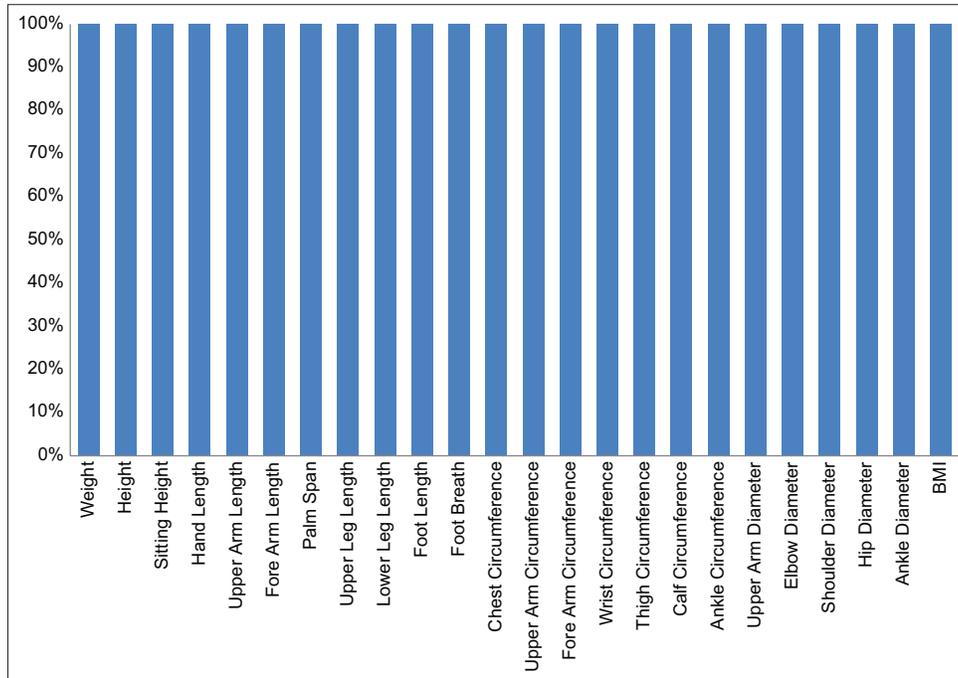


Figure 1: Anthropometric measurements and ball badminton players performance

Statistical Analysis and Discussions

To find out the relationship of anthropometric measurements with ball badminton performance with the Karl Pearson coefficient of correlation is used and testing the hypothesis, the level of confidence is 0.05 Table 2.

An analysis of the above table indicates that ball badminton performance is significantly related to measurements height (0.585*), sitting height (0.259*), weight (0.364*), palm span (0.239*), upper arm length (0.462*), forearm length (0.299*), hand length (0.379*), upper leg length (0.627*), lower leg length (0.389*), chest circumference (0.397*), wrist circumference (0.473*), thigh circumference (0.313*), calf circumference (0.271*), shoulder diameter (0.573*), upper arm diameter (0.251*), and BMI (0.271*) as obtained values of correlation were greater than $r = 0.217$ the correlation to be significant at 0.05 level of confidence. The remaining anthropometric measurements as their correlation values are less than $r = 0.217$ need for significance at 0.05 level of confidence Figure 1.

As for the results finally, the study reveals that ball badminton performance ability is significantly related to measurements are height (0.585*), sitting height (0.259*), weight (0.364*), palm span (0.239*), upper arm length (0.462*), forearm length (0.299*), hand length (0.379*), upper leg length (0.627*), lower leg length (0.389*), chest circumference (0.397*), wrist circumference (0.473*), thigh circumference (0.313*), calf circumference (0.271*), shoulder diameter (0.573*), upper arm diameter (0.251*), and BMI (0.271*). As per the analysis,

my suggestion to the coaches, physical directors, physical education teachers, and physical instructors to concentrate on the above anthropometric measurements, while selecting or screening for ball badminton players in a basic level. It may be given effective and top performance in a specific competition.

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Research Article

Influence of squat exercises on flexibility and core strength among school kho-kho players

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ABSTRACT

The purpose of the study was to find out the influence of squat exercises on flexibility and core strength among school kho-kho players. To achieve the purpose of the study, 30 school kho-kho players were selected randomly as subjects from various schools in Karimnagar district Telangana, India and their age was ranged from 15 to 17 years. The school kho-kho players were assigned at random into two groups of each 15. Group – I underwent squat exercises and Group – II acted as control group who did not attend any special training other than their daily school schedule curriculum. The duration of the training period was restricted to 6 weeks for 3 alternative days per week. The pre- and post-tests data were collected before and after the training period. The dependent variables flexibility and core strength were tested by standardized test items sit and reach and plank tests, respectively. The collected data from the two groups before and after the experimental treatments on selected variables flexibility and core strength were statistically analyzed using dependent “t”-test and analysis of covariance. In all the cases, the level of confidence was fixed at 0.05 significant. The result of the study indicated that the experimental group had shown significantly improved in flexibility and core strength among school kho-kho players due to the influence of squat exercises. However, the control group did not show any significant improvement on selected variables such as flexibility and core strength.

Keywords: Core strength, Flexibility, Plank test, Sit and reach test, Squat exercise

INTRODUCTION

Squats are one of the best exercises for building lower body strength and sculpting hamstrings, abdominal, and quadriceps.^[1] It helps to improve pain free mobility and flexibility by encouraging full extension and contraction throughout the hips. In strength training and fitness, the squat exercises train the muscles of the thighs, hips, and buttocks, quadriceps femoris, hamstrings, as well as strengthening the bones, ligaments, and insertion of the tendons throughout the lower body.^[2-4] Squats are considered vital exercises for increasing the strength and size of the muscles as well as developing core strength. The lower back, the upper back, the abdominals, the trunk muscles, the costal muscles, the shoulders, and arms are all essential to the exercise and thus are trained when squatting with the proper form.^[5,6] Core strength

is the foundation of the Pilates method of exercise. The core muscles are the deep, internal muscles of the abdomen, back, and pelvic floor.^[7] The own body and apparatus squat exercises are one of the three lifts in the strength sport of power lifting, together with dead lifts and bench press.^[8] The kho-kho game is an Indian sport commonly played in schools and colleges in our country. The history of kho-kho was known to be played since the earliest of times.^[9] Kho-kho is a great sport of the participants' physical fitness, strength, speed, flexibility, core strength, stamina, and dodging ability.^[10] In the ancient era, a version of the kho-kho game was played on “raths” or chariots in Maharashtra. This was known as RATHERA. The kho-kho rules were first framed in the early 1900's, this study was motivation and control of the player fitness level improvement of sports agility higher performances.

Purpose of the Study

The purpose of this study was to find out the influence of squat exercises on flexibility and core strength among school kho-kho players.

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METHODOLOGY

The purpose of the study was to find out the influence of squat exercises on flexibility and core strength among school kho-kho players. To achieve the purpose of the study, 30 school kho-kho players were selected randomly as subjects from various schools in Karimnagar district Telangana, India and their age was ranged from 15 to 17 years. The selected subjects were assigned at random into two groups of 15 each. Group – I underwent squat exercises and Group – II acted as control group who did not attended any special training other than their regular daily school schedule curriculum. The duration of the training period was restricted to 6 week for 3 alternative days per week. The pre- and post-tests data were collected before and after the training period. The dependent variables flexibility and core strength were tested by standardized tests items sit and reach and plank tests, respectively.

Analysis of the Data

The influence of squats exercises on flexibility and core strength among school kho-kho players were analyzed and presented below.

Flexibility

The mean value of *t*-test on flexibility (sit and reach test) of pre- and post-tests scores of squat exercises and control groups is analyzed and presented in Table 1.

Table 1 shows that the pre-test mean value of squat exercises and control groups is 22.18 and 22.09, respectively, and the post-test means are 29.41 and 22.15, respectively. The obtained dependent *t*-ratio values between the pre- and post-tests means of squat exercises and control groups are 11.08 and 1.07, respectively. The table value required for significant difference with df 1 and 14 at 0.05 level is 2.14. Since, the obtained “*t*” ratio value of squat exercises group was greater than the table value, it is understood that squat exercises group had significantly improved on flexibility. However, the control group had not improved significantly. The “obtained *t*” value is less than the table value, as they were not subjected to any specific training.

Table 1: The mean value of pre- and post-tests scores of experimental and control groups on flexibility (in centimeters)

Group	Pre mean	Post mean	Mean difference	Obtained t ratio
Squat exercise group	22.18	29.41	7.23	11.08
SD	2.07	1.78	7.23	11.08
Control group	22.09	22.15	0.06	1.07
SD	1.27	1.24	0.06	1.07

*Significant at 0.05 level. (The table value required for 0.05 level of significance with df 14 is 2.14)

Analysis of covariance (ANCOVA) on flexibility of experimental and control groups is analyzed and presented in Table 2.

Table 2 shows that the adjusted post-test mean value on flexibility of squat exercises and control groups is 28.96 and 22.35, respectively. The obtained *f*-ratio 13.39 for adjusted post-test mean is greater than the table value 4.21 with df 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was significant difference exist between the adjusted post-test mean of squat exercises and control groups on flexibility.

The bar diagram shows the mean values of pre-, post-, and adjusted post-tests on flexibility of squat exercises and control groups.

Core strength

The mean value of *t*-test on core strength (Plank test) of pre- and post-tests scores of squat exercises and control groups is analyzed and presented in Table 3.

Table 3 shows that the pre-test mean value of squat exercises and control groups is 36.42 and 36.01, respectively, and the post-test means are 53.46 and 36.25, respectively. The obtained dependent *t*-ratio values between the pre- and post-tests means of squat exercises and control groups are 17.33 and 1.53, respectively. The table value required for significant difference with df 1 and 14 at 0.05 level is 2.14. Since, the obtained “*t*” ratio value of squat exercises group was greater than the table value, it is understood that squat exercises group

Table 2: Analysis of covariance (ANCOVA) on flexibility of experimental group and control group

*APTm	*SV	*SS	Df	*MS	*F ratio
EG CG	B	61.21	1	61.21	13.39
28.96 22.35	W	123.39	27	4.57	13.39

Significant at 0.05 level. (The table value required for significance at 0.05 levels with df 1 and 27 is 4.21) APTM: Adjusted Post-test Mean, Sum of Variance, SS: Sum of Square, MS: Mean of Square

Table 3: The pre- and post-tests scores of squat exercises and control groups on core strength (in seconds)

Group	Pre Mean	Post Mean	Mean difference	Obtained t ratio
Squat exercise group	36.42	53.46	17.04	17.33
SD	2.98	2.76	17.04	17.33
Control group	36.01	36.25	0.24	1.53
SD	2.71	2.73	0.24	1.53

*Significant at 0.05 level. (The table value required for 0.05 level of significance with df 14 is 2.14)

Table 4: Analysis of covariance (ANCOVA) on core strength test of experimental and control groups

*APTM	*SV	*SS	df	*MS	*F ratio
EG CG	B	67.52	1	67.52	51.94
54.62 36.29	W	35.1	27	1.30	51.94

* Significant at 0.05 level. (The table value required for significance at 0.05 levels with df 1 and 27 is 4.21) * APTM: Adjusted Post-test Mean, Sum of Variance, SS: Sum of Square, MS: Mean of Square

had significantly improved the core strength. However, the control group had not improved significantly. The “obtained *t*” value is less than the table value, as they were not subjected to any specific training.

ANCOVA on core strength of experimental and control groups is analyzed and presented in Table 4.

Table 4 shows that the adjusted post-test mean value on core strength of squat exercises and control groups are 54.62 and 36.29, respectively. The obtained *f* ratio 51.94 for adjusted post-test mean is greater than the table value 4.21 with *df* 1 and 27 required for significance at 0.05 level of confidence. The result of the study indicates that there was significant difference exist between the adjusted post-test mean of squat exercises and control groups on core strength.

The bar diagram shows the mean values of pre-, post-, and adjusted post-tests on core strength of squat exercises and control groups.

DISCUSSION ON FINDINGS

The intent of this study was to investigate the squat exercises of school kho-kho players with respect to the orientation on flexibility and core strength. The results of this study shown that kho-kho players were significantly improved on flexibility and core strength due to the effect of squat exercises training when compare to the control group. Willson *et al.* (2006), and Stickler *et al.* (2015), studies proved the same results for

the improvement on core strength and Dallas *et al.* (2014) and Adams *et al.* (1999), studies also proved significant improvement on flexibility. Arumugam (2014) conducted study on Pilates training and study proved improvement on flexibility and core strength.

CONCLUSIONS

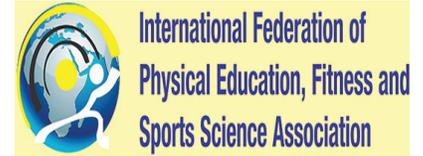
1. There was significant improvement on core strength due to the influence of squat exercises among school kho-kho players.
2. There was significant improvement on flexibility due to the influence of squat exercises among school kho-kho players.
3. However, the control group had not shown any significant improvement on any of the selected variables.

ACKNOWLEDGEMENT

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Research Article

The effect of physical variables on developing the level of skill performance in some karate skills

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ABSTRACT

The research aims to evaluate the kinetic energy levels of the selected skill and techniques (the chosen performance index and review the skill performance and improve body movements), due to the importance of using the law of nature in analyzing the skill performance of my skills (Kazmi-Zuki and Gyaku-Zuki) in karate and through it develops and the skill performance improved, the study axes were the body mass, the square of speeds, and the research sample was (10) players from the Kafr El-Sheikh team and the study was conducted in the hall covered by Kafr El-Sheikh and the conclusion of the study was the kinetic energy that is a reflection of the vital energy, the player has to implement some skills. In karate, the relationship between kinetic energy is an exponential relationship that the realization of kinetic energy is the result of the interdependence of several variables, including reaction time, average skill time, and mass of parts. On the variables that the research came up with (kinetic energy), which showed a correlation with the rest of the variables to be utilized by trainers when developing the training curriculum. Emphasize the importance of kinetic energy by trainers because of its relationship to the working muscles and the variable speed.

Keywords: Kinetic energy

INTRODUCTION

Sports training in the present era is a scientific process that depends on its foundations on scientific and field knowledge of all aspects that help in developing the level of sport in general and physical and sports education sciences and in karate sport in particular, so the trainer and the teacher in addition to his field experience must. He has a scientific knowledge of the foundations of training and its requirements in all respects (Ghazi M., Engineering of Training Load Planning and Training Periods in Physical Education Sciences, 2019, page 1).

Within the framework of the technological revolution and the tremendous development of sports achievement accelerators, digital transformations in the goal industry and the manufacture of competitive numbers for various games in many sports, the manufacture of index numbers in various

competitive sports and the ability of technological industries to transform the course of games and competitions into measured speeds. With the techniques of non-technology, you have chosen the science of artificial intelligence, sports, and games. (Ghazi M., Karate between Planning and Practical Application, 2020, page 12).

Karate is one of the individual games in which the success of any player or his team depends on his mastery of kinetic skill, (and the basic principle in it is that the player be faster than his opponent before he is stronger than him and that the goal of training is to develop the basics of karate and some of the physical characteristics as it comes through improving the level of different body departments (Joudan, Shodan, Jeudan) (Wulf, p. 14).

Many sports sciences have interfered in the field of training to achieve an improvement in the level of skill performance and the development of achievement correctly to serve the type of sporting effectiveness in practice, where biomechanics and kinesiology interfere in sports training to influence the achievement of the required level (Lamb, 2018, p. 25).

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THE STUDY PROBLEM

Although research has focused on analyzing karate skills by employing the principles of kinetic energy alone, the present study, by applying kinetic energy concepts in skill performance, is an attempt to analyze the skill performance of (Kazmi-Zuki and Gyaku-Zuki) through the energy equation kinetics to develop the skillful performance of my skill (Kazmi-Zuki and Gyaku-Zuki).

OBJECTIVES OF THE STUDY

The objectives of the study are as follows:

- Evaluating the kinetic energy levels of the chosen skill technologies (Performance Index Selected).
- Reviewing skill performance and improving body movements.

THE IMPORTANCE OF STUDYING

The importance of the study is due to the use of the law of nature in analyzing the skill performance of my skills such as (Kazmi-Zuki and Gyaku-Zuki) in karate and through it the development and improvement of skill performance.

THEMES OF STUDY

1. Body mass
2. The square of speeds
3. Kinetic energy

Fields of Study

The human sphere

Kafr El Sheikh team players (10).

Time domain

The study was applied in the period between November 1, 2019 and December 1, 2019.

Spatial field

The study was applied in the hall covered by the Kafr Al Sheikh Sports Stadium.

Terminology of Study

Kinetic energy

Energy transformations for use in mathematical fields and the generation of explosive energy and the strength marked by speed and energy. Many forms are transformed from one form to another according to the available conditions and the tool used to codify the training load according to the following law

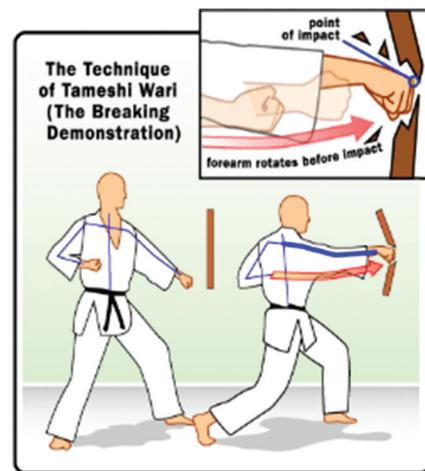
Kinetic energy = $0.5 \times \text{mass} \times \text{square of body speed}$.
 $KE = 1/2 M V^2$

The theoretical part

The kinetic energy of a body is what energy it possesses because of its movement.

After gaining this energy during its acceleration, the body maintains this kinetic energy unless its speed changes.

Mass in physics is a property of a physical body that determines the strength of attractive attraction factors exchanged with other bodies, and their resistance to acceleration with force, and in relativity theory gives the total energy content of the system. Shape no: (1).



The mass is not the same weight although we often calculate the mass of an object by measuring its weight on a pulsar scale rather than comparing it.

Newton's Second Law of Motion

If an object of the fixed mass (m) is exposed to one force (F), its acceleration is given by F/M .

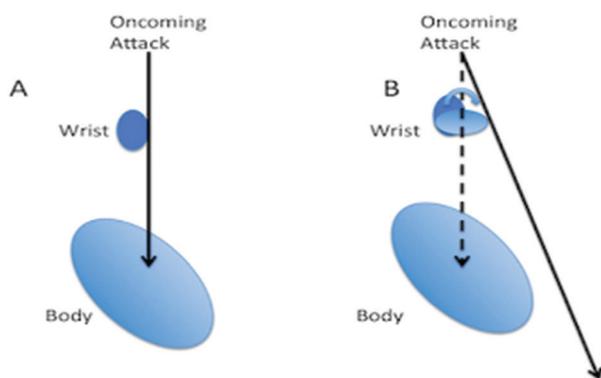


Body mass also determines the degree to which the gravitational field generates or is affected by it. The rotational kinetic energy

that depends on the rotation around an axis and each of the continuous immobility moment is equal to the product of half the moment of immobility times the square of the angular velocity. Galileo the standard unit of kinetic energy is Joule. shape no: (2)

If we Looked for a Comparison of One Inch Straight Punch “Choku Zuki” we Found

One inch punch is a mixture of pushing and hitting the target at the same time because it did not take the appropriate pass path from the starting point to the goal. Of course, there is a kinetic energy emitted and this is shown from the test result of a 1-inch punch provided by Anthony Kelly (153 lbs).



Furthermore, the position of the grip and the location of the joints (little finger and little finger) that will not give the maximum effects because the force transmission will not pass through the joints (index finger and middle finger) that support the trapezoidal, trapezoidal, and echo in the upper row of the carpal bone supported by the SC avoid principle which, in turn, is supported by the radius bone on the forearm. Shape no: (3)

However, for a straight punch “Choku-Zuki,” the kinetic energy that is emitted according to the distance to the target and the rotation make the kinetic energy of rotation is the generation of a huge amount of force affecting the target.

Study Procedures

Curriculum

The researcher used the survey descriptive approach to suit the nature of the study.

The Study Sample

The researcher determined the study community of karate players, by randomly selecting the study sample for the Kafir El Sheikh Karate region, as they numbered (10) players with a black belt Dan (1).

Conditions for choosing study material

To be a karate player – to be one of the black belt holders – their training age should not be less than 4 years.

The researcher made measurements on the research sample from the age and age of the actual practice of training through job records, especially for the affairs of players in the Kafir El Sheikh Karate region.

It is clear from Table 1 that the values of the flatness coefficient are between (0.463 and -0.711) and that all of them fall between $+1$, which indicates approximately the same data about the axis of the curve, as it is clear from the table that all the values of the torsional coefficient of the research sample ranged between (0.554) and -0.908) and that these values were confined between $+3$, which indicates that all members of the sample fall under the moderate curve in the age-length variables and the duration of the exercise, which indicates the homogeneity of the members of the research sample in the chosen variables.

The first axis: Body mass index (BMI)

BMI, or BMI, is a statistical measure to compare a person’s weight to his height. Therefore, it is not considered a measure of the percentage of body fat, but is used to estimate a healthy body weight according to a person’s height. Moreover, given the ease of measuring and calculating the BMI, and using that axis to calculate the body mass to sweat the force released from the body during the strikes under consideration (Kazmi-Zuki and Gyaku-Zuki) (Knowledge, 2019).

It is clear from Table 2 that there is a relationship between height and weight and according to the statistical treatments (direct relationship) the higher the length the greater the weight according to the equation defined to measure the ideal weight (height-weight = 100) and the result of the correlation coefficient between height and weight. Moreover, the physical capabilities of the explosive strength, speed, agility, flexibility, and balance were included to get acquainted with the extent of their attachment to (0.31) and this is confirmed by the Karate Sports Law of 2019 Item 4 paragraph 5 in the regulations on “The percentage of evaluation in sports performance (30%) (Karate 2019, page 22).”

Table 1: The homogeneity of the sample

Statistical variables	Mean	Median	Standard deviation	Skewness	Kurtosis
Age	15.3	15.00	1.15	2212– 0.908	0.711
Duration of practice	4.2	4.00	4.61	0.554	-0.463

The value of the tabular T at the significance level 0.05 and freedom degree 9 = 4.5

The Second Axis: Square of Speeds

Speed is one of the most important physical abilities in general sports and in karate sport in particular. The development of the speed component is one of the most important physical and skill capabilities in performing basic skills in karate and the capacity element is a basis in the development of kinetic energy and knowledge of the use of kinetic energy in improving Skillful performance of some of the skills used in that research. (Ghazi M., 2019, page 122).

It is clear from Table 3 to list the criteria for granting the degree achieved in skillful performance (technical evaluation of kinetic skills) hand movement, harmony and timing, correct breathing, quantitative, compatibility, and are criteria and are estimated in the regulations and laws at (70%) (Karate, 2019, page 14).

The degree of importance for these variables came in at (8.57), and the relative importance of these variables at (5.99), and the correlation coefficient for these variables came in (0.70%).

The Third Axis: Kinetic Energy

The overlap of science with each other when studying the kinetic performance of a specific effectiveness or skill performed by the player called for a study of the correlation between the types of energy produced, as good technical performance

Table 2: Coefficient of correlation between height, weight, and physical abilities in skillful performance

Statistical variables	Mean	Median	Standard deviation	Correlation coefficient
Length	1.70	170.3	3.15	
the weight	72.3	70.00	4.61	
The explosive strength of the arms	15.00	15,4	6,54	
Arm's distinctive force	8.00	8,2	5,47	00.31
Agility	7.02	7.03	0,99	
Flexibility	7.00	7,35	0,83	
Balance	701	7,83	1,02	

Table 3: Correlation coefficient between technical techniques in skill performance

Statistical variables	Priority level	Relative importance	Correlation coefficient
Hand positions	8.57	5.99	
Moving	8.57	5.99	
Harmony and timing	8.57	5.99	
Correct breathing	8.57	5.99	00.70
Kami	8.57	5.99	
Compatibility	8.57	5.99	

in accordance with the correct mechanical conditions when performing the skills is evidence of the player possessing an amount of energy so that he can achieve results high energy is "the ability to do work" (Abu Al-Ella, 2003: p. 2).

What is the kinetic energy: It is the energy that the body gains as a result of its movement? (This type of energy depends on the mass of the moving body and the square of the speed. The kinetic energy is proportional to the speed of the player's performance with the relative stability of the mass (Saree Abdul Karim 2012: p. 74) Energy increases by increasing the speed of the player's performance during the performance of the skill (Kazmi-Zuki and Gyaku-Zuki) because these skills need speed in performance to achieve the point and win the run or the game, so the kinetic energy plays a big role in the correct implementation of the mechanical conditions for karate skills.

Through the movement of the arm and the regressive (and progressive) when performing the skills, the arm is gained at the largest angular velocity, so this velocity is converted to a linear velocity that is transmitted to the front of the hand (fist) after the collision. (Page 12) Angular kinetic energy of the arm = $1/2k \times \omega^2$. Attempting to extend the joints at the moment of hitting leads to an increase in the value of the radius and this is what the karate player works to achieve to obtain the highest value of kinetic energy as well as reduce the performance time by increasing the speed of movement body parts (arm + fore grip, torso, and leg). Any increase in the angular transmission rate of body parts during the application of multiplication skills (Kazmi-Zuki and Gyaku-Zuki). (Religion, 2003, page 174).

ANALYSIS AND DISCUSSION OF RESULTS

The correlation between the kinetic energy variable and the performance level of my skills as (Kazmi-zuki and Gyaku-zuki).

It is clear from Table 4 and Figure 1 that there is a relationship between each of the kinetic energy, the average reaction times, and the average times of skill performance, and the results were as follows: The kinetic energy ratio of the skill of Kazmi-Zuki (10.289 joules) and The skill of Gyaku-Zuki (10.471 joules), and the results of the average reaction times for the skill of Kazmi-Zuki (1.398 m/s) and the Gyaku-Zuki (1.521 m/s), and the mean times for the skill performance time for the skill of Kazmi-Zuki (3.866 m/s) and Gyaku-Zuki (2.137 m/s), and the correlation coefficient between the kinetic energy and the reaction times averages and the skill performance time averages came in (0.978) and the relationship with the correlation coefficient is direct A positive, the more the kinetic energy during the skillful performance, the greater the reaction speed and the greater.

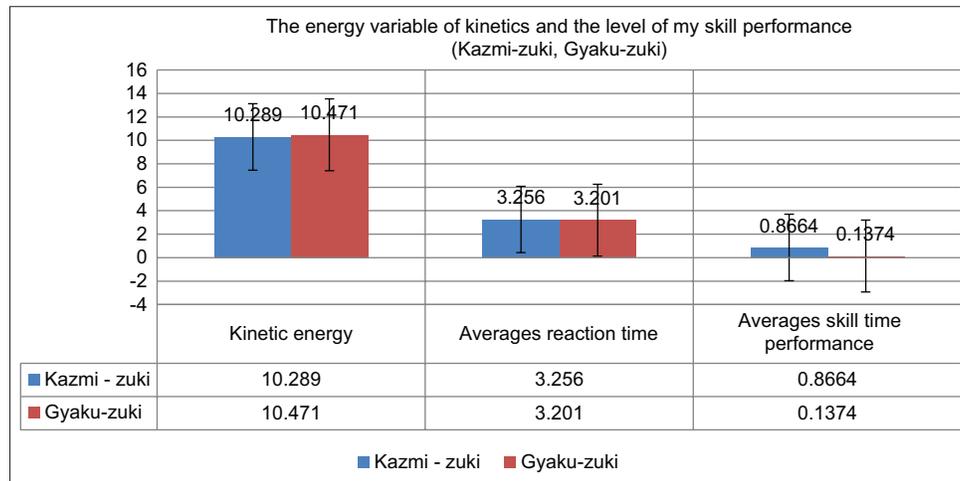


Figure 1: The skill level of the skills in question

Table 4: The values of the correlation relationship between the correlation relationship between the energy variable of kinetics and the level of my skill performance (Kazmi-Zuki and Gyaku-Zuki)

Statistical variables	Kinetic energy	Averages reaction time	Averages skill time performance	Correlation coefficient
Kazmi-Zuki	10.289	3.256	0.8664	0.978
Gyaku-Zuki	10.471	3.201	0.1374	

The kinetic energy increases with the increase in the speed of the parts of the tennis player’s body during the performance of the basic skills of front and back strike skill, that is, the improvement in kinetic energy is directly proportional to the speed variable so that any change and development in the speed of muscular contractions must be identical to the actual performance of the skill with taking in consideration of the harmonic movements of the different parts of the body during the performance, which achieves the correct kinetic consistency in these parts and in a manner that serves to obtain the correct kinetic balance and which enhances the force exerted when the movement of the parts of the body and thus increases the speed of performance. This is consistent with both (religion, 2003) (Al-Kareem, 2013) (Ghazi M., Engineering of Training Load Planning and Training Periods in Physical Education Sciences, 2019).

CONCLUSIONS

1. Kinetic energy is a reflection of the player’s vital energy to execute some skills in karate.
2. The relationship between kinetic energy is a direct relationship.
3. The realization of kinetic energy is the result of the interdependence of several variables, including reaction time, average skill time, and mass of parts.

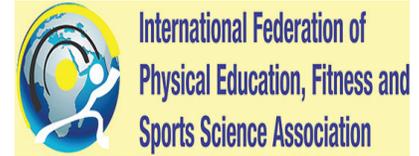
4. The use of modern programs for analysis saves effort and time.

RECOMMENDATIONS

1. Ensure the variables that the research came into (the kinetic energy) and that showed a correlation with the rest of the variables to be used by trainers when developing the training curriculum.
2. Emphasizing the importance of kinetic energy by the trainers due to its relationship with the working muscles and the variable speed.

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Research Article

The relationship between coaching behaviors and athletic performance

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ABSTRACT

The purpose of this study was to explore the factors affecting the athlete's perception of coaching and psychological behavior in relation to their sports performance. The study focused on winning athletes and nine coaches in select State University in the Philippines a member of State Colleges and Universities Athletic Association. A none-experimental survey research design was employed by administrating coaching behavior scale for sport and a psychological performance inventory (PPI). The coaching behavior as perceived by the student athletes included coaching motivation, coaching style, and communicating skills. Psychological behavior included anxiety, mental toughness, and stress. Data revealed that all the variables in coaching behavior and mental toughness greatly affect the winning athlete's performance in competition. Slight results differences were determined among two groups of respondents. Under the light of the study results, further exploration of the factors for winning should be done through qualitative design

Keywords: Athletes, Coaching behavior, Sport management

INTRODUCTION

Many factors were investigated in terms of winning in sport competition (Mata and Da Silva Gomes, 2013) (Mortejo, 2021). While some mentioned variables significantly affecting athletes performances such as home court advantage (Arruda *et al.*, 2014) considerable amount of experiment significantly correlating the amount of enjoyment, effort exerted and achievement of athletes associated to coaching behavior (Wang *et al.* 2009, According to Bali (2014), sports performance is not simply a product of physiology (for example, stress and fitness) and biomechanical (for example, technique factors) but psychological factors also play a crucial role in determining performance. On the other hand, North (2017) stated that athletes perceive and interpret their athletic experience based on the leadership they receive, as well as their ability to perform well. Most people consider a coach's primary job to be encouraging

individual athletes, as well as the team. Coaches can have a huge impact on athletes' personal lives and goals and how they perceive themselves and their community. Individual athletes look to coaches for leadership and encouragement beyond the sports environment and this also carries over to athletic achievements. However, the previous studies also ask for adding psychological variables measures in the existing body of knowledge. Due to some conflicts in some studies confirmatory in the statistical results in terms of connection of coaching behavior and athlete's performance also emerge as one of the recent recommendations in the field of coaching management (AleksicVeljkovic *et al.*, 2019).

METHODS

The researchers used the quantitative method study. It involves the research relationships between variables through the use of various measures of statistical association. It is a procedure in which subjects' scores on two variables are simply measured, without manipulation of any variables to determine whether there is a relationship.

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	Beta		
Coaching style	0.331	0.040	Significant
Coaching motivation	0.033	0.001	Significant
Communication skills	0.073	0.030	Significant
Mental toughness	0.259	0.029	Significant
Psychological behavior	-0.194	0.185	Not Significant

The Table 1 reflects that coaching style greatly affects the athletic achievement compared to other variables. The beta-coefficient value of psychological behavior is not significant since its correlation is not significant. The coaching style has the highest contribution in predicting the values of the athletic achievement compared to the other given variables.

According to Defreese and Smith (2013), here is evidence to show that coaching styles and behaviors have a strong influence on motivation and well-being of athletes. The studies have shown that athlete burn out is negatively related to positive social support.

DISCUSSION

This chapter presents the summary of findings of the study, the conclusions that were arrived at based on their search output, as well as their commendations for the future in the light of the conclusion drawn.



The coaching behavior be described in terms of perception of the coaches themselves regarding coaching motivation is “extremely high” with the grand mean of 6.5469 while students’ perception to their coaches is “high” with the grand mean of 6.0311. This only shows that there is as light difference between how the coach perceives is coaching motivate on compare to the perception of student-athletes. On the other hand, the perception of the coaches themselves regarding their coaching style is “extremely high” with the grand mean of 6.6339 while students’ perception regarding to their coaches is “high” with the grand mean of 5.8189. This only shows that there is as light difference between how the coach perceives his coaching style compare to the perceptions of student-athletes. Finally, the perception of the coaches themselves regarding their communicating skills is “slightly high” with the grand

mean of 4.6154 while students’ perception to their coaches is “slightly high” with the grand mean of 5.2932. This only shows that there is no significant difference between how the coach perceives his communicating skills compare to the perceptions of student-athletes.

The psychological behavior be described in terms of perception of the coaches themselves regarding anxiety is “low” with the grand mean of 3.9792 while students’ perception to their coaches is “moderately” with the grand mean of 3.0811. This only shows that there is a slight difference between how the coach perceives his communicating skills compare to the perceptions of student-athletes. On the other hand, the perception of the coaches themselves regarding their mental toughness is “extremely high” with the grand mean of 6.5500 while students’ perception regarding to their coaches is “high” with the grand mean of 6.1947. This only shows that there is a slight difference between how the coach perceives mental toughness compare to the perceptions of student-athletes. Finally, perception of the coaches themselves regarding their stress is “high” with the grand mean of 4.1042 while students’ perception regarding to their coaches is “moderately” with the grand mean of 2.9385. This only shows that there is a slight difference between how the coach perceives his stress compare to the perceptions of student-athletes. This only shows that there is a slight difference between how the coach perceives his stress compare to the perceptions of student-athletes.

The significant difference between the perception of the student-athletes and the coaches in the coaching behavior of the trainers was tested. The statistical treatment that was used is Mann–Whitney U test with an average of .101. This only shows that there is no significant difference between the perception of the student-athletes and coaches in the coaching behavior of the trainers.

The coaching style has the highest contribution in predicting the values of the athletic achievement compared to the other given variables. Therefore, it concludes that coaching style greatly affects the athletic achievement of the student-athletes compared to other variables.

RECOMMENDATION

In conclusion, the finding of this study suggested that motivation, coaching style, and communicating skills which are all under coaching behavior parameters significantly affected the athlete’s performance in playing. Data also suggested that the mental toughness of the winning athletes significantly influenced their performances, further exploration of other contributing factor in athletes’ sports performances during competition should be investigated through qualitative approach to validate the results of this research design.

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Research Article

Effect of yogic practice on controlling hypertension

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ABSTRACT

The purpose of the study is to find out the effect of the yogic practices on controlling the hypertension among the adult population, that is, MANAGE trainees. The samples for the study consist of 53 MANAGE trainees from various places across the nation and some foreign trainees. Due to the present scenario of the COVID-19, trainees were participated online yoga sessions daily for 6 weeks regularly. Hypertension is not a disease, it is a metabolic disorder. Regular practice of yoga which commonly involves Asanas, Pranayama, chanting of Mantras is an effective method in reducing blood pressure and cortisol. Eating a healthier diet with less salt can help to lower the blood pressure. A pretested structured online questionnaire was provided to 53 people of the adult population. In the present scenario of the COVID-19, the mode of conducting the survey was made through online means. The questionnaires were circulated with the help of WhatsApp. The information was obtained with the help of Google forms. The results of the study show that there is a significant result in lowering and controlled the blood pressure. Hence, yogic practices are recommended for hypertension people.

Keywords: Hypertension, Metabolic disorder, Yogic practices

INTRODUCTION

The term yoga is derived from the Sanskrit which means “to join” or “to union.” There are many philosophical definitions about yoga. The union of body, mind, and soul. The union of Jeeva Atma with Parama Atma. However, in this materialistic world, yoga means be good and do good, simple living with high thinking, and do not harmful to anyone.

Yoga is the journey of the self, to the self, through the self, “says Bhagavad Gita, the holy scriptures of Hindus. Originated in INDIA, yoga is a system of exercises for the body that involves breath control and helps relax body and mind. Yoga has since been adopted widely across the globe and the world even observes June 21 as International Day of Yoga following its inception in the United Nations General Assembly in 2014. Yoga is the path to attain the spiritual health. Spiritual health

includes a purposeful life, transcendence, and actualization of different dimensions and capacities of human beings. Spiritual health creates a balance between physical, psychological, and social aspects of human life. Spirituality is an inner sense of relationship to a higher power that is loving and guiding. Spirituality brings optimism; Ultimately, yoga is path to union with the almighty. We are the creation of the almighty; again we have to union with the almighty.

As per the Indian traditional yoga, there are four streams of yoga.

(1). Bhakthi yoga, (2). Karma yoga, (3). Gnana yoga, and (4). Raja yoga which have been classified into hatha yoga (tantra yoga), ashtanga yoga, and mantra yoga (chanting).

Yoga which commonly involves asanas (postures), pranayama (breathing exercise), trataka (kriya), and chanting of Mantras is an effective method in reducing blood pressure and cortisol. Yoga is an effective method to control the thought rate which arises in the mind. Mostly negative thoughts which are the main cause for the life style disorders (metabolic disorders).

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High blood pressure of unknown cause is known as essential hypertension. It is not a disease but only a symptom indicating that some disease is progressing. Cardiovascular disease, tumors of the brain, hyperthyroidism, renal diseases, diseases of ovaries, and pituitary may cause hypertension. Too many red blood cells having high viscosity of blood may also cause high blood pressure. Heredity, stress, smoking, and narrowing of the main blood vessels due to hormone secretions especially cortisol, adrenaline, and obesity are the predisposing factors of high blood pressure. It is advisable to avoid a high intake of animal or hydrogenated fat in cases of high blood pressure. Protein foods are usually rich in sodium, and therefore, protein restriction of 20 g is advised in severe cases of hypertension. Sodium restriction accompanied by weight reduction can effectively control moderate and mild arterial blood pressure.

The systolic blood pressure (the top number) equals the pressure in the arteries as the heart contracts. The diastolic pressure (the bottom number) is the pressure in the arteries as the heart relaxes.^[1] Parikh *et al.* (2021): Hypertension is one of the major growing global problems. Management of hypertension by medicine, diet, and exercise is not enough and alternative therapy is need of time. Yoga is one such substitute healthcare practice assumed to improve blood pressure control and quality of life in hypertensive. A prospective intervention was designed to check the effect of home-based yoga exercise on blood pressure and quality of life in hypertensive. Methods: A total 74 hypertensive participants were recruited for the present study after following inclusion and exclusion criteria. Participants were divided into two groups, study group ($n = 39$) who has done home-based yoga and control group ($n = 35$) who has not done home-based yoga. Detailed methodology of home-based yoga: Their advantage and disadvantage were explained to the study group very well. Study group have done their home-based yoga for three months and control group did not have done the home-based yoga. Cardiovascular parameters such as systolic blood pressure, diastolic blood pressure, and pulse rate were recorded after following all standard precautions at the time of initiation of study and at end of every month till completion of study. Participants were also assessed for their quality of life, health, and other areas of life by the World Health Organization quality of life questionnaire at the time of beginning of the study and at every month till completion of study. **Results:** Significant decrease in systolic blood pressure from 130.60 ± 4.06 to 124.20 ± 0.60 mm of Hg and diastolic blood pressure from 85.62 ± 5.55 to 79.21 ± 0.73 mm of Hg were seen in the study group. In control group, blood pressure reduction was not seen. Self-rated score of quality of life was improved in the study group as compared to control group.^[2] Pandey and Jain. (2021): This study was conducted in Department of Physiology, Index Medical College Hospital and Research Centre (Faculty of Medicine and Health Sciences) and Malwanchal University, Indore.

Blood pressure variability parameters analyzing, systolic blood pressure, diastolic blood pressure, and mean arterial pressure. **Result:** The Chi-square statistic is 0.0217. p -value is 0.0482824. The result is significant at $P < 0.05$. The Chi-square statistic is 0.11. P -value is 0.035627. The result is significant at $P < 0.05$. The Chi-square statistic is 0.3429. P -value is 0.043662. The result is significant at $P < 0.05$. **Conclusion:** Our study demonstrated the effectiveness of individualized yoga for home practice, and that such interventions may be beneficial in mental health care in the broader community. Appropriate training of yoga teachers in the field of mental health is recommended. Reduction of depression and anxiety is also associated with a range of additional health benefits. Like yoga, low-intensity exercise seems to have beneficial effects on the mind and body. The biological mechanisms underlying the effects of each need to be further teased out in research studies.

METHODOLOGY

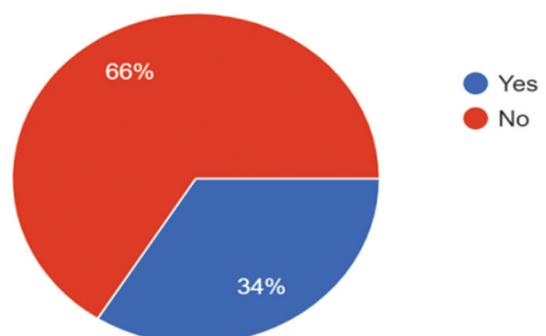
The samples for the study consists of 53 trainees of MANAGE trainees from various places across the nation and some foreign trainees. Online yoga sessions were attended by the trainees for 6 weeks regularly in the morning from 0600 AM to 0700 AM. A survey was conducted using an online questionnaire, a structured questionnaire among 53 trainees of the MANAGE. Due to this present scenario of the COVID-19, the mode of conducting the survey was made through online means. The method of filling the questionnaire was very easy. The information was obtained with the help of Google forms. The questionnaire was used to elicit details to collect information on (i) respondents data and (ii) project data.

The responses were analyzed using Microsoft Excel, Google docs, and Google forms.

RESULTS AND DISCUSSION

Are you taking any medications

53 responses



In this study, 34% of the respondents are taking medications and 66% of the respondents are not taking medications and they are adopting alternative medicines. Alternative medicine is an effective method to overcome the life style disorders. Yoga is one of the alternative medicines, which has no side effects Figure 1.

Hypertension is not a disease it's a lifestyle disorder or metabolic disorder. It is also known as blood pressure. The main reasons for hypertension are stress, smoking, obesity, and alcohol consumption. In this study, respondent's hypertension before practicing yoga is 130/85 Figure 2.

Yoga is an effective approach in this modern era to overcome the life style disorders. By regular practice of yoga, it can enhance flexibility, elimination of toxins from the body, and reduces the heart beat which will leads to blood pressure control. In this study, respondent's hypertension after practicing yoga is 120/80.

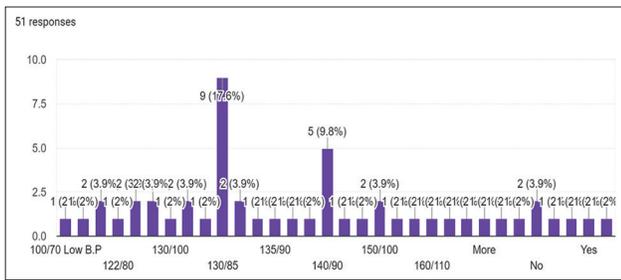


Figure 1: Hypertension before practicing yoga

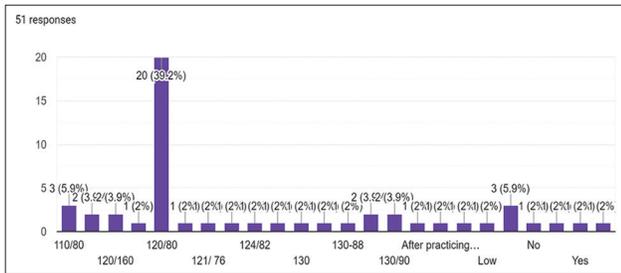


Figure 2: Hypertension after practicing yoga

CONCLUSION

As per the survey, most of the respondents are adopting yoga as a part of their healthy lifestyle. A well-balanced diet is very much important to maintain one's health. Hence, people started adapting a well-balanced diet daily. The importance of healthy eating has increased nowadays and according to this survey. Most of the people were not taking any supplements. Undoubtedly, yoga is the pathway to control the hypertension without any side effects. Most of them are adopted yoga permanently in their lifestyle for their active and healthy lifestyle.

Not only to control the hypertension, yoga is the method to enhance the physical, mental, and overall wellbeing of a human being. Yoga is a natural fat burner without any equipment of apparatus. Yoga can enhance the blood capillaries and increase the flexibility. Yoga practice helps in baroreflex sensitivity, systolic blood pressure, and total peripheral vascular resistance in hypertensive patients. Yoga helps in regulating the blood pressure by stabilizing the sympathetic and parasympathetic nervous system.

RECOMMENDATIONS

- Yoga practice leads to the hyperventilation of the lungs, which is essential for the consumption of oxygen by each and every cell of our human body.
- Practicing yoga will rejuvenate the body.
- Yoga practices will elimination of the toxins from the body.
- Yoga practices will improve the blood capillaries in the muscles.
- Moreover, it will improve the flexibility of our body and for the proper functioning of our bodily systems.

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Research Article

Impact of circuit training on motor fitness variables among intercollegiate women kabaddi players

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ABSTRACT

The purpose of the study was to find out the effect of 6 weeks circuit training on motor fitness of intercollegiate women kabaddi players. A total of 30 women kabaddi Players were selected from the Department of Physical Education, Annamalai University, Chidambaram, Tamil Nadu. The age of the subjects ranged from 18 to 22 years. The Subjects were randomly assigned to two equal groups of “15” each and named as Group “A” experimental group and Group “B” control group. Group “A” were underwent circuit training for 3 days per week for a period of 6 weeks for Group “B,” there was no specific training. All the subjects were tested on the selected motor fitness variables such as leg explosive power and abdominal strength endurance before and after 6 week of circuit training. The data pertaining to the motor fitness variables were statistically analyzed with analysis of covariance (ANCOVA). In all cases, 0.05 level of confidence was fixed as a level of confidence to test the hypothesis. The finding of the study reviles that the experimental group had made a significant difference in all the selected motor fitness variables such as leg explosive power and abdominal strength endurance when compared to control group. Hence, it was concluded that 6 week of circuit training improved the selected motor fitness variables of intercollege women kabaddi players.

Keywords: Abdominal strength endurance, Circuit training, Leg explosive power

INTRODUCTION

Circuit training is a form of conditioning combining resistance training and high-intensity aerobics. It is designed to be easy to follow and to target strength building as well as muscular endurance. The “circuit” exercise is the completion of all prescribed exercises in the program. Once one circuit is complete, the first exercise begins again for another circuit. Conventionally, the time between circuit training exercises is short, often with rapid movement to the next exercise. Circuit training is a great way to improve mobility, strength and stamina. Circuit training consists of 6–10 exercises of strength, which are completed from one exercise to another. Each exercise is performed for a specified number of repetitions or a set time before proceeding to the next exercise. Exercises in each circuit are separated by a short rest period, and each circuit is separated by a longer rest period. The total number

of training sessions may vary from two to six depending on your training level (beginner, intermediate, or advanced), your training period (preparation or competition), and your training objective. Circuit training is an evolving training exercise program developed by R.E. Morgan; G.T. Anderson was at the University of Leeds in England in 1953. Weight training is the best way to improve strength and endurance. No equal amount of muscle hypotrophy is produced by any type of weight training. Weight training with a certain type of load leads to the best possible results. Essentially, the organization of strength training consists of two things: (a) Methods of strength exercise arrangements and (b) loading during strength exercise. Weight training is storming fitness enthusiasts and has even become attractive to 1000 of people who once called themselves couch potatoes. Weight training is an activity you can do in a short period of time, yet it can make dramatic changes in how your body looks and feels. Many who train weight will tell you that having a firm body not only feels great but also has a positive effect on how it looks to others. Weight training can increase energy levels and improve productivity in work and day-to-day activities. Weight training helps maintain muscle

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strength, muscle endurance, neuromuscular co-ordination, and bone density. Recent research indicates that weight training contributes significantly to the quality of life, regardless of gender or age. In fact, the interest in weight training has increased considerably between the elderly and children. The amount of weight to be used should be based on the percentage of the maximum amount of weight that can be lifted at 1 time, generally referred to as one maximum repetition (1RM). Athlete should train according to their genetic predisposition for maximum results. An athlete with a higher proportion of fast twitch muscles would benefit from sprint training and a muscle strength program with fewer repetitions of a heavier weight. The number of repetitions of fatigue is an important consideration in the design of a strength training program. A set of 4–6 RMs performed 3 days a week is a typical strength training program. In a number of studies comparing multiple programs to produce greater strength gains than a single set, the majority of studies have shown that there is no significant difference. The handling of heavy weights in pursuit of strength will require a recovery of 3–5 min between sets. Most athletic events are fast and dynamic, and therefore this quality must be reflected in the strength of the athlete’s work.

METHODOLOGY

Subjects for the present study the investigator selected, a total of 30 women kabaddi players were selected from the Department of Physical Education, Annamalai University, Chidambaram, Tamil Nadu. The age of the subjects ranged from 18 to 22 years. The subjects were randomly assigned to two equal groups of fifteen each and named as Group “A” and Group “B.” Group “A” underwent circuit training and Group “B,” there was no specific training.

The variables were selected by reviewing and studying related literature in detail and the following motor fitness variables were selected [Table 1].

EXPERIMENTAL DESIGN

The pre- and post-test random group design was used as experimental design, in which 30 women subjects were divided into two groups one experimental group and one control group of fifteen subjects each. The experimental group underwent circuit weight training and control group acted as the control. The subjects tested on selected criterion variables were abdominal strength endurance and leg explosive power before and immediately after the training program.

Table 1: Selection of variables and test

Variables	Test
Leg explosive power	Standing broad jump
Abdominal strength endurance	Bend knee sit-ups

TREATMENT

The experimental group was underwent circuit training trice a week for a period 6 weeks. Move from exercise to exercise with no more than 30 s of rest in between. When they complete one circuit, rest for 1–2 min, and then complete the second circuit and the training tempo was 2 counts for the concentric action and 3 counts for eccentric action. Each work out was for a duration of 45–60 min (excluding warm ups and cool down). The training programmers were conducted at physical education college ground. Exercise prescribed below was continuous throughout the duration but, intensity had changed after every week. The first session began with 60% of the 1RM test. The weight training exercises were including bench press, good morning exercise, hamstring curl, and calf raise. The collected data from the two groups before and immediately after the training program. The selected motor fitness variables were statistically analyzed with analysis of covariance (ANCOVA). In all cases, 0.05 level of confidence was fixed as a level of confidence to test the hypothesis.

ANALYSIS AND INTERPRETATION

Tables 2 and 3 show that the pre- and post-test mean of leg explosive power between experimental group and control group were 2.32 + 0.18, 2.46 +0.20, and 2.17 + 0.18, 2.37 + 0.30, respectively. The obtained “F” ratio value 1.09 for pre-test mean and 23.33 for post-test on leg strength. The required table value is 4.20 for significant at 0.05 level of confidence with df 1 and 28. It indicated that the pre-test was insignificant and post-test was significant at 0.05 level of confidence. The adjusted post-test mean of leg explosive power between the experimental group and control group was 2.65 and 2.30, respectively. The “F” ratio value 143.3 for adjusted post-test mean is higher than the required table value 4.21 for significant at 0.05 level of confidence with df 1 and 27. The result of the study indicated that there was significant difference between the adjusted post-test mean of experimental group and control group. The pre- and post-test mean of abdominal strength endurance between experimental group and control group was 36.30 + 4.67, 44.41 + 5.76 and 39.17 + 5.49, 39.17 + 5.13, respectively. The obtained “F” ratio value 2.38 for pre-test mean and 5.48 for post-test on leg strength. The required table value is 4.20 for significant at 0.05 level of confidence with df 1 and 28. It indicated that the pre-test was insignificant and post-test was significant at 0.05 level of confidence. The adjusted post-test mean of leg explosive power between the experimental group and control group was 45.85 and 38.30, respectively. The “F” ratio value 92.50 for adjusted post-test mean is higher than the required table value 4.21 for significant at 0.05 level of confidence with df 1 and 27. The result of the study indicated that there was significant difference between the adjusted post-test mean of experimental group and control group.

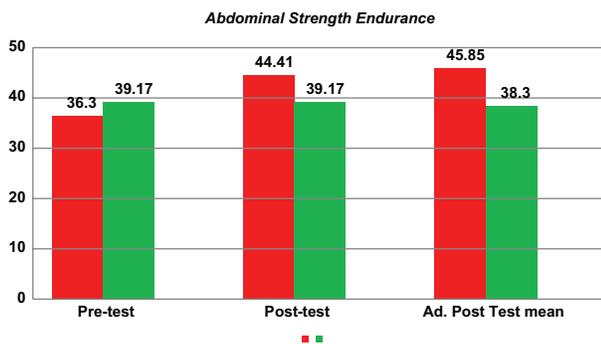
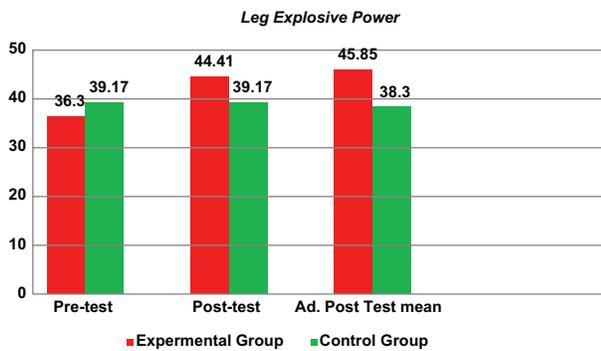
Table 2: Descriptive scores of experimental group and control group on selected fitness variables

Variables	Group	Pre-test	S.D±	Post-test	S.D±	Ad. Post-test mean
Leg Explosive Power	Experimental Group	2.32	0.18	2.46	0.20	2.65
	Control Group	2.17	0.18	2.37	0.30	2.30
Abdominal Strength Endurance	Experimental Group	36.30	4.67	44.41	5.76	45.85
	Control Group	39.17	5.49	39.17	5.13	38.30

Table 3: Analysis of covariance on selected fitness variable

Variables	Test	Source of Variance	Sum of Squares	Df	Mean Squares	F' ratio
Leg Explosive Power	Pre-test	Between	0.012	1	0.012	1.09*
		Within	0.32	28	0.011	
	Post-test	Between	0.35	1	0.35	23.33*
		Within	0.42	28	0.015	
	Adjusted Post-test	Between	0.43	1	0.43	143.33*
		Within	0.091	27	0.003	
Abdominal strength endurance	Pre-test	Between	64.58	1	64.58	2.38*
		Within	760.28	28	27.15	
	Post-test	Between	163.33	1	163.33	5.48*
		Within	834.38	28	29.79	
	Adjusted Post-test	Between	391.28	1	391.28	92.50*
		Within	114.28	27	4.23	

Significant at 0.05 level of confidence



DISCUSSION ON FINDING

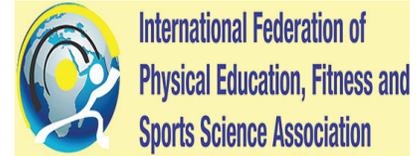
The result of the study shows that 6-week circuit training resulted in the improvement of leg strength, leg explosive power, and abdominal strength endurance of kabaddi players. The increase in the abdominal strength and endurance may be due to the fact that the abdomen exercises were done both in the training and cool down session. Increase in the leg strength and leg explosive power may be due to the circuit weight training exercise intensity and their movement speed and explosiveness. The findings of the present study regarding these variables are in agreement with the finding of Masamoto *et al.*, (2003), Ford (1983), McGovernand (2004), and Berryman *et al.*, (2010).

CONCLUSION

1. Based on the results, it can be reveal that the 6 weeks of circuit training significantly improved the leg explosive power and abdominal strength endurance on selected women strength.
2. The results of the study provided the evidence that the circuit training is an effective method for developing the motor fitness variables such as leg explosive power and abdominal strength endurance.

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Research Article

Effect of aerobic exercises on the motor and physiological variables of long jumper of Hardoi district of Uttar Pradesh

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ABSTRACT

Today, the preparation of an athlete for high level achievement is a complex dynamic matter especially by a high level of motor and physiological efficiency and the degree of perfection skill and proper training and policy. As a result of exercise, many motor fitness components changes take place in various system organs and their functions at various level of rest and work because of interest as they interact with each other.

Keywords: Aerobic exercises, Jumpers motor and physiological

INTRODUCTION

The purpose of this study is to find out the effect of aerobic exercise on the motor and physiological variables of long jumpers at Hardoi district and to find out which of the two categories is more fit of motor fitness component and physiologically sound is responding to standardized level fitness.

HYPOTHESIS

There may not be any sufficient difference between long jumper and triple jumper in relation to the effect of aerobic exercises on motor and physiological variables of Uttar Pradesh state.

METHODOLOGY

The purpose of the study was to find out the aerobic exercise on selected motor and physiological variables among Government College boys at Hardoi district. To achieve this purpose, 30 long jumpers and 30 boys triple jumpers studying in government intercollege at Hardoi district were randomly selected as subject the age of subject ranged from 15 to 18 years.

TOOLS USED

The following motor fitness component is endurance, cardio respiratory endurance physiological variables, the resting pulse rate test and vital capacity were administered on sprinter of Government College Boys at Hardoi district.

FINDINGS OF THE STUDY

The chart shows that the adjusted post-test means on muscular endurance of control group and aerobic exercise group are 33.81 and 39.71, respectively. The obtained “F” ratio value of 845.54 of adjusted post-test data on muscular endurance is greater than the required table value of 4.107 for significance at 0.05 level of confidence. The adjusted post-test means on cardio respiratory endurance of control group and aerobic exercise group are 1874.07 and 2018.92, respectively.

The obtained “F” ratio value of 303.20 of adjusted post-test data on cardio respiratory endurance is greater than the required table value of 4.105 for significance level at 0.05 level of confidence. The adjusted post-test means on resting heart rate of control group and aerobic exercise group are 73.51 and 70.01, respectively.

The obtained “F” ratio value of 17.55 of adjusted post-test data on resting heart rate is greater than the required table value of 4.105 for significance at 0.05 level of confidence.

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The adjusted post-test means on vital capacity of control group and aerobic exercise group are 3.527 and 4.014, respectively. The obtained “F” ratio value of 30.320 of adjusted post-test data on resting heart rate is greater than the required table value of 4.105 for significance at 0.05 level of confidence. The result of the study showed that there was significant difference among the adjusted post-test means of control group and aerobic exercise group.

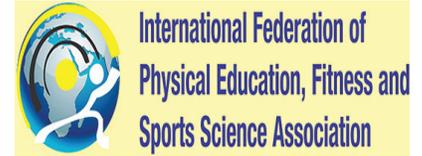
CONCLUSIONS

It remains to be seen whether large gains in muscular strength aerobic power and aerobic exercise have an associated negative

effect on other physiological variables. Thus, there is a great potential for the future research in this field and the result will have widespread applications to a variety of athletic events.

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Research Article

Effects of *Psidium guajava* with and without walking exercise on mean atrial pressure, pre-, and post-glucose among deskbound people

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ABSTRACT

The purpose of the study was to find out the effects of *Psidium guajava* with and without walking on mean atrial pressure, pre-, and post-glucose among deskbound people. To achieve the purpose of this study, 60 ($n = 45$) desk bound people were selected from desk bound people in Chennai that were selected as subject at random and their age group ranged between 30 and 45 years male overweight. The selected 40 office going desk bound people were divided into three equal groups consisting of 15 ($n = 15$) subjects each. The selection of control and experimental groups was done at random. Experimental Group I underwent *P. guajava* without walking for 3 days per week. Experimental Group II underwent *P. guajava* with walking for 3 days per week. Subjects who were in the control group were not exposed to any training and supplementation for the period of 12 weeks. mean atrial pressure, pre-, and post-glucose were selected as dependent variables and independent variables are exercise. The data were collected before and after the experimental treatment period. Analysis of covariance (ANCOVA) and Scheffe's *post hoc* test were used in this study. It was concluded that mean atrial pressure, pre-, and post-glucose levels were significantly decreased due to the influence of 12 weeks of *P. guajava* with and without walking exercise comparing to the control group.

Keywords: *Psidium guajava*, Mean Atrial Pressure, Glucose

HEALTH BENEFITS OF *PSIDIUM GUAJAVA* (GUAVA)

Guava, *P. guajava* (Linn.), a member of *Myrtaceae* family, is a common tropical plant with a long history of traditional usage. It is used not only as food but also as folk medicine, and various parts of this plant have a number of medicinal properties ranging from antimicrobial activity to anticancer property. An added advantage is that cultivation of guava is relatively easy as it thrives in a variety of soils and adapts to different climatic conditions; the fruits are also borne fairly in a short period. Due to the various commercial applications, guava trees are found throughout India. Although they are planted in almost all states, Andhra Pradesh, Assam, Bihar, Maharashtra, Uttar Pradesh, and West Bengal are the important cultivators

of this plant. It is well known tropic tree grown in tropic areas for fruit. It is found to be effective in diarrhea, dysentery, gastroenteritis, hypertension, diabetes, caries, pain relief, cough, oral ulcers and to improve locomotors coordination, and liver damage inflammation.

AMAZING HEALTH BENEFITS OF GUAVA: IMMUNITY BOOSTER

Guavas are one of the richest sources of Vitamin C. Guava fruit contains 4 times the Vitamin C content present in oranges. Vitamin C helps improve immunity and protects you against common infections and pathogens.

Diabetes Friendly

Due to the rich fiber content and low glycemic index, guavas prevent the development of diabetes. While the low glycemic index inhibits a sudden spike in sugar levels, the fiber content ensures that the sugar levels are well regulated.

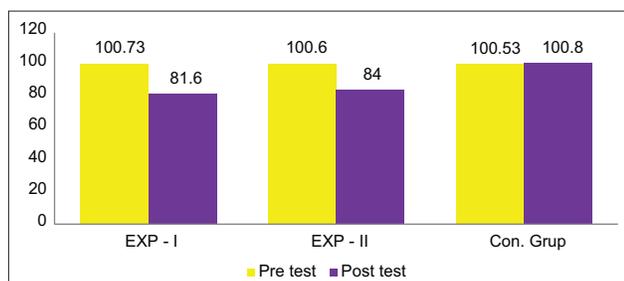
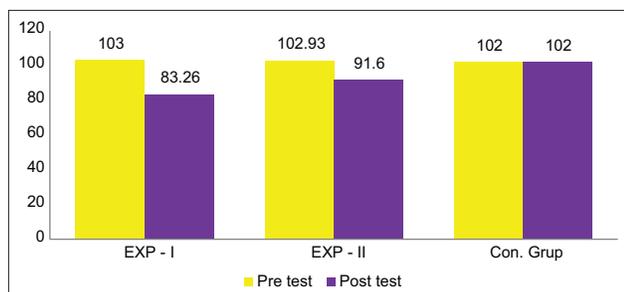
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Table 1: ANCOVA of mean atrial pressure

Means	EXP-I	EXP-II	Con. Grup	S.V	S.S	D.F	M.S	O. F
Pre-test	103	102.93	102	b	9.37	2	4.68	0.40
				w	492.93	42	11.73	
Post-test	83.26	91.6	102	b	2642.711	2	1321.35	77.02
				w	720.53	42	17.15	
Adjusted test	83.18	91.53	102.14	b	2666.93	2	1333.46	78.74
				w	694.35	41	16.93	

Table 2: ANCOVA of pre-prandial blood sugar

Means	EXP-I	EXP-II	Control Group	S.V	S.S	D.F	M.S	O. F
Pre-test	100.73	100.66	100.53	B	0.31	1	0.31	0.07
				W	192	43	4.46	
Post-test	81.6	84	100.8	B	3283.2	1	3283.2	275.74
				W	512	43	11.90	
Adjusted	112.47	114.91	131.79	B	3316.54	1	3316.54	316.95
				W	439.479	42	10.46	



Heart Healthy

Guava fruit helps improve the sodium and potassium balance of the body, thereby regulating blood pressure in patients with hypertension. Guavas also help lower the levels of triglycerides and bad cholesterol (LDL), which contribute to the development of heart disease. This magical fruit improves levels of the good cholesterol (HDL).

Stress-Buster

The magnesium present in the fruit is responsible for one of the many benefits of guava, helps to relax the muscles and nerves of the body. Hence, after a hard workout or a long day at the

office, a guava is certainly what you need to relax your muscles, combat stress, and give your system a good energy boost.

WEIGHT LOSS

Want to shed a few pounds? Guava is just the ticket. Without compromising your intake of proteins, vitamins and fiber, guava helps you lose weight by regulating your metabolism. It is a win-win! Guava makes for a very filling snack and satisfies the appetite very easily. Guava, especially raw guava, also has far less sugar as compared to apples, oranges, grapes, and other fruits.

Statement of the Problem

The purpose of the study was to find out the effects of *P. guajava* with and without walking exercise on mean atrial pressure and pre-prandial blood sugar among deskbound people.

Selection of Variables

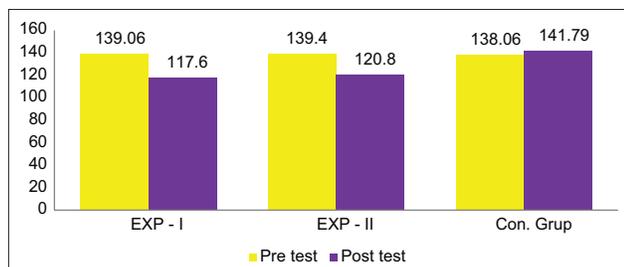
The following variables were selected for this study. I. Dependent Variables: Mean Atrial Pressure and Pre-Prandial Blood Sugar.

INDEPENDENT VARIABLES

(1). *P. guajava* Without Walking Exercise (2). *P. guajava* With Walking Exercise, Experimental Design: The subject were selected for this study through the random group design consisting of pre- and post-test, 45 desk bound people randomly divided into three groups, the group was assigned as an experimental groups and control group. The groups are (1). *P. guajava* without exercise, (2). *P. guajava* eith exercise, and (3). control group

Table 3: ANCOVA of post-prandial blood sugar

Means	EXP-I	EXP-II	Control Group	S.V	S.S	D.F	M.S	O.F
Pre-test	139.06	139.4	138.06	B	14.44	1	14.44	0.54
				W	1149.46	43	26.73	
Post-test	117.6	120.8	141.33	B	4975.64	1	4975.64	90
				W	2377.33	43	55.28	
Adjusted	146.99	150.05	171.15	B	5134.36	1	5134.36	99.38
				W	2169.92	42	51.66	



TRAINING SCHEDULES

During the training period, the experimental group underwent their walking program period of 12 weeks.

Statistical Technique

Analysis of Covariance (ANCOVA) statistical technique was used, to test the significant difference among the treatment groups. Thirumalaisamy R. (2004).

COMPUTATION OF ANCOVA

The following tables illustrate the statistical results of effects of *P. guajava* with and without exercise on mean atrial pressure, pre-, and post-glucose among deskbound people and ordered adjusted means and the difference between the means of the groups under study.

This result indicated that the effects of *P. guajava* with and without walking exercise on mean atrial pressure had significantly reduced among deskbound people, when compared with control group in terms of means. Further findings of the study indicated that *P. guajava* with walking exercise had greater reduction in mean atrial pressure than the *P. guajava* without walking exercise. It is all because of the supplementing the natural products are influenced in the heart- and heart-related tubes to make the systems more vibrant and powerful contracting to eject the blood to proper supply for working muscles and produced better performance and it avoid to formation of high glycemic index and forming of cholesterol in the body. Hence, it is concluded that the *P. guajava* with and without walking exercise had significantly influenced reduced mean atrial pressure.

This result indicated that the effects of *P. guajava* with and without walking exercise on pre-prandial blood sugar had significantly reduced among deskbound people, when compared with control group in terms of means. Further findings of the study indicated that *P. guajava* with walking exercise had greater reduction in glucose than the *P. guajava* without walking exercise. It is all because of the supplementing the natural products are influenced and converted the glucose spent as energy sources for working muscles and produced better performance and it avoid to formation of high glycemic index in the major muscle groups and liver and further forming of cholesterol in the body. Hence, it is concluded that the *P. guajava* with and without walking exercise had significantly influenced reduced pre-prandial blood sugar deposition in the body. Due to right proposition of insulin was secreted with influence of *P. guajava*.

This result indicated that the effects of *P. guajava* with and without walking exercise on post-prandial blood sugar had significantly reduced, when compared with control group in terms of means. Further findings of the study indicated that *P. guajava* with walking exercise had greater reduction in glucose than the *P. guajava* without walking exercise. It is all because of the supplementing the natural products are influenced and converted the glucose spent as energy sources for working muscles and produced better performance and it avoid to formation of high glycemic index and additional forming of excess cholesterol in the body. Hence, it is concluded that the *P. guajava* with walking exercise had significantly influenced post-prandial blood sugar deposition in the body. Once the tissue is receiving better secretion of insulin then it will open the Glut-4 gate and glucose may enter in to the cell and glucose may be converted as energy sources of r working muscle so there are no chances to forming of excess glucose in the major muscles.

CONCLUSIONS

Within the limitations of the study, the following conclusions were drawn:

1. Experimental Group I (*P. Guajava* with walking) showed significantly greater reduction on mean atrial pressure, pre-, and post-glucose than that of Experimental Group II

(*P. Guajava* without walking) at the end of 12 week of *P. Guajava* with and without walking period of time.

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Research Article

Effects of *Psidium guajava* with and without walking on glucose ascorbic acid and mean atrial pressure among deskbound people

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ABSTRACT

The purpose of the study was to find out the effects of *Psidium guajava* with and without walking on glucose ascorbic acid and mean atrial pressure among deskbound people. To achieve the purpose of this study, 60 ($n = 45$) desk bound people were selected from office going desk bound people in Chennai that were selected as subject at random and their age group ranged between 30 and 45 years male overweight. The selected 40 office going desk bound people were divided into three equal groups consisting of 15 ($n = 15$) subjects each. The selection of control and experimental groups was done at random. Experimental Group I underwent *P. guajava* without walking for 3 days per week. Experimental Group II underwent *P. guajava* with walking for 3 days per week. Subjects who were in the control group were not exposed to any experimental training and supplementation for the period of 12 weeks. Glucose ascorbic acid and mean atrial pressure were selected as dependent variables and independent variables are simple walking. The data were collected before and after the experimental treatment period. Analysis of covariance and Scheffe's *post hoc* test were used in this study. It was concluded that glucose and mean atrial pressure levels were significantly decreased and significantly increased ascorbic acid due to the influence of 12 weeks of *P. guajava* with and without walking comparing to the control group.

Keywords: Glucose, Atrial Pressure, Psidium Guajava etc

HEALTH BENEFITS OF *PSIDIUM GUAJAVA* (GUAVA)

Guava, *P. guajava* (Linn.), a member of *Myrtaceae* family, is a common tropical plant with a long history of traditional usage. It is used not only as food but also as folk medicine, and various parts of this plant have a number of medicinal properties ranging from antimicrobial activity to anticancer property. An added advantage is that cultivation of guava is relatively easy as it thrives in a variety of soils and adapts to different climatic conditions; the fruits are also borne fairly in a short period. Due to the various commercial applications, guava trees are found throughout India. Although they are planted in almost all states, Andhra Pradesh, Assam, Bihar, Maharashtra, Uttar Pradesh, and West Bengal are the important cultivators of this plant. It is well known tropic tree grown in tropic areas

for fruit. It is found to be effective in diarrhea, dysentery, gastroenteritis, hypertension, diabetes, caries, pain relief, cough, oral ulcers and to improve locomotors coordination, and liver damage inflammation.

AMAZING HEALTH BENEFITS OF GUAVA

Immunity Booster

Guavas are one of the richest sources of Vitamin C. Guava fruit contains 4 times the Vitamin C content present in oranges. Vitamin C helps improve immunity and protects you against common infections and pathogens.

Diabetes Friendly

Due to the rich fiber content and low glycemic index, guavas prevent the development of diabetes. While the low glycemic index inhibits a sudden spike in sugar levels, the fiber content ensures that the sugar levels are well regulated.

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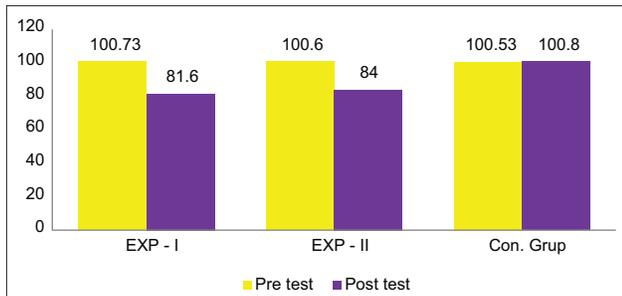
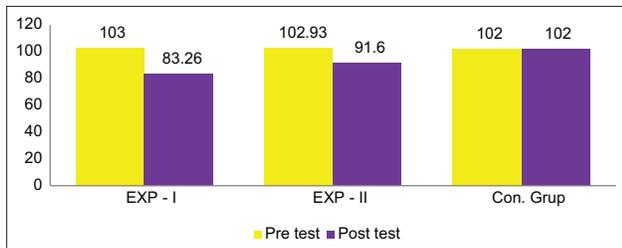
Email: rajesh2sports@gmail.com

Table 1: Computation of analysis of covariance mean atrial pressure

Means	EXP-I	EXP-II	Control Group	S.V	S.S	D.F	M.S	O. F
Pre-test	103	102.93	102	b	9.37	2	4.68	0.40
				w	492.93	42	11.73	
Post-test	83.26	91.6	102	b	2642.711	2	1321.35	77.02
				w	720.53	42	17.15	
Adjusted	83.18	91.53	102.1485	b	2666.93	2	1333.46	78.74
				w	694.35	41	16.93	

Table 2: Computation of analysis of covariance glucose

Means	EXP-I	EXP-II	Control Group	S.V	S.S	D.F	M.S	O.F
pre-test	100.73	100.66	100.53	b	0.31	2	0.31	0.07
				w	192	43	4.46	
Post-test	81.6	84	100.8	b	3283.2	2	3283.2	275.74
				w	512	43	11.90	
adjusted	112.47	114.91	131.79	b	3316.54	2	3316.54	316.95
				w	439.47	42	10.46	



Heart Healthy

Guava fruit helps improve the sodium and potassium balance of the body, thereby regulating blood pressure in patients with hypertension. Guavas also help lower the levels of triglycerides and bad cholesterol (LDL), which contribute to the development of heart disease. This magical fruit improves levels of the good cholesterol (HDL).

Stress-Buster

The magnesium present in the fruit is responsible for one of the many benefits of guava, helps to relax the muscles and nerves of the body. Hence, after a hard workout or a long day at the

office, a guava is certainly what you need to relax your muscles, combat stress, and give your system a good energy boost.

Weight Loss

Want to shed a few pounds? Guava is just the ticket. Without compromising your intake of proteins, vitamins, and fiber, guava helps you lose weight by regulating your metabolism. It's a win-win! Guava makes for a very filling snack and satisfies the appetite very easily. Guava, especially raw guava, also has far less sugar as compared to apples, oranges, grapes, and other fruits.

Statement of the Problem

The purpose of the study was to find out the effects of *P. guajava* with and without walking on glucose ascorbic acid and mean atrial pressure among deskbound people.

Selection of Variables

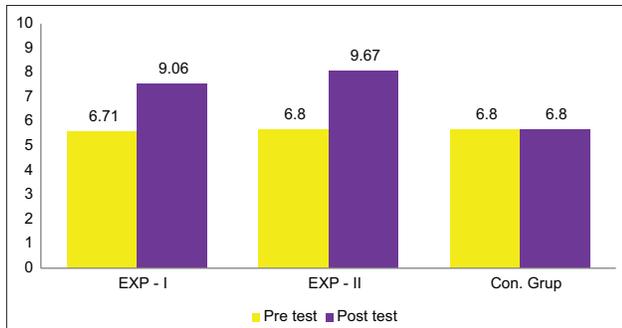
The following variables were selected for this study. I. Dependent Variables: Glucose Ascorbic Acid, and Mean Atrial Pressure.

INDEPENDENT VARIABLES

(1) Simple walking, (2) Control group, experimental design: The subjects were selected for this study through the random group design consisting of pre- and post-test, 45 college men athletes randomly divided into three groups, the group was assigned as an experimental groups and control group. The groups are (1) *P. guajava* without walking, (2) *P. guajava* with walking, and (3) Control group.

Table 3: Computation of analysis of covariance ascorbic acid

Means	EXP - I	EXP - II	Control Group	S.V	S.S	D.F	M.S	O.F
Pre-test	6.71	6.80	6.80	b	0.010	1	0	0.00
				w	54.35	43	1.26	
Post-test	9.06	9.67	6.80	b	40.40	1	40.40	3.08
				w	564.24	43	13.12	
Adjusted	10.77	10.10	8.51	b	40.40	1	40.40	2.72
				w	577.93	42	13.76	



TRAINING SCHEDULES

During the training period, the experimental group underwent their program period of 8 weeks.

Analysis of Covariance (ANCOVA) statistical technique was used, to test the significant difference among the treatment groups. Thirumalaisamy R. (2004).

COMPUTATION OF ANCOVA

The following tables illustrate the statistical results of effects of *P. guajava* with and without.

Statistical Technique

Walking on glucose ascorbic acid and mean atrial pressure among deskbound people and ordered adjusted means and the difference between the means of the groups under study.

This result indicated that the effects of *P. guajava* with and without walking on mean atrial pressure had significantly reduced among deskbound people, when compared with control group in terms of means. Further findings of the study indicated that *P. guajava* with walking had greater reduction in mean atrial pressure than the *P. guajava* without walking. It is all because of the supplementing the natural products are influenced in the heart- and heart-related tubes to make the systems more vibrant and powerful contracting to eject the blood to proper supply for working muscles and produced better performance and it avoids to formation of high glycemic index and forming of cholesterol in the body. Hence, it is

concluded that the *P. guajava* with and without walking had significantly influenced reduced mean atrial pressure.

This result indicated that the effects of *P. guajava* with and without walking on glucose had significantly reduced among deskbound people, when compared with control group in terms of means. Further findings of the study indicated that *P. guajava* with walking had greater reduction in glucose than the *P. guajava* without walking. It is all because of the supplementing the natural products are influenced and converted the glucose spent as energy sources for working muscles and produced better performance and it avoids to formation of high glycemic index and forming of cholesterol in the body. Hence, it is concluded that the *P. guajava* with and without walking had significantly influenced reduced blood glucose deposition in the body.

This result indicated that the effects of *P. guajava* with and without walking on ascorbic acid had significantly increased among deskbound people, when compared with control group in terms of means. Further findings of the study indicated that *P. guajava* with walking had greater increase in ascorbic acid than the *P. guajava* without walking. It is all because of the supplementing the natural supplementation had potential to increase from its natural stuff in to the human body when it is taken in to raw material. Its making muscle is forceful muscular contraction in the portion of actin and myosin. Hence, it is concluded that the *P. guajava* with and without walking had significantly influenced to increase ascorbic acid in the body.

CONCLUSIONS

Within the limitations of the study, the following conclusions were drawn:

1. Experimental Group I (*P. guajava* with walking) showed significantly greater reduction on glucose and mean atrial pressure than that of Experimental Group II (*P. guajava* without walking) at the end of 12 week of *P. guajava* with and without walking period of time.
2. Experimental Group I (*P. guajava* with walking) showed significantly greater increased on ascorbic acid than that of Experimental Group II (*P. guajava* without walking) at

the end of 12 week of *P. guajava* with and without walking period of time.

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Research Article

Effect of age-appropriate physical activity program of physical education on selected health-related physical fitness among school students of Medchal district

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ABSTRACT

Objective: The objective of this study was to examine the Effect of Age-Appropriate Physical Activity Program (AAPAP) of physical education on selected health-related physical fitness among school students of Medchal District. **Methods:** A sample of ($n=180$) subjects were selected by random sampling method based on age categories. The age ranges from 10 to 16 years. The selected subjects were divided into six groups, that is, three experimental groups 1, 2, and 3 and three control groups 1, 2, and 3 based on the three age categories (Category I - 10–12 years, Category II – 12–14 years, and Category III – 14–16 years of age) from three schools of Medchal district. Twelve weeks of AAPAP of P.E for 30 min in initial 6 weeks and 40 min duration of training were given in later 6 weeks. Pre-test and post-test were conducted on selected health-related physical Fitness variables, that is, flexibility and cardiovascular endurance by administering sit and reach test and 600 m run/walk test. Statistical technique analyzed with paired sample t -test that it was used to know the separate results for each age category. **Results:** The results of the study indicates that improvement in selected health-related variables, that is, flexibility and cardiovascular endurance was significantly improved as a result of the participating in AAPAP.

Keywords: Age-appropriate, Physical activity, Sit and reach test

INTRODUCTION

Physical education is meant not just for physical growth and all round development but also for education through the entire person's physical activity (PA). PA is defined as any bodily movement produced by contraction of skeletal muscles that require energy expenditure (PA – *Physiopedia*, n.d.). Exercise and other activities that require physical movement, such as playing, working, active transportation, housework, and recreational activities, are part of PA.

Relationship between PA, Physical Education, and Health-related Fitness on Children

A study on PA on health and behavior outcomes and develop evidence-based recommendations for PA in youth had revealed that the programs of moderate to vigorous PA of 30–45 min duration 3–5 days per week had a greater amount of PA would be necessary to achieve beneficial effects on health-related fitness

outcomes in ordinary daily circumstances (Strong *et al.*, 2005). One of the study showed that low PA was associated with several other negative health behaviors in teenagers. Future studies should examine whether interventions for increasing PA in youth can be effective in reducing negative health behaviors (Pate *et al.*, 1996). A health-related physical education curriculum can provide students with substantially more PA during physical education classes. Improved physical education classes can potentially benefit 97% of elementary school students (Sallis *et al.*, 1997).

The health effects of a daily PA program have been carried out in 10-year-old school children in Adelaide, South Australia. The fitness group experienced significant gains in physical work capacity and showed significant decreases in body fat compared to the other groups. The findings suggest beneficial effects on health of daily PA programs within existing primary school curricula (Dwyer *et al.*, 1983).

Age-appropriate

- “Age-appropriate is suitable for people of a particular age, particularly concerning child development.” – Macmillan dictionary

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- “Age-appropriate is suitable or right for people of a particular age or age group”. - Cambridge dictionary.

If children are not exposed to age-appropriate activities and experiences early on, they will not gain the skills necessary for their present and future development stages. Around the world, certain activities have guidelines for children’s age groups for specific training.

Recommended PA for Each Age Category by the WHO and CDC

Ages up to 5 years at any intensity, of which at least 60 min are moderate to high PA, spend at least 180 min spreading all day; it is better; it does not take more than 1 h to be restricted at the time. Children and adolescents aged 5–17 are expected to do moderate to vigorous, mostly aerobic at least 3 days/week with high intensity, PA at least 60 min a day on average. The aerobic PA of adults between 18 and 64 years of age should last at least 150–300 min, or vigorously 75–120 min. According to the experts, at least 2 days a week, people should exercise more to strengthen their muscles. Adults of all ages should be taking in more exercise than recommended. Older adults should get involved in moderate to vigorous PA 3 days per week by concentrating on different fitness components (PA, n.d.) (*How Much PA Do Children Need?* |PA| CDC, n.d.).

Various Commissions on Physical Education Program

The Kunzru Committee, in 1959, proposed an integrated schooling and physical education policy and a mandatory curriculum for both. Physical education is essential for physical health and performance, mental alertness, and the creation of specific characteristics. Thereby, it is to be “restructured, updated, and revamped in the specific underlying values of growth and progress in the individual underlying values of development and improvement” (Kothari Commission 1966). “Early childhood care and education should consist of more structured, play-based, or activity-based learning” (National education policy 2020).

According to various commissions’ reports, physical education should be made mandatory in all schools beginning with elementary school, and physical education curriculum should be restructured and updated to reflect their ages and current state.

Significance of the Study

Due to the lack of studies in the age-appropriate PA programs (AAPAPs) on school physical education curriculum, the present study of the age-appropriate PA of Physical Education Program on selected health-related fitness variables among school students of Medchal district was conducted. The studies that were looked into did not find a combination of all such variables, that is, health-related fitness with the AAPAP of Physical Education for students.

In this regard, the researcher thought that it was indeed the need of an hour of the study to intervene in the age categories with the students’ health-related physical fitness variables on school physical education program. The study of the effect of AAPAP of physical education on selected health-related physical fitness among school students of Medchal district may effectively develop the student progress in the respective age categories.

Aim of the Study

The aim of the study was to find out whether there were any relationship exists between the age categories and health-related physical fitness variables through the AAPAP of physical education among School Students of Medchal District.

METHODOLOGY

Selection of the Subjects

A sample of ($n = 180$) subjects were selected by random sampling method based on age categories. The age ranges from 10 to 16 years. The selected subjects were divided into six groups, that is, three experimental groups 1, 2, and 3 and three control groups 1, 2, and 3 based on the three age categories (Category I – 10–12 years, Category II – 12–14 years, and Category III – 14–16 years of age) from schools of Medchal Dist. Twelve weeks of AAPAP-1, 2, and 3 of P.E for 30 min in initial 6 weeks and 40 min duration of training were given in later 6 weeks for each experimental groups separately. Control groups not participate in intervention program, but they do participate in routine physical education program, that is, RPE-1, 2, and 3, pre-test and post-test were conducted on selected health-related physical fitness variables, that is, flexibility and cardiovascular endurance by administering sit and reach test and 600 m run/walk test.

Selection of Variables

The investigator reviewed the available scientific literature on the basis of discussion with experts, feasibility criteria, and availability of equipment’s and relevance of the present study variable. Selected health-related fitness variables are – flexibility and cardiovascular endurance. Flexibility by administering sit and reach test and cardiovascular endurance by administering 600 m run/walk test.

Experimental Design

1. The 180 subjects from the 3 age categories (Category I – 10–12 years, Category II – 12–14 years, and Category III – 14–16 years of age) of 60 each in each age category from three schools (ZPHS Kolthur, ZPHS Keshawaram, and ZPHS Lalgadimalakpet) of Medchal district of the Telangana state
2. The selected subjects will be randomly divided into six equal groups of 30 subjects each based on their age categories

- Three experimental groups of AAPAP of physical education (AAPAP of PE), that is, Experimental Group I (AAPAP-1) – (10–12 years), Experimental Group II (AAPAP-2) – (12–14 years), and Experimental Group III (AAPAP-3) – (14–16 years) and three control groups of (RPE-1) C.G-1, (R.P.E-2) C.G-2, and (RPE-3) C.G.-3 from same age category as experimental groups
- Three control groups with RPE. Control groups did not participate in any training program of AAPAP
- Twelve weeks of training will be given to experimental groups for 3 days per weeks with 45 min duration per day and which excludes warming up and warming down.

Collection of Data

To collect the data, test was administrated before and after 12 weeks training, the score were recorded in the initial and final readings for the group.

Statistical Technique

The data collected from the group on the selected variables were statistically examined to find out whether there was any significant difference between the pre-test and post-test for experimental and control groups was employed using Statistical Technique of t-test was used to compare the means scores and t-ratio for significant differences separately for each age categories, that is, between AAPAP-1, 2, 3 (E.G), and RPE-1, 2, 3 (C.G), for the differences in selected health-related fitness variables – flexibility and cardiovascular endurance. The level of significance was fixed at 0.05 level of confidence.

RESULTS

The results of the study indicates that improvement in flexibility and cardiovascular endurance was significantly improved in all the three experimental Groups, as a result of the participating in AAPAP of P.E. It was hypothesized that the training of AAPAP of physical education would cause more improvement in flexibility and cardiovascular endurance on all the three experimental groups. Hence, the hypothesized was accepted [Figure 1].

DISCUSSION

By observing the obtained results in Table 1, it shows that the mean scores of flexibility for experimental groups AAPAP-1, 2, and 3 pre-test mean was 9.23, 7.17, and 5.07 and post-test mean is 12.67, 10.53, and 8.23. The obtained t-ratio's was 17.53, 24.10, and 21.914 which was greater than the table value, that is, 2.05 for 29 degrees of freedom. Hence, AAPAP-1, 2, and 3 is significant at 0.05 level of confidence.

Whereas control groups RPE-1, 2, and 3, pre-test mean was 8.73, 6.93, and 4.73 and post-test mean is 8.77, 7.10, and 5.03, whereas the insignificant t-ratio's for RPE-1, 2, and 3 was 0.85, 0.28, and 0.083 which is less than the required table value of 2.05 for 29° of freedom [Figure 2].

By observing the obtained results in Table 2, it shows that the mean scores of cardiovascular endurance for the experimental groups AAPAP-1, 2, and 3 that pre-test mean was 282, 264, 239 and post-test mean is 264, 239, and 203. The obtained t-ratio's was 17.53, 24.10, and 21.914 which was greater than the table value, that is, 2.05 for 29 degrees of freedom. Hence, AAPAP-1, 2, and 3 is significant at 0.05 level of confidence.

Whereas control groups RPE-1,2, and 3, pre-test mean was 279, 264, and 239 and post-test mean is 280, 263, and 239. Whereas the insignificant t- ratio's for RPE-1, 2, and 3 was 0.85, 0.28, and 0.083 which is less than the required table value of 2.05 for 29° of freedom.

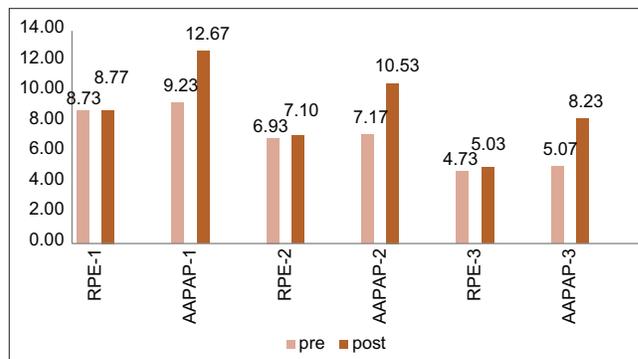


Figure 1: Bar diagram showing the mean difference between pre-test and post-test of the experimental and control groups on flexibility for age categories 1, 2, and 3

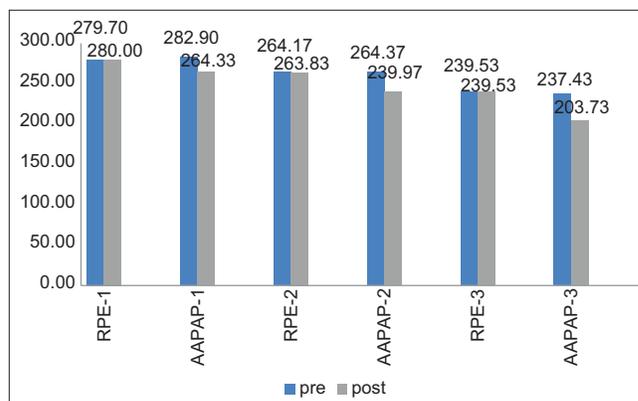


Figure 2: Bar diagram showing the mean difference between pre-test and post-test of the experimental and control groups on cardiovascular endurance for age categories 1, 2, and 3

Table 1: Paired sample “t”-test of experimental groups and control groups on flexibility (units in centimeter’s)

S. No.	Parameters	n=180	Groups	Pre-Test		Post-Test		T ratio	Sig.
				Mean	SD	Mean	SD		
1.	Flexibility	30	RPE-1 (C.G)	8.7333	2.81539	8.7667	2.71247	-0.183	0.856
			AAPAP-1 (E.G)	9.2333	2.90877	12.6667	2.78337	-17.532	0.000
		30	RPE-2 (C.G)	6.9333	3.13966	7.1000	2.56434	-1.095	0.283
			AAPAP-2 (E.G)	7.1667	2.40808	10.5333	2.63574	-24.108	0.000
		30	RPE-3 (C.G)	4.7333	2.16450	5.0333	1.84733	-1.795	0.083
			AAPAP-3 (E.G)	5.0667	2.01603	8.2333	2.02882	-21.914	0.000

*Significant at 0.5 level of confidence, required table value is 2.05

Table 2: Paired sample “t”-test of experimental groups and control groups on cardiovascular endurance (units in Seconds)

S. No.	Parameters	n=180	Groups	Pre-Test		Post-Test		T ratio	Sig.
				Mean	SD	Mean	SD		
1.	Cardiovascular endurance	30	RPE-1 (C.G)	279.7000	10.22219	280.0000	9.47956	-0.523	0.605
			AAPAP-1 (E.G)	282.9000	10.57763	264.3333	9.40042	27.067	0.000
		30	RPE-2 (C.G)	264.1667	7.83046	263.8333	7.19714	0.647	0.522
			AAPAP-2 (E.G)	264.3667	6.85557	239.9667	9.08384	20.888	0.000
		30	RPE-3 (C.G)	239.5333	11.80220	239.5333	11.80220	239.5333	11.80220
			AAPAP-3 (E.G)	237.4333	10.51332	203.7333	13.24812	29.994	0.000

*Significant at 0.5 level of confidence, required table value is 2.05

CONCLUSION

Within the limitation of the study and on the basis of the obtained results from this study, the following conclusions had been drawn:

- It was concluded that the participating in 12 weeks of AAPAP of P.E training program had significantly improved flexibility and cardiovascular endurance on all the three experimental groups when compared to control groups
- It also observed that flexibility is better in AAPAP-1 than AAPAP-2 and 3, but whereas cardiovascular is better in AAPAP-3 than AAPAP- 2 and 1.

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