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EFFECT OF MEDITATION PRACTICE ON PERSONALITY DEVELOPMENT AMONG PHYSICAL EDUCATION STUDENTS

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Dr. K. Balasubramaniyan**

INTRODUCTION

Human development during which the individual undergoes marked physiological, psychological and social changes in the process of growing from a child into an adult. At this age need proper guidance for directing their energy to the development of the positive traits of personality; to understand and appreciate moral and ethical values of life. School, the social institution to which virtually all adolescents are exposed, serves two primary functions: maintenance - actualization and skills training/cultural transmission. All adolescents must construct a set of values that will help them function successfully as adult members of society. As the values of childhood are surrendered, adult values slowly emerge and solidify into a value system that guides interaction with others, and the society for the remainder of the adolescent's life.

Yoga is derived from the Sanskrit word *Yuj* which means to link or join, bringing harmony to body-mind relationship. Yoga aims at bringing good health and equanimity of mind to its practitioners at all times under various pressures and tension. The equipoise resulting from yogic exercises enables the practitioner to see the problem as it is in all its manifestations. This openness of mind allows him to receive and reconcile contradictory ideas and suggestions in solving the problems.. Psychologists have given a comprehensive list of components of personality. *Meditation practice Yoga* founded by YogirajVethathiri Maharishi, is an integrated system of meditation and steady .which leads the individual to self- realization *Meditation practice Yoga* focuses on the development of personality of the individual in the following levels:

Physical level: Makes the bodywork more efficiently by directing the energies in the most controlled fashion.

Mental level: Enhances the power of imagination, creativity and will power of the mind.

Intellectual level: Enhances the power of sharpness and comprehensive development of the intellect with powerful concentration.

Emotional level: Enables to systematically sharpen and sensitize their emotions.

Spiritual level: Helps to move towards the causal state of the mind by introspection wherein the subtle layers of mind untold themselves and the inner dimensions of personality open out.

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The study undertaken to And the effect of *SumpitiMKuwkihw* Yoga on the personality (, social behavior, feelings and emotion*, learning skills, ability to manage stress, interaction »nh family and friends) of students, and also to And the effect of *Meditation practice* on the achievement of its practitioners,

METHODOLOGY

A sample of physical education students was selected at random. The physical education studentsin kovilooraandavarcollege from which 60 students belonging to both sexes were selected for the study. 40 formed the experimental group and 20 formed the control group.

Meditations practices were formulated and followed. None of the internal parts of the body are subjected to any strain . Time duration to perform these exercises is short and the schedule is easy.. Some of the physical exercises included were: circulation, to cure spinal pain, and Relaxation: to reduce blood pressure, stress and strain, and to give inner peace Meditation is done inMeditation practicing by raising theKundaliniShakthifromMooladharato the Agnva Chakra. Three stages ofMeditation were taught to the students namelyAgnya, Shanthi, andThuriya, ensuring that all the students of the experimental group experienced the presence of KundaliniShakthi The frequency of the mind reduces from a normal slate of > 15 cycles / sec to 8-13 cycles/ sec duringAgnyastage andShanthl stage, and to 3-8 cycles per second duringThuriyastage. The practice ofAgnyastage meditation improves the awareness and will power of the student;Shanthi stage relaxes the body and mind; and the practice ofThuriyastage improves the memory power.

Relevant examples were given for each one of them.

Data were collected using Interview .schedule, Questionnaire and Reading material. Interview Schedule for parents and teachers to identify different problems faced by adolescent students. Questionnaire on personality was developed. It consisted of 30 items and required the subject to indicate his/her response in Always*, 'often*, * rarely \ or[4] never* • The items of the questionnaire were based on the personality aspects- physical, social, emotional, learning, stress management, and relationship with family and friends. The reliability and validity were found to be high.

RESULTS AND DISCUSSION

The mean and standard deviation values of the experimental group are higher than that of the control group . It is also observed that the *t' values are significant, which implies that the training has a significant effect on the personality and the academic achievement of the students.

Table I: Effect of meditation practice on personality development

	Control group		Experimental group		"t" ratio
	Mean	SD	Mean	SD	
Physical	9.5825	1.7384	12.92	2.457	8.102
Social	3.095	0.8055	4.924	0.975	12.821
Emotional	3.075	0.875	4.974	0.7825	10.629
Learning	3.085	0.6220	4.992	0.556	17.4255
Stress management	4.625	0.936	6.963	0.9265	11.545
Relationship with family and friends	5.745	0.969	6.901	0.857	9.618
Academic achievement	28.475	5.894	32.45	5.448	3.7425

From the results of respectively after receiving meditation practice. The academic achievement of the students who have received the training had also significantly improved. Thepractice of simplified physical exercises of Meditation practice Yoga results in regularly oxygenizing the body, activate the endocrine glands, purify the blood and regulate its circulation, rejuvenate the whole system and thus help to build up a very high level of immunity against diseases. Meditation has enabled the students to improve their awareness, concentration, and will power and to increase energy level and productivity.

CONCLUSION

With impressive changes taking place in all spheres, adolescents in the coming decades will face new and more intense tensions. The practice ofMeditation practicewill enable them to unfold a greater and more powerful consciousness through meditation,. The study makes a strong recommendation to the introduction ofMeditation practice in the educational system to give the students an opportunity to develop their physical, mental intellectual and emotional dimensions for the building of a harmonious personality.

REFERENCES

Ramasadhu,Yogatharavali, (SadhanaNiketan, Kumbakonam, Tamil Nadu), 1989.

Gupta S C &Kapoor V K, Fundamentals of Mathematical Statistics, (Sultan Chand & Sons, New Delhi), 1983

Swami Chinmayananda, Meditation and Life, (Central Chinmaya Mission Trust, Bombay), 1980.

Desikachar TKV,The Heart of Yoga: Developing a Personal Practice, (Inner Traditions International, Vermont), 1995.

George Feuerstein, The Yoga Tradition: Its History. Literature, Philosophy and Practice, (Holm Press, Prescott, Arizona), 1995.

Ferguson, Statistical analysis in Psychology and Education, (McGraw-Hill Book Company, New York), 1959.

Fundcrburk J, Science Studies Yoga-A review of Psychological Data, (Himalayan International Institute of Yoga science and Philosophy, Honesdale), 1977.

Gautama S, Life Education and the Quest for Truth, (Bhavan's Book University, BharatiyaVidyaBhavna, Bombay), 1998..

Garrett Henry E, General Psychology, (American Book Company, New York), 1990.

Dusek Jerome B, Adolescent Development and Behaviour, (Prentice Hall Inc, New Jersey), 1987.

INTEGRATIVE NEUROMUSCULAR TRAINING FOR KIDS' INJURIES

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Youth injures are a common concern for coaches, players, and parents. Nearly 30 million kids participate in youth sports each year, and with that comes a list of injuries. As youth sports gain increased attention for increased injuries, parents and coaches need to step back and consider a solution to keep kids safe on the green, in the pool, and on the field. Preventing sports injuries extends far beyond the game or competition. Preventing sports injuries requires preventative care, proper training, and increased safety awareness across the board. Recent research suggests Integrative Neuromuscular Training is effective in preventing common youth sports injuries.

Causes of Youth Sports Injuries

Kids who play sports regularly don't necessarily obtain the skills and fitness training necessary to condition them properly to prevent and reduce injuries. Kids are entering sports when they are younger and younger – age 6 on average. Children are entering sports competitions and practices without the proper training for their bodies to meet the physical demands of youth sports. The lack of preparation and exposure leads to injury. Common youth sports injury causes are:

- Previous injury
- Improper gear
- Excessive training and overuse
- Nutritional and training deficiencies
- Improper footwear
- Muscle imbalances
- Lack of conditioning, or no training at all (Faigenbaum et al)

Preventing Injuries

Preventing sports injuries involves a number of strategies:

- Use the right equipment and ensure it is not defective or broken
- Wear appropriate gear and protection
- Encourage hydration and weather-smart training
- Practice and train before the game or competition

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More than half of youth sports injuries are caused by overuse. More than half of injuries are preventable. This is where Integrative Neuromuscular Training comes into play. Integrative Neuromuscular Training provides kids with the tools and training to perform at their peak and to avoid injuries.

Integrative Neuromuscular Training

Integrative Neuromuscular Training, or INT, is a method of training that has been proven to improve physical fitness and eliminate poor biomechanics. Integrative Neuromuscular Training involves various activities that target physical, neuro cognitive, and visual-motor abilities (Myer). A comprehensive and effective Integrative Neuromuscular Training regimen consists of the following activities:

Resistance/ strength training

Exercising your muscles by using opposing force, such as free weights and bands, is called resistance training. When you pick up a heavy object, resistance is what you work against to lift the item. Muscle resistance improves tone, mass and endurance, and it prevents injuries.

Dynamic stability exercises

Dynamic stability exercises are ones that target the trunk—abs and back muscles—to improve posture.

Core training

Core training is a series of exercises that work the transverse abdominis, erector spinae, lower lats, and the obliques.

Agility exercises

Agility drills and exercises help the athlete move quickly and change direction easier**.**

Benefits of Integrative Neuromuscular Training

Youth athletes who participate in strength training programs with a qualified professional may benefit in many ways:

- Enhanced muscle health and strength
- Increased blood flow and cardiovascular health
- Greater bone density
- Enhanced power and flexibility
- Improved range of motion
- Developed body composition and body mechanics
- Improved mental health
- Improved stamina
- Amplified focus and awareness

Working with a qualified health and fitness professional ensures a young athlete receives age-appropriate training, targeted training, visual examples, accurate instruction, and constructive feedback.All of these benefits lead to one important issue we have been discussing: preventing youth sports injuries. The benefits of Integrative Neuromuscular Training may improve injury resistance and ignite a renewed passion for the sport and fitness overall.

REFERENCES :

http://www.trainingcor.com/2016/02/integrative-neuromuscular-training.html

Training the Developing Brain, Part I: Cognitive Developmental Considerations for Training Youth Myer, Gregory D. PhD, FACSM, CSCS*D1,2,3,4; Kushner, Adam M.1; Faigenbaum, Avery D. EdD, FACSM5; Kiefer, Adam1,2; Kashikar-Zuck, Susmita6; Clark, Joseph F. PhD7Current Sports Medicine Reports:September/October 2013 - Volume 12 - Issue 5 - p 304–310

THE SIMILARITY BETWEEN POSTURAL DEVIATIONS AND BODY MASS INDEX AMONG SCHOOL STUDENTS

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INTRODUCTION

Posture is the alignment and maintenance of body segments in certain positions such as standing, walking, lying or sitting [1,2]; and is the most important factors affecting physical and mental status of individuals through their lives [1,2]. The Posture Committee of American Academy of Orthopaedics in 1994 defines posture as the regular and balanced arrangement of skeletal components so as to preserve supportive structures of the body from injury and progressive deformation [3,4]. Several factors could affect posture in humans including familial, anatomical structure impairments, postural habits and occupation [2].

Bad posture may be attributed to muscle and emotional issues, which could generate positional or structural deviations if the individual remains in inappropriate positions for a long time [5]. Although postural deviation is commonly associated with the spine, other parts of the body have also been implicated in postural mal-alignment [6]. It has been shown that if body segments are held out of alignment for extended periods of time, muscles becomes shortened or lengthened in position [7] thus affecting muscle efficiency; and predisposing individuals to musculoskeletal, neurological and pathological conditions [7,8]. In this regard, a decrease or increase in the normal body curves might result to uneven pressure at the joints, ligaments, muscles and bones [6] and failure to institute timely corrective measures, degenerative changes will occur leading to postural deviation [9] This phenomenon has been widely studied in several fields such as anthropology, anatomy and orthopaedics because of its significance in the context of human movement and development [9,10]. Posture analysis is crucial for clinical assessments in physical medicine and rehabilitation [2]. Exploring the relation between postural balance and an- thropometric measurements is important in order to determine the postural deviations in developing treatment programmes for postural scoliosis, increasing lumbar lordosis, straight back posture; and assessing the different deformities that may have occurred [11].

The best body posture can be observed in children; however, as individuals grow older, they develop habits (change in gait, adopting abnormal sitting and standing positions) that predispose them to poor posture [8]. Poor posture occurs in all works of life and its prevalence is increasingly on the rise [10] despite efforts to educate people on the effects of poor posture, the condition remains a daunting problem [9] particularly in the adult population.

Through observation, there seems to be an increase in postural deviation among students at the University of Venda; the reason for this is not known and the students are not

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aware of the developing trend. It becomes imperative that this phenomenon is studied. It is envisaged that findings of the study will provide knowledge on the prevalence of postural deviation and this will help to educate the students on prevention and management of postural deviations. Therefore, the study was designed to assess postural deviations (kyphosis, scoliosis and lordosis) in relation to body mass index (BMI) among university students at the Centre for Biokinetics, Recreation and Sports Science, University of Venda, Thohoyandou, South Africa.

METHODS

The purpose of the study was to find out the similarity between postural deviation and BMI among school student

RESEARCH DESIGN

This was a cross-sectional study involving 400 students (males and females) in the paraur thaluk school students Purposive sampling was used to select 400 participants (100 students in each level) covering levels 1 to 4.

Anthropometric measurements

Weight and height were determined according to the standard anthropometric methods of the International Society for the Advancement of Kinanthropometry (ISAK) [13]. Weight was measured in kilogrammes (kg) using a bathroom digital scale. Height was measured to the nearest of 0.1 cm, using a mounted stadiometer. Body mass index (BMI) was determined according to WHO [14] classification.

Postural assessment

Postural assessment criterion as outlined by [15] was adopted. The procedure involves drawing a plumb line vertically and asking the participants to stand erect on a bench; marking the five anatomical points which include the ear, acromion, greater trochanter, patella and malleo- lus. Participants were assessed from the lateral, posterior and anterior views.

Participants were observed without shirt in lateral view. The ear lobe was in line with the tip of the shoulder (ac- romion process) and the high point of the iliac crest. The lateral line, dividing the body into front and back (coronal plane) indicated normal posture. If the chin pokes forward, it indicates lumbar lordosis. Each spinal segment has normal curves and the shoulders in proper alignment; if the shoulders drops forward it indicate scapula protraction and rounded shoulders. The pelvic angle is normal at 30 degrees but the posterior superior iliac spine should be slightly high than the anterior superior iliac spine. The knees are straight, flexed in recurva- tum (hyperextended), usually the normal standing position of the knees are slightly flexed at 0 to 5 degrees and hyperextension of the knees may cause an increase in lordosis in the lumbar spine [15].

Anteriorly, the head was straight on the shoulders (mid- line) the tip of the nose and in line with the manubrium, sternum, xiphisternum and the umbilicus; this line divides the body into right and left (sagittal plane) and the upper trapezius neck line was equal on both sides. The levelling of the shoulders indicated normal posture. However, where the dominant side is

slightly lower, the clavicle and acromioclavicular joint are level and equal and there is no protrusion, depression or lateralization of the sternum, ribs or costal cartilage. The waist angles were equal and arms were equidistance from the waist. However, individuals with scoliosis, one arm will hang closer to the body than the other arm. The carrying angles at each elbow are equal, and the normal angles vary from 5 to 15 degrees [15].

Participants were observed in posterior view. The shoulders were level and the head was in midline, the spines and the inferior angles of the scapulae were level. If the medial borders of the scapulae are equidistance from the spine, it indicates normal posture. Straight curved lateral spine indicates scoliosis; the ribs protrude or symmetrical on both sides with the waist angles equal. Arms were equidistant from the body and equally rotated; posterior superior iliac spines were at the same level, the higher one, suggests one leg was shorter or rotation of the pelvis may be present [15]. Deviations of the spine include: Lordosis (extension of the lumbar spine), Kyphosis (flexion of the thoracic region) and Scoliosis (lateral curvature of the spine) [10].

Statistical analysis

Descriptive statistics was presented in percentages. Chi- square was applied to test the significant relationship between variables. The statistical significance was set at $p < 0.05$. All statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 21.0.

RESULTS

The mean age of the participants was 13 to 18 years. Figure 1 indicates the type and percentage of postural deviation among the participants. Majority (34%) of the participants had kyphosis, 3% had scoliosis and 22% lordosis There was a significant difference between females and males with kyphosis and lordosis (X^2= 11.222, p= 0.001) and (X^2= 5.138, p= 0.023), respectively. However, there was no significant difference between females and males in scoliosis (X^2= 0.995, p= 0.318) (Table 1).

TABLE 1.

Gender differences in postural deviation

Type of deviation		Gender				X	p-value
		Females		Males			
Kyphosis	No	48	78.7%	18	46.2%	11.222	0.001
	Yes	13	21.3%	21	53.8%		
Scoliosis	No	60	98.3%	37	94.9%	0.995	0.318
	Yes	1	1.6%	2	5.1%		
Lordosis	No	43	70.5%	35	89.7%	5.138	0.023
	Yes	18	29.5%	4	10.3%		

FIGURE 1.
Gender differences in postural deviation

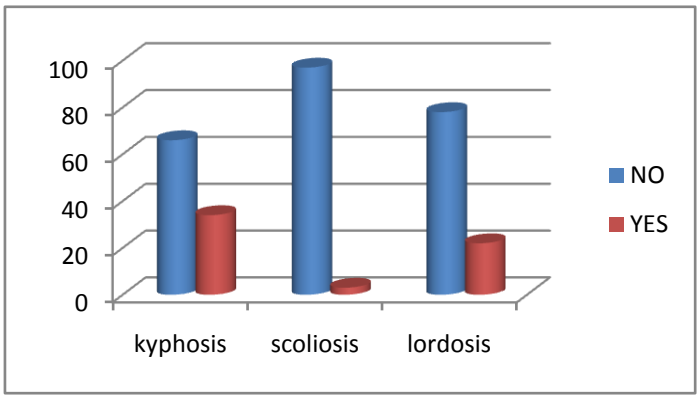

Table 2 indicates the relationship between body mass in- (X^2= 6.036, p=0.196) and (X^2= 2.149, p= 0.708), respec- dex (BMI) and postural deviation. There was no signifi- tively. However, there was a significant relationship be- cant relationship between BMI and kyphosis and scoliosis tween BMI and lordosis (X^2=19.193, p=0.001).

Table 2. Relationship between BMI and postural deviations

Variable	Postural deviation	I	p-value
Body mass index*	Kyphosis No	Yes	
Underweight	5	1	
Normal	36	23	6.036 0.196
Overweight	13	9	
Class1Obesity	9	1	
Class 2 Obesity	3	0	
Body mass index*	Scoliosis No		
Underweight	6	0	
Normal	56	3	
Overweight	22	0	2.149 0.708
Class1Obesity	10	0	
Class 2 Obesity	3	0	
Body mass index*	Lordosis No		
Underweight	5	1	
Normal	52	7	19.193 0.001
Overweight	16	6	
Class1Obesity	5	5	
Class 2 Obesity	0	3	

*Classification based on WHO [14] definition

DISCUSSION

The present study was designed to assess the prevalence of postural deviation among paraur thaluk school students which information is lacking. Such information might help to educate the students on prevention and management of postural deviations. The findings of this current study indicates that majority (34%) of the participants had kyphosis; lordosis (22%) while 3% had scoliosis. The finding also demonstrates significant gender difference in

postural deviation with majority of the males and females having kyphosis and lordosis, respectively. In contrast, no significant gender difference was found for scoliosis. This finding corroborates a study in Southern Brazil [16] among students, which reported kyphosis in 16.6% of students, 33.2% and 27.9% had scoliosis and lordosis, respectively. Like the present study, females were less likely to have kypho- sis than males but more likely to have lordosis (p=0.01) while scoliosis did not show significant difference (p=0.53). Similar results has been reported by other researchers [17,18] but the reason for this is poorly understood. However, some studies have suggested that females have increased lordosis angle [19,20] and greater buttock size [21], which may contribute to the higher rate of lordosis seen in female participants but this is not absolute as other studies observed no significant gender difference in lordosis [22] and kyphosis being more prevalent in females [23]. The gender difference observed in the present study may be due to the anatomical makeup of the student population where females have greater gluteal mass and the males are often slender and taller.

The finding of the present study demonstrates no significant relationship between BMI and kyphosis as well as scoliosis. However, there was an inverse relationship between BMI and lordosis suggesting an increasing risk of developing lordosis as the BMI increases. This is comparable to Abdullah et al. [24] study which found no relationship between BMI and kyphosis (p=0.198) and scoliosis (p=0.003); but observed a significant relationship between BMI and lordosis (p=0.000) [24]. Most overweight and obese individuals are likely to have lordosis because some have protruding stomach and big buttocks where the spine tries to hold the body upward, and in that process, develops arch at the lower back to hold the body upright [25]. A study conducted in Japan and Brazil [26] observed that among 32 morbid obese persons, obesity negatively affected anterior, posterior and lateral balance and led to genu valgum deformity in 84.4% of the patients

CONCLUSION

The study demonstrated that there were students with postural deviations with prevalence in the order of: kyphosis lordosis scoliosis. Kyphosis was the most common type of postural deviation found among the paraur thaluk school students. Gender and BMI were associated with postural deviation among the students. Apart from scoliosis, there was a significant gender difference in kyphosis and lordosis with the female students having higher prevalence of these postural deviations compared to the males. There is need to institute intervention measures to correct bad posture among the students which presents irreversible muscu- loskeletal, neurological and pathological damage in future.

REFERENCES

Zagyapan R, Iyem C, Kurkcuoglu A, Pelin C, Tekin- dal MA. The relationship between balance, muscles, and anthropomorphic features in young adults. Ant Res Int 2012; 146063: 1-6.

Fabris De Souza SA, Faintuch J, Anna AF, Gama- Rodrigues JJ, de Balisa Fonseca IC, de Melo RD. Postural changes in morbidly obese patients. Obes Surg 2005; 15: 1013-1016.

Knoplich J. Enfermidades da coluna vertebral: uma visao clinica e fisioterapeutica. 3rd ed. Sao Paulo: Robe; 2003.

Brianezi L, Cajazeiro DC, Maifrino LBN (2011). Prevalence of postural deviation in school education and professional practice of physical education. J Morphol Sci, 28: 35-36.

INFLUENCE OF PLYOMETRIC TRAINING ON SELECTED PHYSICAL FITNESS VARIABLES AMONG WOMEN VOLLEYBALL PLAYERS

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INTRODUCTION

Plyometrics, known as "jump training" or "plyos", are exercises based around having muscles, exert maximum force in short intervals of time, with the goal of increasing both shoulder muscular strength and power. This training focuses on learning to move from a muscle extension to a contraction in a rapid or "explosive" manner, for example with specialized repeated jumping. First popularized in the 1970s by state sports trainers in the former East Germany, it's based on scientific evidence showing that the stretch- shortening cycle prompts the stretch or "myotactic" reflex of muscle and improves the power of muscular contraction.

Strength is the maximum force that can be developed in a muscle or group of muscles during a single maximal contraction. The rate of force development is at the maximum for any type of muscle action is explosive power. In activities requiring high acceleration and output, explosive power training is necessary for maximum development.

METHODOLOGY

This study under investigation involves the experimentation of plyometric training on agility, explosive power in terms of vertical jump. 30Womenvolleyball players those who were studying in various course of NachiappaSwamigal Polytechnic College KoviloorKaraikudiTamilnadu and aged between 18 and 21 years were selected. The selected women volleyball players were randomly divided into two groups of fifteen each, out of which group - I (n = 15) underwent plyometric training, and group - II (n = 15) remained as control. The training programme was carried out for five days per week during morning session only for 8weeks, agility were measured by administering shuttle run, and explosive power in terms of vertical jump was measured by administering Sergeant jump. Then the experimental group underwent plyometric training programme for 5 days per week for8 weeks. The control group did not participate in any special training programme apart from their day to day activities.

The data were collected on selected criterion variables such as agility, explosive power in terms of vertical jump were measured by using 15m shuttle run, Sergeant jump before and after the 8 weeks of plyometric training programme respectively Analysis of covariance (ANACOVA) was applied to find out significant difference if any between the experimental and control group.

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Significant at .05 level of confidence.(The table value required for significance at .05 level of confidence with df 1 and 18 and 1 and 17 were 4.41 and 4.45 respectively).

RESULTS AND DISCUSSIONS

The data collected prior to and after the experimental periods on agility, explosive power in terms of vertical jump on plyometric training group and control group were analysed and presented in the following table - I.

TABLE I

ANALYSIS OF COVARIANCE AND 'F' RATIO FOR AGILITY, EXPLOSIVE POWER IN TERMS OF VERTICAL JUMP FOR PLYOMETRIC TRAINING GROUP AND CONTROL GROUP

Variable Name	Group Name	Plyometric Training Group	Control Group	'F' Ratio
Agility	Pre-test Mean ± S.D	18.89 ± 0.893	18.33 ± 0.897	0.7263
	Post-test Mean ± S.D.	17.93 ± 0.776	18.56 ± 0.773	26.39
Explosive Power in terms of vertical jump	Pre-test Mean ± S.D	42.31 ± 1.22	42.36 ± 1.09	1.0001
	Post-test Mean ± S.D.	48.32 ± 0.99	42.32 ± 6.56	5.533*

Significant at .05 level of confidence.(The table value required for significance at .05 level of confidence with df 1 and 18 and 1 and 17 were 4.41 and 4.45 respectively).

Table - I showed that there was a significant difference between plyometric training group and control group on agility, explosive power in terms of vertical jump. Further the results of the study showed that there was a significant improvement on agility due to 8 weeks of plyometric training programme. The result of the study also shows that there was a significant improvement in explosive power in terms of vertical jumpfor plyometric training group when compared with the control group.

CONCLUSION

1. There was a significant difference between plyometric training and control groups on agility, explosive power in terms of vertical jump.
2. There was a significant improvement on agility after the 8 weeks of plyometric training programme.
3. There was also a significant improvement in explosive power in terms of vertical jumpafter the plyometric training programme.

REFERENCES

Chu, Donald (1998). Jumping into plyometrics (2nd ed. ed.). Champaign, IL: Human Kinetics. pp. 1-4.

Hardayal Singh, Science of Sports Training, (New Delhi: D.V.S. Publication, 1991),

Starks, Joe (25 April 2013). "An Athlete's Guide to Jumping Higher: Vertical Jump Secrets Uncovered!". Athlete Culture. Retrieved 30 April 2013.

Retrieved from http://www.webmd.com/fitness- exercise/guide/plyometrics-exercise, workouts? Page = 2 on 28-10-2014

Retrieved from http://www.webmd.com/fitness- exercise/guide/plyometrics-exercise-workouts on 21-8-2014.

EFFECT OF LAND AEROBIC AND WATER AEROBIC DANCING ON CARDIO RESPIRATORY ENDURANCE OF OVERWEIGHED SCHOOL BOYS

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INTRODUCTION

Aerobic dance provides benefits to the cardio respiratory system, particularly to its engine, the heart. Aerobic means work in presence of oxygen. The systems involved in oxygen transport for us to make any activity such as the respiratory and circulatory systems with aerobic activity, our heart gets stronger and increase the size. This reduces the number of beats per minute and our heart became strong enough to supply the entire body with precious oxygen with a few beats. In addition, the heart vessels increase their ability to carry blood and oxygen to small blood vessels and this improves the entire network of blood circulation inside the whole body. People who exercise on a regular basis and make aerobic dance exercise a part of their routine exercise programme that tend to have more success with its long duration. Water exercise is rapidly growing in this modern world. An advantage of aquatic exercise is that it can involve the upper and lower extremities through optimal ranges of motion while minimizing joint stress. The repetitional strain imposed on the tissues by ground striking can lead to injury. The buoyant force of water results in up to a 90% reduction in body weight in the water.

METHODOLOGY

The purpose of this study was to find out the effect of land aerobic and water aerobic dancing on cardio respiratory endurance among overweighed school boys. To achieve this purpose of this study, thirty overweighed school boys were selected as subjects at random from Christ Vidyanikethan ICSE School, Irinjalakuda, Thrissur (Dt), Kerala, and their age was 13 to 15 years. The study was formulated as pre and post test random group design in which thirty overweighed school students were selected. The selected subjects were divided in to three equal groups namely, one control group and two experimental groups. Each group consist of ten students. The group- 1 served as control group who did not undergo any specific training, the group- 2 underwent land aerobic dancing and the group-3 underwent water aerobic dancing. The two experimental groups were performed the designed training programme for the period of eight weeks, in five days a week.

Criterion measures:

The variable was tested and measured by 9minutes run / walk (in meters).

Statistical application:

Analysis of co-variance (ANCOVA) was used to find out significant adjusted post-test mean difference of three groups with respect to each parameters and Scheffe's post hoc

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test was used to find out pair-wise comparisons between groups with respect to each parameters. To test the hypothesis the level of significant was fixed at 0.05 levels.

Table-1
ANALYSIS OF CO VARIANCE OF EXPERIMENTAL GROUPS AND CONTROL GROUP ON CARDIO RESPIRATORY ENDURANCE
(Scores in meters)

Test	Group- I	Group-II	Group-III	Sourse Of Variance	Sum Of Square	Degree Of Freedom	Mean Squares	Obtained 'F' Ratio
PRE TEST								
MEAN	**1146.00**	**1250.00**	**1182.00**	**BETWEEN**	**55786.67**	**2**	**27893.33**	**1.13**
STANDARD DEVIATION	**142.70**	**198.90**	**81.34**	**WITH IN**	**665400.00**	**27**	**24644.44**	
POST TEST								
MEAN	**1161.00**	**1346.00**	**1405.00**	**BETWEEN**	**324140.00**	**2**	**162070.00**	**10.32***
STANDARD DEVIATION	**140.96**	**71.30**	**132.16**	**WITH IN**	**424180.00**	**27**	**15710.37**	
ADJESTED POST TEST								
MEAN	**1181.68**	**1320.60**	**1409.73**	**BETWEEN**	**259917.81**	**2**	**129958.91**	**11.51***
				WITH IN	**293535.84**	**26**	**11289.84**	

*Significant at 0.05 level. (The table value required for significance at 0.05 level of confidence for 2 and 26 are 3.35and 3.37 respectively)

Results on Cardio Respiratory Endurance

Pre-test: The mean and standard deviation of the pre-test on cardio respiratory endurance scores of G1, G2, and G3 are 1146 ± 142.70, 1250 ± 198.90, and 1182 ± 81.34 respectively. The obtained pre test 'F' value of 1.13 was lesser than the required table 'F' value of 3.37. Hence the pre test mean value of cardio respiratory endurance shows insignificant at 0.05 level of confidence for the degrees of freedom 2 and 27.

Post test: The mean and standard deviation of the post-test on cardio respiratory endurance scores of G1, G2 and G3 are 1161 ± 140.96, 1346 ± 71.30, and 1405±132, 16, respectively. The post test 'F' value of 10.32 was greater than the required table 'F' value of 3.37. Hence the post test means value of cardio respiratory endurance shows significant at 0.05 level of confidence for the degree of 2 and 27. Thus the result obtained proved that the interventions namely Land aerobic and Water aerobic dancing on cardio respiratory endurance produced significantly different improvements among the experimental groups.

Adjusted post-test: The mean value of the adjusted post-test on cardio respiratory endurance of G1, G2 and G3 are 1181.68, 1320.60 and1409.73 respectively. The obtained adjusted post-test F value of 80.25 was greater than the required table **F** value of 3.37. Hence the adjusted post-test means value of 11.51 shows significant at 0.05 level of confidence for the degree of freedom 2 and 26. Thus the result obtained proved that the interventions namely Land aerobic and Water aerobic dancing on cardio respiratory endurance produced significantly different improvements among the experimental groups.

In order to find out which training programme is to be used in the present study for the significance of adjusted means was tested by Scheffe's post hoc test. The result of the same are presented in the table- 1(A).

TABLE - 1 (A)
SCHEFFE'S POST HOC TEST VALUES OF PAIRED MEAN DIFFERANCE ON CARDIO RESPIRATORY ENDURANCE
(Scores in meters)

GROUP-I	GROUP-II	GROUP-III	MD	CON
1181.68	1320.60		138.92*	27.59
1181.68		1409.73	228.05*	27.59
	1320.60	1409.73	89.13*	27.59

*Significant at 0.05 level.

Comparison 1

The comparison between the group 1 and group 2 obtained mean difference value138.92 was greater than the confidential interval value of 27.59.Hence this comparison was significant.

Comparison 2

The comparison between the group 1 and group 3 the obtained mean difference value 228.05 was greater than the confidential interval value of 27.59.Hence this comparison was significant.

Comparison 3

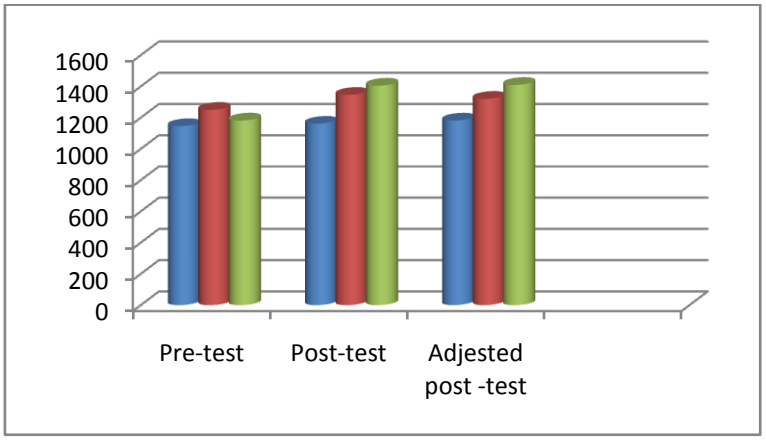
The comparison between the group 2 and group 3 obtained mean difference value 89.13 was greater than the confidential interval value of 27.59.Hence this comparison was significant.

Conclusion

Since the obtained mean difference between experimental groups and control group were greater than the confidential interval value on cardio respiratory endurance, it was concluded that Land aerobic dancing group and Water aerobic dancing group improve the cardio respiratory endurance than the control group. Further it was concluded that the water aerobic dancing group improved cardio respiratory endurance better than Land aerobic dancing group.

FIGURE – 1

Comparative Bar Chart of Pre-test, Post-test and Adjusted Post-test of Different Groups on cardio-respiratory endurance (Scores in Meters)



BIBLIOGRAPHY

Deborah B. and Dowdy, A study on the effects of Aerobics dance on physical work capacity, cardiovascular function and body composition in middle age women (2006).

Patricia A. Gillet and Patricia A. Eisenman;A study to determine the effect of intensity controlled exercise in the aerobic capacity of overweight, middle-aged women(2007).

Dr Fatma Arslan, PhD, The effects of an eight-week step-aerobic dance exercise programme on weight loss and body composition parameters in middle-aged sedentary obese women (2008).

Sourlou, et.al, The effectiveness of 24-week aquatic training on muscle strength (isometric and dynamic), flexibility, and functional mobility in healthy women over 60 years (2006).

Gappmaier. et, The aerobic exercise in water versus walking on land indices of fat reduction and weight loss of obese women (2006).

Agro, The effects of low-impact and high impact aerobic dance exercise on selected fitness measure (2005).

Bushman et al. The effect of deep water running (DWR) on the ability to sustain or improve aerobic capacity (1997).

Hertler et al, A comparison between Treadmill exercise and Deep water running training in 13 young runners (1992).

WEB SOURCES

http://onlinelibrary.wiley.com

http://www.ncbi.nlm.nih.gov/pubmed.com

http://www.sposci.com