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Contents

Yoga	Page No
1. Sustained Maximal Inspiration, Breath Holding Time and Peak Flow Rate Responses To Pranayama Practices Among College Men Players <i>Dr. K. Chandrasekaran</i>	1 - 4
2. Need Of Latest Trends And Developments In Professional Preparation Of Yoga Teachers <i>Dr. Y.P. Sharma, Sh. Zafar Ali</i>	5 - 8
3. Yogic Energy To Enhance The Sports Performance <i>Dr. Tanuja S. Raut, H.J. Kaware</i>	9 - 11
4. Yogic Practices For Health & Sports Performance <i>P.K. Pradhan</i>	12 - 14
5. Healing Effect Of Mudras (Hand Gestures) On Psychosomatic Disorders <i>Dr. Chintaharan Betal</i>	15 - 22
6. Yogic Way : For Sound Mental Health <i>Prof. Jamnadas K. Savalia</i>	23 - 25
 Exercise & Sport Science and Physical Education	
7. Effect Of Aerobic Training On Body Mass Index On Sedentary Obese Men <i>Dr. Shenbagavalli.A., Mrs. Mary Recthammal . D.</i>	26 - 29
8. Heart Rate And Arterial Blood Pressure Response To Active And Passive Stress <i>M. Elamaran, Dr. P. Samraj</i>	30 - 34
9. A Comparative Analysis On Personality Traits Of Inter-Varsity Male And Female Swimmers <i>Dr. K.G Jadhav, Sachin Pagare, Sinku Kumar Singh</i>	35 - 37
10. The Relationship Between Anxiety And Performance - A Cognitive Behavioural Perspective <i>Dr. J.S. Pattankar, Prof. P.K. Tiwari</i>	38 - 44
11. Gender Differences In Personality Characteristics Of Inter Collegiate Kho-Kho Players <i>Sinku Kumar Singh</i>	45 - 47

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EDITORIAL

We have started our journey in the year of 2000 in a very tiny form. Then three / four years we continue and have applied for Govt. registration in the year of 2005. After through verification from the Govt. agency, in a five morning of January, 2008 we received 'Certificate of Registration' from the Office of the Registrar of Newspapers for India, Government of India and the registration no: WBBIL/2007/22677. Government accepted the title "Indian Journal of Yoga, Exercise and Sport Science and Physical Education".

The next Journey has been started. We need your cordial co-operation and blessings from the almighty.

Editor

Contribute to the:
Indian Journal of Yoga, Exercise & Sport Science and Physical Education
one of the best Journal in India.

YOGA

Yoga : 1**SUSTAINED MAXIMAL INSPIRATION. BREATH HOLDING TIME AND PEAK FLOW RATE RESPONSES TO PRANAYAMA PRACTICES AMONG COLLEGE MEN PLAYERS**

Dr. K. CHANDRASEKARAN

*Reader & Head**Department of Physical Education, Bharathidasan University**Tiruchirappalli - 620024**Tamilnadu - India**e-mail: chandruiyoga@yahoo.com***Abstract**

The purpose of the present study was to find out the effect of pranayam practices on selected lung functions among the college level players. The study was conducted on 30 men players. They were divided into two equal groups. Group - A underwent nine weeks of intensive pranayama practices, Group - B is control group did not undergo any type of training other than the regular sports activities. The most important lung functions like : Sustained maximal inspiration (SMI), breath holding time (BHT) and peak flow rate (PFR) were measured before and after the treatment by using the scientific and reliable equipments. The data were analysed by th statistical techniques ANOVA and ANCOVA for interpretation. The Pranayam techniques had significant ($p < 0.05$) effect on the selected lung functions.

Key Word : Pranayama, Sustained maximal inspiration, Peakflow.

Introduction

Competition is a fundamental feature of any sports and games. During competition the individual player's physiological functions are taxed severely. Thus the physiological stress depending in the nature of the sport, the tactics, which employed and the level of fitness of the players concerned. Many researchers have attempted to outline the typical profiles of top competitors and the fitness requirements for success at a high level. It is evident that genetic and structural factors are important in many sports. On the other hand most of the sports a high standard of training is essential and inherited predispositions need to be nurtured for sporting potential to be realised. Generally the sports training aims to improve the fitness and skills.

Individuals endowed with the possibility to obtain a high oxygen uptake need to compliment this with rigorous training in order to achieve maximal performance. For any endurance, sports and games the players must develop the ability to sustain a high fractional utilization of their maximal oxygen uptake. Definitely, it will enhance their physiological functions as whole in the body. Now they become physiologically more efficient in performing their physical activity.

We are very much aware that the competitive level in sports performances is progressively increasing day by day in all kinds of sports events. To meet out the crucial challenges, one has to identify and exploit the available human resource. Also, the talents have to be shaped properly in the right direction through the relevant training programmes.

Yoga

The ancient Indian discipline yoga provides a stable and sustaining body system for our sports persons. Yogic techniques and practices aim at selective as well as wholesome shaping of human body and mind. In this study the only the pranayama practice is taken into account as a treatment variable.

Pranayama

Breath is a life force for the human being. It is believed that the lung functions play a vital role in most of the sports activities. Pranayama is a sub-set of the yogic practices. Pranayama is a yogic exercise in respiration. Respiration consists of the alternate expansion and contraction of the thorax, by means of which air is drawn into or expelled from the lungs. Inspiration is a forced muscular effort performed by three distinct sets of muscles. In inspiration the chest cavities made broader, longer and deeper.

Our ancestors the Rishis and Saints have observed that the breathing process is the base of any living being. On the basis of their observations the life span of the living beings are measured by their

breathing rate. It has been identified that the breathing rate and life span is inversely proportional to each other. Thus if we reduce our breathing rate we can postpone our life to a longer period. Pranayama helps to reduce the breathing rate. In Pranayama by strenuous training of the lungs & nervous system, breathing can be made more efficient by changing its rate, depth and quality.

Istvan WCPP Head Coach pointed out that the pulmonary ventilation training improves the efficiency of the breathing by means of

- i) Increase the capillary density surrounding the alveolae, therefore, increased blood flow resulting in a greater diffusion capacity for oxygen.
- ii) Improves the ability to sustain high level of ventilation,
- iii) Increase the maximum amount of air that can be breathed per minute,
- iv) The capacity for aerobic resynthesis of ATP is also enhanced,
- v) The increased tidal volume reduces the frequency of breathing.

Subramaniam (2001) concluded that there is a significant improvement in aerobic capacity as a result of practice of asanas and practice of asanas along with pranayama and meditation. However, improvement in aerobic as a result of the combined practice of asanas, pranayama and meditation is significantly higher than the practice of asanas alone. This may be due to the effect of pranayama and meditation. *Dhanaraj (1974)* in his study the yogic training for six weeks found a significant positive influence in breath holding time. *Tells et. al, (1993)* reported that the three months yogic training which includes asanas, pranayama, meditation and kriya significantly improved the respiratory functions of forced expiratory volume in 1 sec., forced vital capacity and breath holding time of male physical education teachers.

Objective of the Study

The main objective of the study is to find out the effect of pranayama practices on the sustained maximal inspiration (SMI), breath holding time (BHT) and peak flow rate (PFR) among college men players.

Methodology

To achieve this purpose the investigator has selected 30 college level players on random sample technique from the School of Engineering Technology, Bharathidasan University, Tiruchirappalli. The selected subjects (players) have been divided into two equal groups namely: experimental group (Group-A) and control group (Group-B).

The treatment of the selected pranayama techniques listed in Table - I have been given only to the experimental group alone for weekly six days viz. Monday to Saturday. Sunday was rest. The treatment has been given to them for nine weeks besides their regular sports training. These pranayama practices have been practiced only in the morning between 6 a.m. to 7 a.m. The Control Group was permitted to do their regular sports training alone.

TABLE -1 : Pranayama Course (35 - minutes)

SL No.	NAME	Breathing Nature	DURATION
1.	Nadi Suddhi	Alternate Nostril Breath **	5 – minutes (each) Total – 35 min.
2.	Bhastrika	Bellows Breath	
3.	Ujjayi	Victorious Breath	
4.	Nadi Sothana	Alternate Nostril Breath	
5.	Sitali	Cooling Breath	
6.	Sitakari	Cooling Breath	
7.	Bhramari	Bee Breath	

** - without kumbhaka phase

From the physical point of view, a proper balance among the nadis ensures health, strength, peace and longevity. Pranayama's have seasonal effective in its technique of practice. Chandrasekaran (1999) mentioned that the selection of pranayama, for the practice schedule should be based on the seasonal requirements. During practice the three phases, inhalation, holding the breath and exhalation to

be observed as 1:0:1 ratio in the I & II Week, 1:1:2 ratio in the II & IV Week and 1:2: 2 (i.e. 5 seconds inhalation 10 seconds holding the air in the lungs and 10 seconds exhalation) ratio was advocated at the rest of the treatment period of V to IX weeks.

Data Collection

Initial and final data on the sustained maximal inspiration (SMI), breath holding time (BHT) and peak flow rate (PFR) among college men players were recorded for both group - A and Group - B.

- ◆ Incentive spirometer is used to find out the sustained maximal inspiration (SMI), which is made in California by Hudson Respiratory Care Inc.
- ◆ Breath holding time (BHT) capacity is measured by using electronic stop watch in one / hundred seconds accuracy.
- ◆ Peak flow rate (PFR) was assessed with help of peak flow metre which is made in Ireland by Vitalograph Ireland Ltd.

Analysis of Data

To evolve concrete evidence, ANOVA and ANCOVA (analysis of covariance) statistics tool have been applied to extract the significant difference if any, among the experimental and control groups as suggested by Clark and Clarke (1972).

TABLE - 2 : COMPUTATION OF ANOVA OF EXPERIMENTAL GROUP AND CONTROL GROUP ON SMI, BHT, & PFR

		SOURCE	Sum of Squares	DF	Mean Square	F
SUSTAINED MAXIMAL INSPIRATION (S M I)	INITIAL	Between Groups	28830.000	1	28830.000	1.02
		Within Groups	793506.667	28	28339.524	
	FINAL	Between Groups	125453.333	1	125453.333	5.95
		Within Groups	590293.333	28	21081.905	
BREATH HOLDING TIME (B H T)	INITIAL	Between Groups	100.833	1	100.833	0.65
		Within Groups	4350.133	28	155.362	
	FINAL	Between Groups	790.533	1	790.533	6.80
		Within Groups	3257.333	28	116.333	
PEAK FLOW RATE (P F R)	INITIAL	Between Groups	10083.333	1	10083.333	1.41
		Within Groups	200653.333	28	7166.190	
	FINAL	Between Groups	44083.333	1	44083.333	7.09
		Within Groups	174186.667	28	6220.952	

From the table - 2, it can be seen that the computed F-ratio of 1.02 (SMI), 0.65 (BHT) and 1.41 (PFR) for the *Initial test means* among the experimental group and the control groups were insignificant ($P > 0.05$) at 0.05 level of confidence with the degrees of freedom being 1, 28; it clearly indicated that the random assignments of groups were quite successful.

Further, it revealed that the calculated F-ratio of 5.95 (SMI), 6.80 (BHT) and 7.09 (PFR) for the *final test means* among the experimental group and the control groups were significant ($p < 0.05$) at 0.05 level of confidence with the degrees of freedom being 1, 28. This showed that the treatment of Pranayama practice have made the significant difference in the mean values among the groups. Hence, the ANCOVA technique was employed to find out the difference between the adjusted post test means was significant or not.

TABLE - 3 : COMPUTATION OF ANALYSIS OF COVARIANCE (ANCOVA) OF EXPERIMENTAL GROUP AND CONTROL GROUP ON SMI, BHT, & PFR

	SOURCE	Sum of Squares	Df	Mean Square	F
SUSTAINED MAXIMAL INSPIRATION (S M I)	Between Groups	43979.367	1	43979.367	26.17
	Within Groups	45378.036	27	1680.668	
BREATH HOLDING TIME (B H T)	Between Groups	378.543	1	378.543	54.64
	Within Groups	187.059	27	6.928	
PEAK FLOW RATE (P F R)	Between Groups	13322.019	1	13322.019	51.78
	Within Groups	6946.211	27	257.267	

As the primary aim of analysis of covariance, the adjusting the initial means with final means and testing the adjusted means was done. F - ratio obtained (*viz* : **Table-3**) from testing the adjusted means of 26.17 (sustained maximal inspiration -SMI), 54.64 (breath holding time - BHT) and 57.78 (peak flow rate - PFR) were high in compare with the required table F-ratio of 4.21 at .05 level of confidence with the degrees of freedom being 1, 27. Hence the chosen variables for the study is well significant at ($p < 0.05$) at 0.05 level.

Discussions and Findings

Pranayama is the practice of breathing exercise with scientific three phases namely puraka (inhalation), kumbhaka (holding the air in the lungs) and rechaka (exhalation) in a progressive manner works on the breathing mechanism centrally and the effects spread to the periphery too. Mainly the lungs, intercostals muscles, diaphragm and ribs are highly excised during the Pranayama practices. Thus it enhances the sustained maximal inspiration (SMI), breath holding time (BHT) and peak flow rate (PFR) among college men players significantly. This findings are supported the results of the Subramaniyan, (2001), Tells et.al, (1993), and Dhanaraj, (1974).

Conclusions

Within the limitations of the study, the results revealed that there was a significant improvement in the chosen lung functions due to pranayama practice. It was concluded that inclusion of pranayama practices, besides their regular sports training would definitely enhance the college men players lung functions to a marked extent.

References

1. Chandrasekaran, K (1999), Sound Health Through Yoga, Prem Kalyan Publications, Sedapatti.
 2. Clarke, David and Harrison H. Clarke (1972), Research Procesin Physical Education, Recreation and Health, Englewood Cliffs, Prentice Hall Inc., New Jersey.
 3. Dhanaraj, V.H. (1974), The effect of yoga and five fitness plan on selected physiological parameters, *Doctoral Dissertation*, University of Alberta Edmonton.
 4. Subramaniyan, P.K. (2001) Effect of yogic exercise on specific physical and physiological variables, *Journal of Physical Education and Sports*, Vol.9. India
 5. Tells S, Nagarathna R, Nagendra H.R., and Desiraju T. (1993), Physiological changes in sports teachers following 3 months of training in yoga, *Indian Journal of Medical Sciences*, Vol.47
- Istvan WCPP Head Coach - <http://www.geocities.com/multisporttraining/general.I.html>

Yoga : 2

NEED OF LATEST TRENDS AND DEVELOPMENTS IN PROFESSIONAL PREPARATION OF YOGA TEACHERS

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Abstract

The professional preparation in yoga needs introspection at the opportune time and measures to be taken to enrich the teaching / training to improve the quality of a Yoga teacher. Further, educational process must aim at preparing a teacher to become more adaptable and capable. Professional preparation in yoga education depends on demands and requirements of the changing society. The hallmark of any growing system is "change" characterized by a dynamic and conscious endeavor towards positive process through innovation in the pursuit of understanding the perspectives of a trend, especially when the educational technologist advocate systems approach, educational planning methods and evaluation pattern. In view of the present emphasis on yoga promotion at all levels, the yoga teacher training institutes should make genuine efforts to review the training programme, reasonably revise and to restructure the curriculum contents to improve the quality of a yoga teacher. To achieve this aim latest trends and developments are discussed as under :-

Bring Yoga Education under the purview of system approach.

Select candidates having yoga aptitude.

Modification in curriculum contents

Modification in subjects contents

Modification of methodology of teaching,

Emphasis on allied subjects,

In this paper an attempt has been made to highlight the latest trends to be implemented in the professional preparation of yoga teachers for the up gradation of yoga. .

Conclusion

There is a great need of genuine efforts to review, revise and restructure the curriculum contents to improve the quality of yoga teachers by the authorities concerned. Training programmes should be designed keeping in view the up gradation of the profession and widening the horizon of job placement.

Indtroduction

Presently yoga education is getting popularity very rapidly because programme of yoga education not only calls for muscular activity, but also make constant demands upon the participants physical, mental, social and emotional reactions which are highly important in their intellectual social and moral development.

Yoga Education is an integral part of education. Professional preparation in Yoga Education depends on the demands and requirements of the changing society because well balanced teaching and training curriculum can produce good teachers and yoga administrators (Chasen, 1984). In view of the present emphasis on yoga promotion at all levels, the yoga teachers training institutions should make efforts to review, revise and restructure the training programme and curriculum content. Training programme must aim at preparing teachers so that they become more capable and adoptable because professional growth of a teachers means the development of teachers capacities, abilities and competencies for carrying all responsibilities related to the teaching profession (Mongal, 1995). For professional preparation and entry to teaching departments teaching abilities are considered prerequisite (Sandhu, 2004). Appropriate trends and developments are needed to achieve this aim. These trends can be discussed under the following heads:

- Bring Yoga Education under the purview of system approach.

- Select candidates having yoga aptitude and sports background
- Modification in curriculum contents for enhanced employability
- Use of teaching and learning aids
- Modification of methodology of teaching
- Modification in subject contents

Bring Yoga under the purview of system approach

It is time that Yoga Education should be brought under the preview of system approach to have a meaningful and comprehensive programme of yoga teacher preparation. System approach is a means by which thorough analysis of system or subsystem may be made. Education is considered as a behavioral system keeping in view the instructional process. Educational system is also open as all behavioral systems. It is having INPUT : PROCESS : OUTPUT : FEEDBACK : MANAGEMENT : CONSTRAINTS and RESTRAINTS contents. Feedback device provides information of regulating the system. Formal evaluation in the form of tests, and evaluation in the form of examinations and other methods of evaluation of learner provide the feedback information. Components of management, constraints and restraints improve the function for making the system self correcting and self generating.

The systems approach consists of eight steps : Need, Objectives, Constraints, Alternatives, Selection, Implementation, Evaluation and Refinement.

Modification in Curriculum contents

In addition to making all round fit citizen through the medium of yoga education one of the main aims of the modern yoga is to enhance the scope of job placements of the yoga professional, To achieve this aim it is necessary that curriculum content be designed towards a diversified yet related area of other disciplines. It is an attempt to ensure enhanced employability. These areas may be as under :

- Yoga Therapy
- Movement Science
- Yoga Management
- Yoga Journalism
- Yoga Physiology
- Yoga Psychology
- Yoga Physical Health Training

Yoga Therapy

It signifies the application of yoga as a therapeutic measure in selected rehabilitation management programme. It prepares the yoga education personnel as yoga therapists. This act will widen the horizon of job in various departments in the medical field.

Movement Science

Movement Science can be included in the curriculum. It may be very beneficial for the disabled i.e. physically handicapped, the mentally retarded and the perceptually defectives. Modified programmes in the yoga education are required to improve the physical fitness components of special group to enable them to lead a self dependent and respectable life. The product in this field has ample scope for job placement in the institutions opened for the special group as well as in the occupational therapeutic centers.

Yoga Management

Training in yoga management can provide exposure to managerial concept and would enable the yoga education personnel to take up executive positions in the ever expanding yoga establishments of the government and private public sectors. This is an age of management . Yoga management can evolved as an identifiable branch of the management systems. Training in yoga management can help for efficient management in yoga education planning, organization of yoga functions, and management of yoga facilities.

Yoga Journalism

Coverage of yoga in daily newspapers, general magazines and in specialized yoga magazines, on radio and television has become important and the journalistic approach has come to be recognized. yoga education personnel with a flair for journalistic career could serve the cause of yoga through journalism.

Yoga Physiology

Yoga physiology deals with very significant aspects like effect of yogic activities on various systems,

fiber distribution and performance, muscle fatigue, its sources, symptoms and effect of yogic training and conditioning on muscles. It exclusively deals with the functional adjustments and adaptive mechanism operating in the body during enhanced stress of yoga participation. It also deals with the effect of yogic exercises on various systems.

Yoga Psychology

Also an important area in yoga education. Modern concept, present development will be incorporated in this area.

Yoga Health Training

New millennium will be characterized by rapid changes : increased population, urbanization, automation, noise pollution, traffic crowding resulting in stress and tension. The technological and industrial developments will leave individual in most of the jobs with little or no physical activity, but with ample of time for ease and comfort. Man will become slave to the mechanical gadgets of the automation. This automation may prove to be challenge to the human society. Yoga training can bring the individual out from this danger.

Use of Advance Teaching and Learning Aids

Education is a process of modification and communication. If it is to be really meaningful, it requires effective communication. The group placed model of teaching is now giving way to the model with emphasis on learning on the learner as an individual and in the use of a wide range of teaching and learning resources. Attention should be provided on the individual. The whole evaluation process should focus attention on the individual person as a learner with unique characteristics, capacities need, level of motivation and dispositions.

Old and time honored lecture method is still followed as the main method of teaching, in spite of many disadvantages. These disadvantages are as under :

- All the students do not have identical
- equal background
- All the students do not have same ability to learn
- Learning styles differs from individual to individual
- All students are equally not ready and receptive
- Many students play passive role during the lecture

Instructional Modules

Instructional modules could be designed for group study and also for individualized learning. They are modularized instructional packages. Instructional module has three basic well- co-ordinated elements ; (i) objective, (ii) learning activities, and (iii) evaluation. Module is a unit of instruction. Access to information will vastly improve bringing about a total transformation of the functional profile of the library and documentation services. Printed paper as the primary device for storage and transmission of recorded information may be replaced by variety of electronic devices. Electronic books could store textual/graphic information as electronic signals in high density read only memory (ROM) and display the required information as flat screen liquid crystal display (LCD). Electronic books with less volume, minimum storage with low cost will be more useful and will prove ideal. Large scale/mini computer, microprocessor for scanning and searching the stored information can be used. Photographic microfilms of various kinds, magnetic storage as tapes and discs, optical storage as videodiscs will be very effective.

Modification in methodology of teaching

In the field of yoga education, it is very necessary to include modified methodology of classroom teaching in the professional preparation. Following suggestions are presented under this category:

- Higher education in yoga education is needed at the yoga education teacher training institutions to strengthen the faculty. M.Phil, and Ph.D. programme should be started to provide excellence in yoga education.
- Application of the research finding to the actual implementation in the yoga education teacher training programmes for appropriate modification to make professional preparation training more comprehensive, meaningful and useful. Yoga education should be started in arts and science college in every university all over the country. It will be a good move for the recognition of yoga education as an academic discipline.

- Production of resource material, appropriate teaching and learning aids. Electronic information storage system.
- Continuing education should be encouraged. Updating knowledge through in-service refresher/ orientation programmes may be organized regularly, covering teaching- learning processes, training, evaluation, research and development.

Emphasis on modification of syllabus

Regular meeting of concerned bodies should be held to discuss the importance and usability of various contents of yoga course. New contents keeping in view its importance should be introduced time to time.

References

- 1 Chason, Roy Foster (1985) "A Survey of Athletic Directors, Principals and Facility Directors to determine the administration programme". Dissertation Abstract International, 45, No, 12 (June): 3576-A.
- 2 Mangal, S.K. (1995). Teaching of Physical and Life-Sciences, New Delhi : Arya Book Depot 1995, P. 298.
- 3 Sandhu, Kiran (2004) Professional preparation and Career Development in Physical Education & Sports. New Delhi: Friends Publication (India), p. 16.
- 4 Sharma, Y.P. (2006) Physical Education and Sports, New Delhi : Reliance Publishing House,

Yoga : 3

Yogic Energy to Enhance the Sports Performance

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Introduction

Today's age is age of competition. Every field is connecting with competition it includes not only academic field but also sports. Every player is trying to reach his almost capacity for those he uses different types of method to reach the top in Olympic winner. In looser there is a difference of fraction of second one getting medal and other is waiting for four years. Everyone is trying for that fraction of seconds. In the field of sports coaches, sports scientist, physiologist, psychologists and all other are concerning scientist trying to grab that fraction of second with the help of psychology, biomechanics, nutrition, sport medicine, doping drugs and all other, All these science helps to develop maximum performance. But we are not using our own science i.e. yogic practice to develop max sports performance by creating more and more energy through yoga.

Every one knows that "energy is capacity to do work", for every aspects of life we need more or less energy. For i.e. Sitting, standing, laying, reading, laughing i.e. every minor thing the ways that breath, think, eat, work, & move all contributes to the quality of energy that manifest in our lives. Breath is an essential link to our vitality. Our cultural doesn't have word for this life force energy. The Chinese refers to it as 'chi' .or 'Qi'. While 'prana' is its equivalent in India. The Japanese called it 'ki'. Through yoga we are able to conserve and create more energy, which can be utilized to develop max performance. Yoga teaches us how to control over miss leading thoughts, anxiety, tension, stress, and angerness. All these things save a lot of energy. This saved energy can be utilized to develop the max performance, as all coaches prefer the energetic player for every relevant sport. Mind is the storehouse of all energies = positive & negative. Positive energies help to create, achieve, constructive and satisfying goals, where as negative feelings like anger, hostility, jealousy, fear under all circumstances cause major mental instability and break down of the physical being. The mind can save or feed energy to whole body depending upon its state. It has been an ancient belief of psychologists, philosophers in east, particularly in India that the mind has more influence over the body. That the body has over the mind. Today this fact has been well accepted all over the world. In today's highly competitive world it is very essential to posses a disciplined and stable mind for optimum performance in any field, especially in sports in yoga with the help of pranayama, yogasana and bandh, the energy which is going outside of body can be diverted inside the body. There is three type of bandha. jalandhar bandh, udiyan bandh, mulbandh. They all get together are called mahabandh.

Now we come to our view. How energy created in our body, and how should it conserve through yoga. For that we have to take the help of ashtang yoga. In ashtang yoga, yam, niyam aasan, pranayam. pratyaher, dharana, dhyam, samadhi are included. We are human being but yet we don't know how to alive on small things we are thinking about wealth, we are getting angry on very small thigs and due to this our life is disturbed.

Yama and Niyam

In yama ahinsa, satya, asatya, bramhcharya, aparigruh are included. It teaches us or in short we say that with the help of yoga. We are able to conserve the energy & it should be diverted for sports. In niyam we have shouch, santosh, tap, swadyay, ishwar paridhan are included. Cleanliness is important in niyam, i.e. internal cleanliness and external cleanliness of the body. Internal cleanliness is observing rules of personal hygiene and in the removal of impurities of mind.

Asana

Asana or yogic posture is the stable & easy form of staying. To sit considerably for a longer period without moving and feeling comfortable is a sign of having been perfected in posture. It is conductive to the attainment of perfect concentration or samadhi. In yogic posture spirel cord, heart, neck and head should be kept erect.

Yoga is the restriction of the fluctuations of mind stuff. The medium for mind stuff is sensory organ. Disturbance of mind losses a lot of energy through our sensory organ because mind is controlling authority of sensory organ and through that we can conserve the energy through asanas.

Pranayam

When posture is perfected, regulation of breath is to be activated & this implies regulation of the flow of inspiratory and expiratory movement of breath. As a result of perfection in pranayama imparities of body and mind are disturbed. Pranayama fortifies both body & mind against disease and affliction respectively. There are some asanas for creating and conserving energy suggested are as follows.

Rag Doll:



Due to this posture, neck & spinal cord gets total relief and when we hold tension in our body unnecessary we drain energy. If yourself just hang your neck doing nothing & you will have more energy for the things in your life.

How to Perform: (According to pose shown above)

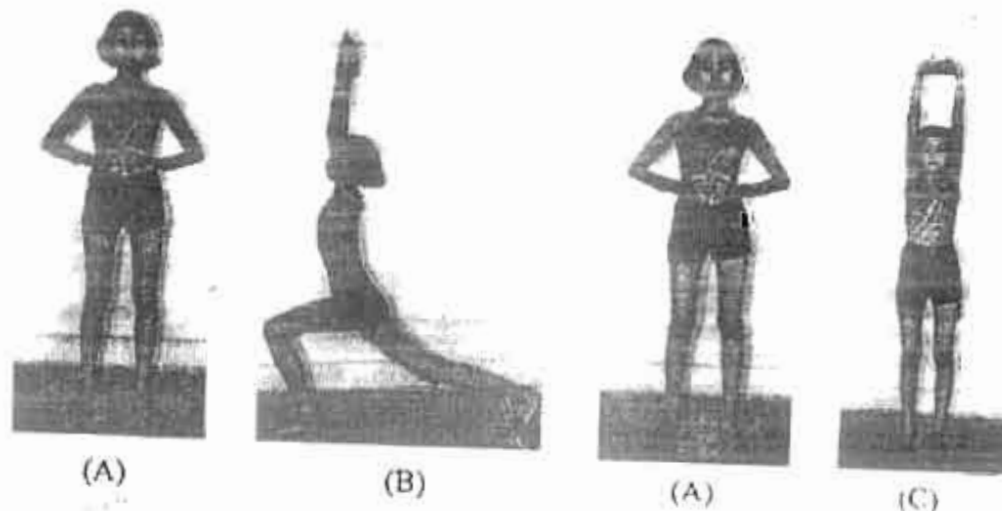
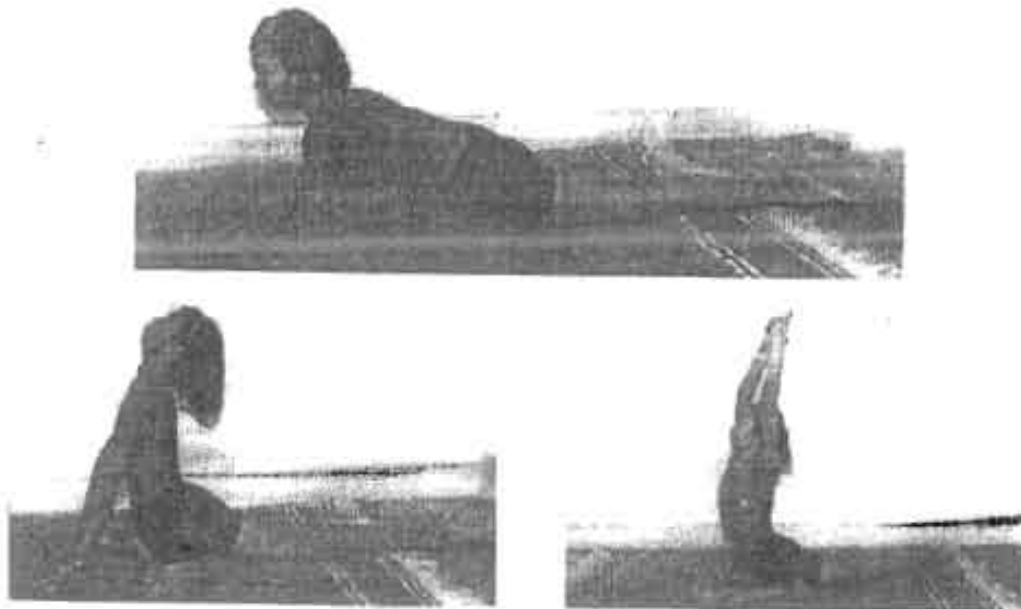


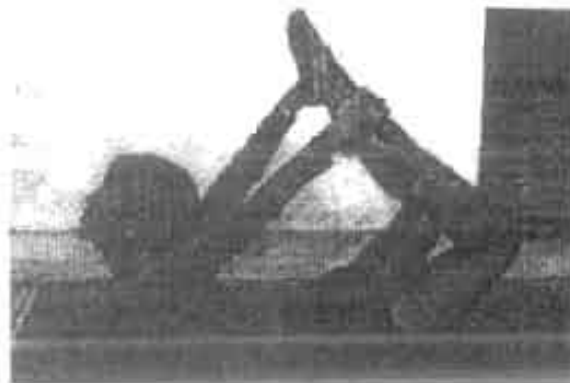
Figure No. 2: Worrier Series

Worrier series: According to posture shown in figures (A) the anatomical location of life energy is centered just below the navel. Our human battery resides in this area of lower belly and it is the place from which our most powerful patience & emotion arise. As you return your hands to this energy center each time you are drawing vitality from this special place to help you move into the next pose you can perform it in different way only position (A) is compulsory for next position fig. (B) and fig. (C). Another thing related to this part of the body where you were first given life (Through the umbilical cord) draw on it at this stage of your journey for life giving energy.



Pigeon

Pigeon is performed according to pose shown above. Most adult have tight hips we carry a lot of energy in them the pigeon helps you to unlock this well of energy by being the hips of tension. By doing pigeon hip joint open loosen & release lot of energy.



Full Bow

This powerful pose presses down on your belly i.e. energy center giving it satisfying massage to energy center. Therefore it release a lot of energy.

Bow or half bow: Nukasan etc. (According to pose shown above)

Rub of Feet

According to Chinese medicine all circuit of energy in the body have thermal point in the feet. Rub the bottom of both feet's and arranged the ankle without worrying about technique. Feet relaxology is great for the lymphatic system and it will help heighte & balance your energy.

Conclusion

From the above discussion we can say through the yoga we can definitely creat and store more and more energy. This positive energy (vitality) can be used for the sport: No doubt only with the help of this asanas, we cannot expect good result but definitely it is helpful to create the energy.

References

1. Dr. P. V. Karmbelkar, Patanjali Yoga Sutra.
2. Rachel Schaetter, Yoga for Spiritual Muscles.
3. Dr. O. P. Tyagi, Mental Tension and its Cure.
4. R.B. Alderman, Psychological Behaviour in Sports.

Yoga : 4

Yogic Practices for health & Sports Performance

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Introduction

Today we are in 21st century there is a landmark development in the science & Technology including space, defense, atomic energy, computer, internet service etc. By the internet invention we can collect required information within a fraction of second from any part of the universe. Due to this advanced scientific technological invention the body movements of the human being have been restricted. Tension & competitive feeling increased. Man has been felt the prey of stress, hypokinetic and psychosomatic diseases. So time has come that man should not ignore the importance of Yoga.

Every one desires good health and it is the ultimate objective of all those who want happiness in life. Each & everyone has to follow good health practices in their routine life. Minor health disorders are quite common to all. In the case of major health problems, the precautionary measures are plenty. Some people control their diseases like blood pressure, diabetes, acidity, asthma, etc. by taking medicines regularly. But such practice does not in any way completely eliminate the health disorders on the other hand, it leads to several other adverse health problems. The continuous, systematic and regular practice of yoga is an effective tool to maintain good health and also helps eliminate all the dreadful diseases from the human body.

Causes of ill health

The body falls ill due to many reasons, main reason, as per modern science is harmful bacteria causing infection or a disorder. But ailments caused by mental stress etc. have no physical basis and are caused by mental stress etc. All functions of the body are controlled by brain through complete nervous system. With mental stress function all systems is impaired and ailments start attacking the body and reaction starts. The main reason for bad health is incorrect food and overeating. To give energy to body, keeping the blood stream clean and all organs to function in alert manner depends on our food habits. Incorrect food, imbalance food, overeating, irregularity cause diseases to creep in the body.

Yoga is a scientific way to health

Yoga is a Systematic and methodical process to control and develop the mind and body to attain good health, balance of mind and self-realization. Though yoga has the potential power to make us healthy add to our vigor, still most people lack the knowledge of systematic practice of yoga. They perform yogic exercises for a short period and when they are health improves, they discontinue the yoga practice. For this reason, the effective results of yogic practices can not be determined perfectly. Many scientists, doctors, psychologists etc. all over the world are extensively studying the beneficial aspects of yoga which encourages us to attain positive health through yoga.

Yoga is for him who is moderate in eating and recreation, in actions systematic in sleeping and working and more than that, it is yoga, which ultimately eliminates all the health hazards and misery of human life. The systematic yogic practices not only eliminate and control several diseases but also keep the mind perfect, clean and peaceful. In the present difficult living situations, mental agitation, anxiety and depression are quite common. Yoga practice helps to cure several diseases and to develop the concentration of mind and eases stress and tension.

The great master of YOGADARSHANA, Pathanjali gives 'Eight-fold path' which helps a seeker to realize self and to attain perfect state of mind. Yoga is a art of living and yogasana is a scientific procedure. This is the only exercise which affects the inmost parts of the body. The health of our body and mind depends on the soundness of the health of our internal organs- the heart, lungs, digestive systems, glands, the nervous systems etc. If the organs inside the body are active and the body has adequate resistance power. Yogic exercises activate various systems in our body, better functioning of different glands and improving immune system. The brain includes on the higher nerve centres, it activates

the whole body by means of these centres. Yogasanas keep our brain and whole nervous system active and functional. Pranayama also makes the nerves calm and active, the mind steady and increases self-confidence.

Effects of yogasanas on health

- Yogasanas are very effective in throwing out all our body wastes and bring control over the body and organs are proper functioning of which depends our health and happiness.
- The asanas improve mental power and health in controlling the sense organs.
- It increases the elasticity of our body and make the body more active and supple.
- The blood circulation takes place more smoothly and properly and the body becomes capable of more works.
- It improves our resistance power against diseases and do not allow any external matter to accumulate in the body, they keep the body free from diseases.
- The deferent asanas clean the blood circulation drains of our body and circulates bloods freely in all parts of our body and helps keep our body free from impurities.
- Yogasanas are the best means to keep organs in proper functioning order.
- Yogasanas not only improve body health, they also have sobering effects on the mind. The mind becomes balance and peaceful,
- The practice of yogasanas is very effective activating on various glands, so that they secrete their juices in the required quantity and function properly.

Effects of Pranayama on health

- Pranayama is controlling the normal breathing cycle, it increase the expansion and contraction of our lungs so that they become capable of purifying more and more blood.
- Mind becomes capable of concentration.
- It has a unique power to throw waste products from the body.
- It creates resistance power in the body against diseases.

Effects of Six types of yogic purification practices on health

Our body has three basic properties - vaat, pitt and cough. If these three are present in the body in a balanced form, the body remains pure and disease free. Six fold yogic purification practices help to maintain them in a balanced form. Our present habit of consuming undesirable food and leading fast life are the cause of several body disorders through the accumulation of impurities in the body. To remove these diseases the six fold yogic purification practices are prescribed so that the body may function properly in its natural way. The six types of yogic purification practices are neti, dhauti, nauli, basti, kapalbhati and tratika.

Effects of yogic diet on health

Yogic diet has all along insisted on a nourishing but non-stimulant, vegetarian diet. One who want to advance on the path of yoga should first pay attention to his diet. There is no conflict between yoga and modern science as far as the principle of balance diet is concerned. But yoga diet would exclude all those food items which are non-vegetarian and intoxicating, because according to yoga food is not physical fitness alone, it also affects mental and spiritual state of a being. Yoga lays emphasis on sattvic food. Food which promote longevity, intelligence, health, happiness and delight which are sweet, bland, nourishing and agreeable, are dear to the sattvic type of man. Yogic diet not only help the body to remain strong and active but lead one to high mental and spiritual attainments.

Present Status of Games and Sports on Inter-National Screen

As far as concerned about the present status of games & sports of India it is found that we are much behind of Inter-national competitions even to smaller countries. Like Japan, South Korea have made many land marks of achievement in inter-national contest. Therefore, it is the time to think seriously that how this regretted situation could be overcome. Some research personnel in the field of yoga and physical education are of this view and opinion yogic practices could be much more useful to develop and maintain the sport performance and make the psychological preparation of the sports man. They have suggested various areas of the physical education and sports, where the yogic practices could be utilised.

1. Yoga for promotion of Sports

A) To develop basic fitness

Fitness is that state which characterizes the degree to which the person is able to function. It implies the ability of each person to live most efficiently with his potential. Ability to function depend upon physical, mental, emotional and social component of fitness, all of which are related to each other. The various health related fitness parameters viz; cardio respiratory endurance, muscular strength, muscular endurance, flexibility, co-ordination ability can be develop through yogic practices.

B) Development of Specific Sports Skill

Development of Sports Skills depend on various factors. Out of these neuromuscular co-ordination is one of the main factors, Yogic practices are greatly useful to develop the neuromuscular co-ordination, balancing efficiency, accuracy etc. As well as stretching also improves the performance of sports man. The purpose of steady stretching could be solved by asanas.

C) To Develop Psychological factors

Psychological factors is play very important role in the performance of sports. Psychological disorders like emotions, anxiety, stress, depression are controlled properly, these could be contributed to improve the performance. Emotions are governed by autonomic nervous system. Control over autonomic nervous system bring the emotional disturbances down. Yogic practices like Asanas, Pranayamas, Dhayn are excellent in conditioning the autonomic nervous system.

2. Yoga for Prevention and Cure Sports Injuries

Muscle Stretching procedure prevents the athletic injuries. paschimotanasan, halasan, padhastasan, ugrasan etc. are good stretchers. These asanas not only prevent sports injuries but also cure some injuries like sprain, strain etc. and some psychological disorders.

3. Maintenance of Physical Fitness

Yogic practices are useful to lowering the anxiety level, tension, stress and keeping the athlete in his/her normal state during competition period. As the off season state is tension free state for athlete. Some times he feels nausea after the exercise. In this state there is a possibility for lowering the fitness. Therefore in this period yogic practices may help in maintaining fitness and promote rest and relaxation. When physical structure is healthy the mind is serene, which, in turn, activates the inner powers. The man becomes steady and concentrated. This boosts our working capacity and success follows our efforts. We acquire the power of facing to them. Thinking becomes positive and constructive and our actions have the right direction.

References

1. N.S. Ravishankar, 2002, "Yoga for Health", Pustak Mahal, Delhi.
2. Dr. S. Pal, D.D.Agrawal, 2003, "Yogsanas and Sadhana", Pustak Mahal, New Delhi.

Yoga : 5

HEALING EFFECT OF MUDRAS (HAND GESTURES) ON PSYCHOSOMATIC DISORDERS

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Abstract

Psychosomatic disorders created serious health problem since last a few decades. In spite of technological developments and pharmaceutical wonderful drugs, the number of psychosomatic patients is increasing at the alarming rate. It is, now, not only confined to the persons who work under chronic pressure but also occurring with increasing frequency among the younger age groups. Depending on ritual, cultural and pharmaceutical knowledge, various healing methods have been used to cure them, but fruitful results have not yet been derived. Like other relaxative techniques of Yoga, Mudra is also very easy, non-expensive and self-sustainable technique to manage and cure psychosomatic disorders.

In mudra, every act of touching finger tips, every movement of hands positively effect the distinct and corresponding areas of the brain. This calms down and regulates the cerebral activity, autonomic nervous activity, neuro-endocrinal and other systemic activities and thereby establish the proper flow of bio-energy (prana) and body fluids. Once, the flow of prana becomes smooth and regular, mind also attains the qualities of emotional stability, tranquility and clear thinking. Now, all the ripples of thoughts and emotional feeling over reasoning consciousness (vivek chetna) are removed and individual gains the elevated states of consciousness. It is the state which strengthens immune capacity against the causative factors of psychosomatic disorders.

Introduction

The scientific inventions, technological developments and rapid processes of urbanization have improved the standard of living by bring forth varied range of materialistic sufficiency, comfort and enjoyment in human life. Science has also invented pharmaceutical wonderful drugs and surgical equipments to die out human suffering and illness, but in spite of these, new diseases have cropped up and the frequency and number of victimized people by cardiac disorders, respiratory ailments, diabetes and peptic ulcer is increasing day by day. To day medical research declares that 90 to 95% of physical disorders are due to stress and tension (Zaveri and Zaveri, 2006). Psychologists and medical experts confirmed by convincing evidence that accelerated speed and competition in occupational arena and fear of uncertainty and insecurity in daily life affairs' increased emotional stress. This stress of long duration with greater conflict and ambiguity is responsible for occurring psycho-physiological malfunctions, medically termed as 'Psychosomatic disorders'.

Psychosomatic disorder is a group of ailments in which somatic complications are as important as the psychological in origin. American Psychological Association (APA) used the term 'Psychophysiological' to identify these type of disorders and states that they originate due to combined effects of psychological, physical as well as socio-cultural factors. The term 'cortico-visceral' is also used in some countries of the world (Coleman, 1974). Webster's international Encyclopaedia states that psychosomatic disorders originate due to mental disturbances and ultimately undermine a person's physical health (Harkavy, 1996). Medical reports revealed that personal health has been adversely effected by these disorders since last a few decades. Besides men, career women, working mother and even house wife are found to be seriously effected. People of urban centres and commuter's zones have already victimized with greater intensity (White and Watt, 1973). At present, the situation has become so common and wide that younger age (25-45) suffering with increasing frequency which ultimately leading them to premature death.

Genesis of Psychosomatic Disorders :

(i) **Yogic Concept:** It is generally accepted that disharmony, imbalance and maladjustment among the

functions of various organ systems are the root causes of disease (Reddy, et al. 2005). But in accordance with yogic concept, disease means the disease of personality; of the whole man - body, mind and spirit. In Ayurveda, mental health is given more important than physical health because disturbances in mental equilibrium often manifest themselves physically- "*PRASANNA ATMENDRIA MANAHA SWASTHA ITYABHIDHEEYATE*" (Sushratha Samhita, XV-41). Maharishi Patanjali also emphasized on mind and mentioned that disturbed mind is the base of all Vyadhi i.e. disease (Yoga Sutra, I-30). In fact, mental tension contribute to at least 92 to 95% of the physical ills that beset mankind today (Zaveri and Zaveri, 2006). Yoga believes that, any ailment originates in Monomaya Kosa (psychic level) in the form of 'Adhi' (subtle form of disease) or primary disease and at this stage there is no symptoms at the physical level. But when the accumulation of psychic impurities, ie 'Kleshas', (Yoga Sutra, II-3) become greater in weight, an individual suffers from the ripples of irrational thoughts and feelings (Yoga Sutra, I-30-31) and becomes the victim of emotional tension and stress. If not alleviated, and exist for long duration, gradually they percolate to the somatic (physical) level. This externalized manifestation of psychic impurities at the organic stages of body is termed as 'Vyadhi' (gross form of disease) or secondary disease. At this state, smooth flow of 'Prana' (vital energy) is obstructed or it flows in wrong paths without proper rhythm and harmony. The nadis can no longer, maintain their stability and steadiness and they become quiver and faint. Food does not get properly digest, visceral organs become overactive; the homeostatic balance goes into disturbance and ultimately immune capacity of the cells deteriorate. Amidst such tumult, individual becomes the victim of psychosomatic disorders (Nagendra, 2004).

Physiological Concept: When an individual in his daily life affairs confronted with severe emotional stress and tension, due to affliction of mind by irrational thought waves, the cerebral cortex of the brain senses that stress and sends impulses to the hypothalamus. After a complex interaction process, the pituitary glands releases adrenocorticotrophic hormone (ACTH) to stimulate medulla of adrenal gland which releases two hormones that is 'adrenaline and noradrenaline', in the blood stream. These hormones stimulate liver to release glucose; the sources of energy and also activate autonomous sympathetic nervous system immediately. Blood vessels constrict and blood pressure rises, muscle fibers contract to prepare for sudden movement. The stomach stops the act of digestion of food. The respiration becomes shallow and rapid. The brain becomes hyper-alert. All these changes prepare the body for "flight or fight" whichever it choose to perform (Krishnamurthy, 1999).

If the stress responses are not terminated in due time, dominated functions of the autonomous sympathetic nervous system is also prolonged. The situation eventually results in sustained mobilization of unnecessary energy and causes muscle destruction, fatigue and diabetes. As it suppresses digestion, acidity and ulceration in stomach become common and increased cardiovascular activity leads to hypertension, heart attack. In deed, prolongation of stress arousal deteriorate the immune capacity of the cells and thereby increased the risk of onsets psychosomatic illness (Zaveri and Zaveri, 2006). Therefore, the real solution lies in learning how to cope with emotional stress and tension in daily life. Human body itself is a storehouse of medicines and one can earn them by developing the innate coping mechanism of the psycho-physiological systems of body.

Contemporary Methods of Treatment

It is mentioned that psychosomatic ailments created a serious health problem since last a few decades and hence, depending on ritual, cultural and pharmaceutical knowledge various healing methods have been used to cure them. By virtue of pharmaceutical wonderful drugs and developed techniques of surgery, modern medical system tries to manage psychosomatic ailments. But the derived result is not permanent because due to its somatic approach it interacts with human physiology only. There is no opportunity to reintegrate or control irrational thought waves or cittaviksepah.

Psychological counseling, hypnotic suggestion and family therapy can facilitate and reduce extreme emotional reactions but recurrence is almost common unless the emotional stress can be set right (Wolberge, 1947 and Black, 1963). Sometimes behaviour therapy is also used to desensitize patients to the psychosocial stimuli that cause anxiety or stress, but there is again high chances of relapsing when one exposes to psycho-social stimuli. Therefore, aforesaid treatment methods are very specific and useful only at limited conditions. Under this situation, health scientists, physicians and researchers are in search of a holistic curative technique which can give permanent solution of the problem. Some of the yogic

practices like mudra, meditation, yoga nidra and relaxation are easy, non-expensive, self-sustainable techniques which attempt at a restructuring of mental faculties by alleviating physical, mental, and emotional tensions, Mudras (hand gestures), though comparatively unexplored and unfamiliar to layman is also a scientific technique to remove emotional upsurges and beastly consciousness. (Niranjananand, 1997).

The flexibility of hands display a direct relationship to the flexibility of the entire body. If an individual feels tense at a certain part in the body, this tension will be expressed at the corresponding part of the hands (Hirschi, 2000). According to physiological concept, flexibility of the hands always effect the flexibility of the neck because the nerve paths run through the vertebral foramina in the arms, hands and fingers. This is why, hand exercises relieve tensions in the neck (Hirschi, 2000). Middendorf (1985) confirmed direct relationship between the individual's fingers and corresponding areas of the lungs. Keshav Dev (Esotera) who intensively investigated the effect of mudras on various disorders also confirmed their healing capacity. Keeping in view these positive roles of mudras (hand gestures), the present investigator undertook this theoretical research programme.

Historical Evolution and Conceptual Clarification of Mudra

It is very difficult to state exactly the evolution of 'Mudra' as its origin remains uncertain. But Hommel stated that the term derivated from the Assyrian 'Musaru' which denotes a seal used in writing. In old Persian language change of *z' to 'd' would show the evolution: Musaru = Muzra - Mudra (Hommel). According to Saunders (1960) mudra existed even before the organization of Buddhism into a religious system. Its use in the veda is attested whereas its presence in the magical rites of primitive Buddhism is undeniable. The appearance of mudra in Trantraism is deemed as a sort of renaissance of the earlier gestures, probably blurred during the first century. Mudras have been used in two senses since old days. The first sense signifies the symbolic representation of metaphysical aspects of esoteric ceremonies whereas second one describes the episodes of mythological events to identify divinities. Mudras of first group are mystic and form an integral part of rituals and religious ceremonies while the second group is mostly use in iconography i.e. sculpture and painting.

The Etymology of the term "mudra" is of varied significance and varied range of opinions are exist among the authorities. Gorakshnath stated that root 'mud' means 'to delight' and root 'ra' means 'to bestow'. Realization of the union of both jivatma (individual soul) and paramatma (cosmic soul) is called 'mudra' (Siddhasiddhanta Paddhatih, VI-29). He also added that mudra is the bestower of bliss and also gives delight to the gods by driving the hordes of demons away (Siddhasiddhanta Paddhatih, VI-30). According to tantric concept, it is the symbolic representation of 'Sakti' the feminine counterpart of God which is the productive force of strength, of force and of efficacy (Saunders, 1960). Coomerswamy (1928) identified them as "an established and conventional sign language". Woodward (1917) defined it as "finger-signs". Getty (1928) told that mudra is a "mystic pose of the hand or hands". Rao (1914) viewed mudra as "hand poses adopted during meditation". In esoteric rites the word taken the meaning "way of holding the fingers" to express mystic, magical and ritual values. According to Hirschi (2000, P. 23) practice of mudras not only uplifts the level of consciousness but also have wondrous controlling effect on emotional tension and stress.

In yogic texts, mudra is mostly the extended form of yogasanas to achieve mental tranquility and equanimity but in the present study, it is restricted to 'hand gestures' only.

Mechanism of Mudra in managing Psychosomatic Disorders

The therapeutic concept of mudra envisages that every act of touching finger tips, every movement of hands has its special curative effect on brain, mind and body. The ends of the nerve paths of the hands occupy large areas of the brain. This area is much larger even than that of the arms and legs. Every variation of mudra has its special connection with particular area of the brain along with separate effects. But the mudras that are mostly effective to bring about inner equilibrium, calmness and relaxation, prescribed for treating pshycho-somatic disorders (Figures 1 to 10). The regular practice of (1,a) Jnana mudra and (1,b) Chin mudra, (2) Varuna mudra, (3) Apan mudra, (4) Kubera mudra, (5) Ksepana mudra, (6) Garuda mudra, (7) Suchimudra, (8) Mushti Mudra, (9) Mahasirs mudra and (10) Makara mudra for at least 55 minutes twice daily (morning and evening) can raise the level of consciousness by removing physical, mental and emotional tensions and other psycho-physiological imbalances of a practitioner (Hirschi, 2000).

Experts state that cerebral activity is activated and trained by touching and feeling with fingers because they stimulate the corresponding connections (areas) in the brain and activate brain waves. Indeed, when mudras are practiced with full concentration and a state of serenity is maintained, cerebral activity is calmed, regenerated and the nerve cells of hypothalamus are influenced by these learned relaxative responses of cerebral cortex. Hypothalamus sends an adrenocorticotrophic hormone (ACTH) releasing factor from its nerve cells to the pituitary.



Fig. Ia. Jnana Mudra : Keep your hands on the knees, keeping the palms turned down. Let the tip of index fingers touch the tip of the thumbs. Keep other fingers straight.



Fig. Ib. Chin Mudra : Keep your hands on the knees, keeping the palms turned up. Let the tip of index fingers touch the tip of the thumbs. Keep other fingers straight.



Fig. 2. Varuna Mudra : "Bend the little finger of your right hand until the tip touches the ball of your right thumb; place the thumb of your right hand on it. Press the little finger and thumb slightly with your left thumb. Simultaneously your left hand encircles the right hand lightly from below."



Fig. 3. Apan Mudra : "With each hand : Place the thumb, middle finger, and ring finger together - extend the other fingers."



Fig. 4. Kubera Mudra : "Place the tip of your thumb, index finger, and middle finger together. Bend the other two fingers so they rest in the middle of your hand."



Fig. 5, Ksepana Mudra : "Place your index fingers flat against each other. Clasp the rest of your fingers and let the finger pads rest on the back of your hands. Cross your thumbs and place each in the hollow of the other thumb."



Fig. 6. Garuda Mudra : "Clasp your thumbs and place your hands, right hand on top of the left hand, on your lower abdomen."



Fig. 7. Suchi Mudra : "Stretch the right arm to the right and point the index finger upward. At the same time stretch your left arm to the left and follow the same instructions."

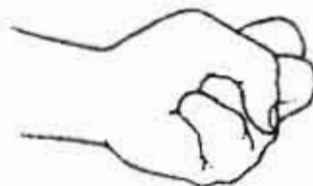


Fig. 8. Mushti Mudra : "Bend your fingers inward and place your thumbs over the ring fingers."



Fig. 9. Mahasirs Mudra : "The tips of your thumb, index finger, and middle finger touch each other. Place your ring finger into the fold of the thumb and keep your little finger extended."



Fig. 10. Makara Mudra : "Place one hand inside the other. Extend the thumb of your lower hand through the little finger and ring finger of the other and place in the middle of the palm of your upper hand. This hand's thumb and the tip of your ring finger touch each other."

Under the command of pituitary gland, secretion of adrenal gland is inhibited and regulated. Simultaneously at this tranquil state of cerebral functions, pineal gland begins to release 'serotonin' with an increased proportion in blood (Zavari and Muni Mahendra, 1994). Consequently, the functions of parasympathetic nervous system is dominated which reduces blood pressure, heart rate, and oxygen consumption and also lowers metabolic rate. The practitioners feel a unique state of deep relaxation. This 'relaxation response' is exactly opposite to the 'flight and fight' reaction during emotional stress and tension. At this state, 'Alpha' brain wave is produced. Now the flow of bio-energy (prana) in the nadis and body fluids throughout the body become smooth and regular and body gains homeostatic balance.

Once the flow of 'Prana' becomes smooth, regular and calm; mind also attains the state of tranquility and stability (Hathapradipika, II-2). At this state, individual achieves the ability of mental alertness, clear thinking and right decision making because, now all the ripples of thoughts and emotional feelings over consciousness (citta) are removed. Consequently, individual attains the higher level of consciousness. This elevated states of consciousness strengthens and enhances immune capacity by developing more 'T' cells (Mangaltheertham, 2007).

Discussion

The purpose of present study was to examine the probable effect of mudras (hand gestures) on psychophysiological disorders. Literature shows that negative emotions like anger fear, jealousy etc. cause disequilibrium of 'mind-body equipment' and create deformation in physical and mental comforts. This condition i.e. perturbed 'Monomaya kosa' and thereafter, 'Annamaya kosa' become the breeding ground of psychosomatic disorders (Yoga Sutra, 1-30) because this state of 'mind-body' is less aware and less conscious for perceiving and analyzing the surrounding stimuli and events properly. Naturally, an individual reacts to stimuli in an immature and maladjusted way which creates imbalances in psychophysiological functions and ultimately one becomes the victim of various psychosomatic disorders.

However, after the analysis of theoretical data, it has been confirmed that mudras are the most effective technique to alleviate psychophysiological imbalances. Regular practice of prescribed mudras can help the practitioner to activate his parasympathetic responses to emotional stress and tension which is more mature, appropriate and relaxative than the former one. Now, one remains calm and tranquil even under all kind of adverse conditions because one is now free from turmoil and turbulence of thought waves and the calmed mind achieved high level of understanding and elevated state of consciousness.

In fact, practice of mudras brought 'about a change in the consciousness by modifying pattern of mind from 'Kshipta' to 'Ekagra'. In the whole process, nature of physiological functions changed favourably to strengthen and enhance immune capacity.

The present finding is also supported by the results obtained by many earlier investigators. Researcher Keshav Dev (Esotera) after having confirmed, admitted the healing capacity of mudra in case of chronic complaints. The Kinesologist Kim (1991) tested the effect of mudras on various disorders and reached at positive conclusions. Hirschi (2000) also mentioned therapeutic attributes of mudras for various physical, psychological as well as psycho-physiological diseases.

Conclusion

In conclusion, it is mentionable that like meditation and other relaxative processes of Yoga, Mudras are also congenial and authenticate means of removing emotional up surges. They help to achieve psychophysiological equilibrium and thereafter elevated states of consciousness. Due to these attributes, mudras can be suggested as an efficient tool for treating psychosomatic ailments as well as other stress induced disorders. Yet, this theoretical investigation is not free from limitations. Therefore, the concept need to be experimented scientifically for further assurance and confirmation.

Reference

1. Bahnsen, C. and Solomon, G.F., 'Study Links Cancer to Emotional Stress'. Loss Angeles Times, April 6, 1971, II, 5.
2. Black S. 'Inhibition of Immediately Hypersensitivity Response by Direct Suggestion Under Hypnosis', British Medical Journal, I (1963) PP. 925-29.
3. Coleman, J.C. (1974). *Abnormal Psychology and Modern Life*. D.B. Taraporevala Sons & Co. Private Ltd. Bombay, PP. 498, 503-512.
4. Coomarswamy, A.K. (1928). 'Mudra Mudda', Journal of the American Oriental Society, Boston, JAOS XL-VII, PP. 279-81.
5. Dunber, F. (1943). *Psychosomatic Diagnosis*. Herper, New York.
6. Dunber, F. (1954). 'Emotional and Bodily Changes'. 4th Ed. Columbia University Press, New York.
7. Getty, Alice. (1928). 'The Gods of Northern Buddhism' 2nd Ed. Clarendon Press, Oxford, USA.
8. Harkavy, M.D. (1996). 'Webster's International Encyclopaedia' Trident Press International, Florida, USA,
9. Hathapradipika, II-2.
10. Hirschi, G., (2000). 'Mudras : 'Yoga in Your Hands''. Sri Satguru Publications, Indian Bookcentre, Delhi, PP. 6, 7, 26.
11. Hommel, Fritz. "Pali Mudda = Babylonisch Musaru and die Herkunft der Indischen Schrift". In WUST, Q.V., PP. 73-84.
12. Keshav Dev. "Yoga Mit Dem Kleinen Finger" by Ram Panjaabi in the Journal 'Esotera', 9/98.
13. Kim, Da Silva (1991). *Gesundheit in unseren Handen*. Munchen, Germany.
14. Krishnamurthy, V.S, (1999). *Spiritualise to lead a stress free life*, T.R. Publications, Chennai.
15. Mangaltheertham, Swami. 'An Altered States of Consciousness in Health and Healing for Rural Community'. Souvenir, National Yoga Week, 2007, Morarji Desai National Institute of Yoga, New Delhi.
16. Middendorf, Use, (1985). 'Der Erfahrbare Atem'. Paderborn, Germany.
17. Nagendra, H.R. (2004). 'The Basis for an Integrated Approach in Yoga Therapy'. Vyasa, Vol. I, P. 62.
18. Niranjanand, Swami. (1997). *Gherand Samhita. (Hindi Comentary)*, Bihar Yog Bharti, Munger Bihar, P. 204.
19. Rao, T.A. Gopinatha. (1914). 'Elements of Hindu Iconogrpahy'. Law Printing House, Madras; Vol. I, Chapter-I, P.14.
20. Reddy, M.V., Murthy, K.J.R., Sahay, B.K, & Prasad, B.N. (2005). *Yogic Therapy*. Arthamuru, East Godavari, A.P., India,
21. Saunders, E.D. (1930). *Mudra: A Study of Symbolic Gestures in Japanese, Buddhist Sculpture*. Routledge and KeganPaul Ltd., London, PP. 8, 31.
22. Sushrata Samhita, XV - 41.

23. Siddhasiddhanta Paddhatih, VI-29,30.
24. White, R.W. and Watt, N.F. (1973). *The Abnormal Personality*. The Ronald Press Company, New York.
25. Wolberge, L.R. 'Hypnotic Experiments in Psychosomatic Medicine. IX (1947), PP. 337-42.
26. Woodward, F.L. tr.; *The Book of Kindred Syings (Sanyutta-nikaya) Part-IV*, P. 267, London, Oxford University Press, 1917.
27. Yogasutra, 1-30,31,11-3.
28. Zaveri, A and Zaveri, M (2006) 'Therapeutic Thinking : A scientific meditation technique for conscious living', Arhum Centre, Mumbai PP. 36-38.
29. Zavari, J.S. and Muni Mahendra Kumar (1994). 'Neuroscience and Karma', Jain Vishva Bharati Institute, Ladnun, Rajasthan.

Yoga : 6

YOGIC WAY: FOR SOUND MENTAL HEALTH*Prof. Jamnadas K. Savalia**Co-ordinator, Mahadev Desai Sharirik Shikshan Mahavidyalay,
Sadra, -382320 Dist. Gandhinagar, Gujarat, India***Abstract**

Philosophical thinking on one hand, and active participation in life on the other are often considered to each other. As easy as trying to straighten a dog's tail. Extremely difficult, actually. It is easy to bring changes in superficial aspects of our behaviour. It takes a lot of effort, patience, motivation and understanding of one's own self to bring long lasting deeper changes viz. those in our thinking changes viz. those in our thinking patterns and temperament. But it's a worthwhile effort, and the truly motivated who understand its worth do make these attempts and also succeed.

Mental Healthy signifies a feeling of general well being, good efficiency in work and dynamic adjustment with environment. Thus sound mental health leads to:

- Normal physical and mental development.
- Normal participation.

This article reveals that pranayama, prathyahara, dhyana gives us an improvement in memory and other functions and by releasing billions of macrophages and granulocytes.

It also contains the effect of Yoga on our sound mental health and a summary for well being.

Introduction

In today's society, people are not familiar about yoga practice in a scientific manner. The main cause is, there is no standardization in yoga. The fact that the yogic discipline allows the body and mind to function better and the mind to be under one's own control. For the proper maintenance of body mind complex yoga recognizes five components of self viz. body, prana (bio-energy), mind, intellect and bliss.

Mental health signifies a feeling of general well being, good efficiency in work and dynamic adjustment with environment. Thus sound mental health leads to:

Normal physical and mental development.

Normal participation.

1. Mental health is the focal point of good education.

2. Yoga: A question is generally raised whether yoga can fill the vacuum in the educational set up.

Patanjali states yoga is discipline. It also means that yoga is disciplined way of life.

According to Gita yoga is harmony. Yoga brings about balance in all the aspects of life.

Yoga has eight limbs which cater to the five components of Body, Buddhi and Ananda

• With varying degrees of emphasis yoga is qualified as Jhana Yoga, Bhakli Yoga, Karma Yoga, Hatha Yoga etc.

3. Mental hygiene - One has to adopt some discipline in order to remain in good health. In order to maintain sound health cleanliness should not be limited to the physical only it has to be extended to mind as well as intellect.

- It is now widely recognized that diseases - even physical ailments have their roots in the mind.
- But this concern for mental health is not appropriately reflected in our life styles and behaviour patterns.
- Structure of mind is regulated by inputs made in the form of sensory impulses to which it is exposed.
- With increasing frequency of inter - actions and faster means of communication chances of conflict are also increasing.
- Like all living organisms human beings are naturally endowed with techniques to resolve conflicts,
- Following maxims are enunciated for maintaining mental health.

a) Active interest in some form of physical exercise, b) Relaxation should form an integral part of daily routine especially after physical exertion. c) Discipline of food habits and tastes should be evolved. Diet plays an important role in the arousal and expression of emotions. d) Avoid learning responses i.e. acquiring habits, one may have to unlearn later. e) One should avoid stimuli when one cannot act in responses to them this can be done by consciously attending to some other activity and avoiding the

stimulus. f) Vicious circle of frequent stimulation of one emotion or other i.e. always living in exciting situations, reduces immunity. Therefore one should evolve suitable and workable entertainment time table. g) Acceptance of want, hardship and pain is a part of the game of life and is desirable, h) A mentally healthy person is able to take a detached or impersonal assessment of any situation, i) Avoid extremes in every sphere food, diet, recreation, entertainment, rest, exercise, emotion etc. j) Be flexible in approach to food, friends, etc. be experimental in outlook and adjust. k) Have workable techniques to unload one's mind especially when some behaviour is likely to lead to guilty feelings or inferiority complex. l) One needs to have faith in the unique and universal guiding principle in nature. A faith in one's capabilities gives self confidence. A faith in the good of others as one's own welfare motivates one to be generous and self sacrificing. Self acceptance is the key to avoid repression, m) Lastly, but most importantly, a mentally healthy person has a positive self concept and has a correct estimate of this capacities.

Components of yoga way of life

In order to acquire mental health and lead a balanced life one may imbibe this art of yoga at as early age as possible. Yoga life style serves both the functions prophylactic as well as remedial. The components of yoga may be described to illustrate that this discipline was specially designed to promote mental health.

- Components of yoga are classified into external and internal.
- First two components deal with behavioural discipline at the social and individual level. This discipline provides moral base for internalization abstraction, concentration and meditation. Yama and Niyama are the maxims of mental health.
- Essential features of Asana are steadiness and ease. Yoga evolved a system of physical education which promotes steadiness and ease at the physical as well as mental level.
- Carefully selected set of yogasanas promote circulation of blood in all organs of the body.
- Yogasanas may promote concentration when performed with breathing rhythm.
- Yogasanas are remedial physical as well as psychical.
- In fact yoga therapy has popularized yoga and it has been researched more than any other aspects of yoga. Yogasanas and yoga therapy are elementary preparatory steps. The essence if Antaranga Yoga.
- Pranayama - regulation of Prana (bioenergy); through regulation of breath is the bridge between body and mind. It is helpful in overcoming tension.
- Pratyahara (internalization) is the intermediary between external and internal yoga through conscious relaxation. It relieves the muscles of the chemical messengers of inhibited emotions.
- Dharana (concentration). It may be emphasized that concentration has to be learnt. Trataka, observation of breath, name recitation, etc., are primary lessons of concentration.
- Dhyana (meditation) is a deep mental activity of continuous flow of attention on the objects of concentration. It leads to Prajna discriminative insight and is a remedy for Klesas.
- It is also prescribed for reinforcing moral code.
- One painted meditative practice removes obstacles in mental and spiritual evolution.
- But research data proves that the time spent in internal yoga pays rich dividends by improving memory and other functions and by releasing billions of macrophages and granulocytes.

Summary

- Mental health finds expression in physical and mental development.
- Present educational system does not pay specific attention.
- Yoga discipline meets all requirements of mental health education.
- All ailments have their root in mind.
- Eight limbs of yoga cater to the balanced development of personality.
- Yama and niyama are social and individual disciplines.
- Asanas ensure oxygen rich blood supply to all organs.
- Pranayama regulates mind through regulated breathing.
- Pratyahara is planned conscious relaxation.
- Dharana improves concentration through elementary practices.
- Dhyana is the continuous flow of attention and may be used to cure mental afflictions.

Reference

1. www.healthandyoga.com
2. Abstracts. 2nd international conference on psychotherapy, yoga and spirituality, November 27-29. 2005, Haridvvar.
3. Jaggi O.P.(1984) Mental Tension and its care, India Orient Paperbacks

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EFFECT OF AEROBIC TRAINING ON BODY MASS INDEX ON SEDENTARY OBESE MEN

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Abstract

The aim of this study was to investigate the effect of aerobic training on body mass index on sedentary obese men. 30 obese men were selected randomly and divided into two groups 15 subjects in each group. Group I as experimental group and Group II as control group. The experimental group had been in aerobic training programme five days in a week for a period of 8 weeks. The control group did not involve in any fitness programme or training programme. Once in 2 weeks the load was increased. The body mass index was selected as variable. The collected data were analyzed by using 't' ratio. From the findings it is quiet interesting to know that the sedentary obese men have positive influence upon their body mass index due to the training programme given. The aerobic training helps the subjects to decrease the weight and it helps to increase the heart rate and breathing for a sustained time. The result shows that Aerobic fitness level can improve with or little as 10 minute durations as long as exercise performed often with a total of 5 days a week. It was concluded that the participation in eight weeks of Aerobic training resulted in improvement in Body Mass Index.

Introduction

There has been outstanding advancement in the medical field which has taken place during the last few years, in arresting and finding cures for many incurable maladies, but obesity has so far successfully eluded most of them, as has cancer. The present generation is in constant quest for a remedy for this malady. New solutions for slimming are coming up every other day, in the form of pills and potions which are gaining entrance in many physicians consulting rooms. Ultra modern drugs with tall claims of weight reducing effects are being manufactured by the dozens.

Crash diets are experimented with very little effect. Stay trim devices are being manufactured and advertised in order to lure those who wish to lose weight, to go in for a trial. Health clubs that advertise fitness and weight reducing programmes are attracting young and old from all corners. Some of these programmes are no doubt effective, but they cost too much and consume a lot of energy. Sometimes except for an over all well being, they never help reduce a single pound. Reducing weight can be a natural activity and an enjoyable pastime for those who do not suffer from any other serious disease. They can reduce by adopting a method that suits their physical, mental and psychological needs. However, the proper weight reducing remedies are those which do not leave the individual with any bad or undesirable after effects and at the same time have a lasting effect.

Obese people, who lead a fairly comfortable and carefree life, may detect the very idea of having to really toil for achieving a thing like a trim figure or good health. Their mistaken conception is, that if external help is available, they can achieve better results in reducing their weight without themselves doing anything much. Through such help though some modes of treatment is available, they require the actual participation and absolute co-operation of the individual during the course of treatment. This is because unless the individual realizes that it is his responsibility to lose weight, the weight reducing program will be a total failure.

Automation has modified the need for physical activities. Elevators, automobiles, two and four wheelers and the like have replaced walking, cycling and other natural exercises in the lives. Competition in every field has created a tendency towards more brain work than physical work for a large group of people. They consequently take up tension ridden jobs. Physical neglect caused by this is resulting in obesity in most cases. Aerobic exercise is recommended to lose weight. Aerobic exercise does not

mean that you should work your muscles strenuously to some tune played in a recorder as it is found in many health clubs. Aerobic is a system of exercising by means of rhythmic activities. These include walking, swimming, cycling, rowing, skating and many such activities. Even rope, skipping is an aerobic exercise. The aim of such exercise is to improve fitness through increased oxygen consumption. Dancing to a time and exercising the muscles is not recommended for persons suffering from complicated health problems. One should select the type of aerobic exercise that suits his need instead of doing exercises recklessly. Walking is the best Aerobic exercise which even a heart patient can do. Most obese people do have at least some minor heart and lung ailments.

When people exercise for fun and enjoy. What they do if they undertake logic exercise which is more of relaxation combined with action exercise it is more ever walking and yogic exercise do not become an addiction. Such exercise even helps maintain good health, especially when one leads a sedentary life. If a person wishes to lose weight, he should not do hard exercises. So mild exercises are done for longer duration, Most of these exercises need a specific time to be fixed. The best suited time for walking is early morning before sunrise because that is the time when the air is free from any sort of pollution. Walking moderately for three miles per hour is good. One should practice cycling, horseriding, playing games, swimming, skating, if possible.

Methodology

The aim of this study was to investigate the effect of aerobic training on body mass index on sedentary obese men. The investigators randomly selected 30 obese men and divided into two groups 15 subjects were assigned to an experimental group and 15 subjects to control group. Prior to the administration of test, the investigators held a series of meeting with the subjects and were made clear about the objectives and purposes of the test. The testing procedure was explained to them in detail. They were requested to co-operate and participate actively in the training programme. Body Mass Index was selected as variable. The experimental group had been in physical training programme five days in a week for a period of 8 weeks. The control group did not involve in any fitness program or training programme.

The subjects were done warming up for a period of 10 minutes before starting the training session. It includes jogging, stretching, rotation at various joints, walking on heels and toes, forward bend, backward bend, sideward stretch, rotation of shoulder joints, hip joints, stretching of calf and quadriceps muscle groups.

Training Schedule

Week	Training in minutes
First and second week	5 minutes walking and 5 minutes Jogging
3 – 4 weeks	10 minutes walking and 5 minutes Jogging
5 – 6 weeks	15 minutes walking and 10 minutes Jogging
7 – 8 weeks	30 minutes walking and 20 minutes Jogging
Warm Down (10 minutes)	

After the training the subjects were asked to go for limbering down exercises. It includes slow jogging, light stretching and slow rotation exercises.

The body mass index of a subject was calculated by measuring the height in meters and used a stadiometer and body weight in kilograms used a digital weighing machine. The following equation was used to calculate the body mass index (BMI).

$BMI \text{ Kg/M (square)} = \text{weight in Kg/ height in m sq.}$ A persons body mass index calculation can be compared with the following ranges: 20 is underweight; 20 to 25 is desirable weight, 25 to 30 is overweight; 30 is obese and 35 is very obese. To compare the mean difference between initial and final scores of experimental and control group 't' test was employed with Body Mass Index.

Results**Table I****Mean, standard deviation, standard error and 't' ratio of experimental and control groups in body weight and body mass index.**

Variables	Groups	No	Mean	Mean Difference	Standard Deviation	Standard Error	't'
Body Weight	Group I	15	Initial	88.6533	1.1533	3.59541	9.654
		15	Final	87.5000		3.56971	
	Group II	15	Initial	90.1867	0.733	2.57734	1.703
		15	Final	90.2600		2.50237	
Body Mass Index	Group I	15	Initial	30.7911	0.4665	0.78081	6.826
		15	Final	30.3247		0.71439	
	Group II	15	Initial	31.0773	0.0260	0.79414	1.696
		15	Final	31.1033		0.76564	

* Significant at 0.01 level.

In Table I the calculated 't' value for experimental group in body weight was 9.654 which was higher than the required table value at 0.01 level. But in the case of control group the calculated 't' ratio was 1.703 which was lower than the required table value. This shows that the training program had a significant reduction on the body weight of experimental group. The calculated value for experimental group in body mass index was 6.826 which was higher than the required table value at 0.01 levels. But in the case of control group the calculated 't' ratio was 1.696 which was lower than the required table value. This shows that the training programme had a significant reduction on the body mass index of the experimental group.

Discussion of findings

All the subjects of the experimental group involved in this study were undergone regular aerobic training programme for a period of eight weeks. From the table it was evident that in the case of body mass index there were significant changes noticed after eight weeks of regular aerobic training programme. As regard to control group no changes were seen in the body mass index.

From the findings it is quiet interesting to know that the sedentary obese men have positive influence upon their Body Mass Index due to the training programme given. The Aerobic training helps the subjects to decrease the weight and it helps to increase the heart rate and breathing for a sustained time. The results show that Aerobic fitness level can improve with or little as 10 minute duration as long as exercise performed often with the total of 5 days a week.

Conclusion

Participation in eight weeks of Aerobic training resulted in improved in Body Mass Index.

References

1. Foss M. L and Strble D.A Exercise Testing and Training for the obese (New york : Spectrum Publication, 1984) : 112.
2. Benedicte Deforche et.al., "Physical fitness and Physical Activity in obese and Nonobese Flemish Youth" Obesity Research II (2003).
3. Dorien P.C, Van et.al., "Effect of Exercise Training at Different intensities on Fat Metabolism of obese Men" Journal of Applied Physiology, 92 (2002).
4. Fernald LC, Socio- Economic Status and Body Mass Index in low income Mexican adults " SOC SCi Med 2007 Mar 16.
5. John, Jakieic and Amy Otto " Physical activity considerations for the treatment and Prevention of obesity" American Journal of Clinical Nutrition, 82 (July 2002).

6. Katznel L.I. et. al., " Effects of weight loss Vs Aerobic exercise Training on Risk factors for Coronary Disease in Healthy obese , middle Aged and older men : A Randomized Controlled Trial " Journal of American Medical Association, 274 (24) (1995 December).
7. Lee K.J., "Effects of a Exercise Program on Body Composition, Physical Fitness and Lipid Metabolism for Middle Aged obese women" Taehan Kanho Hakhoe China, 35 (7) (2005 December)
8. Timothy R, Wessel et. al., "Relationship of physical Fitness VS Body Mass Index With Coronary Artery Disease and Cardiovascular Events in women " Journal of American Medial Association, 292. (2004).
9. Tomohiro Okura et. al., Effects of Exercise Intensity on Physical Fitness and Risk Factors for coronary Heart Disease" Obesity Research II (2003).

HEART RATE AND ARTERIAL BLOOD PRESSURE RESPONSE TO ACTIVE AND PASSIVE STRESS*M. ELAMARAN* Dr. P. SAMRAJ*****Lecturer **Professor**Department of Physical Education & Sports Sciences,
Annamalai University, Annamalaiagar – 608 002, India***Abstract**

The present exploration is projected to elucidate the changeability on heart rate and arterial blood pressure in response to active and passive stress. For this purpose, fifteen men handball players in the age group of 20 to 25 years were selected as subjects from Annamalai University, during their competitive season. The selected dependent variables such as (heart rate, systolic, diastolic and mean arterial pressure) were appraised using oscillometric method and instruments of scientific standards at sea level and during the sixth hour of acute exposure to moderate altitude. To statistically analyse and compare the changes on heart rate and arterial blood pressure response to active and passive stress, 'ANOVA' and Bonferroni corrections were used. The analysis of data revealed that there is a significant amplification in response to active stress, whereas, there was a blunted response to passive stress. These results suggest that active and passive stress induces changes in cardiovascular variables, whilst passive stress may have some undesirable effect on performance and requires acclimatization.

Key words: Stress, Altitude, Exercise, Heart Rate & Blood Pressure.

Introduction

Human beings acclimatize in a variety of ways depending upon the environmental stresses to which it is exposed. Passive stresses are those, which are persistent and relatively invariant namely altitude and climate. Active stresses are occasional and variable such as exercise, emotions, diet, vocations, etc. Reactions to excessive stresses are modified by the individual attributes of each person.

When individuals habitually live at sea-level, their energy and muscular systems function optimally to accommodate the existing atmospheric conditions. Climate moderates the functioning. In hot-humid environments, the adaptations are different to those of dry-cool climates. The flexibility of responses of the human body to various combinations of altitude and climates has made it possible for humans to populate many parts of the earth.

Among the factors that influence the physiological outcomes of altitude exposure, the level of ascent is the foremost one. Exposure to high altitude causes the body to acclimatise to the lower level of oxygen available in the atmosphere. Acclimatization to high altitude includes a number of physiological and hematologic adaptations that theoretically should improve O_2 transport to skeletal muscles during exercise (Levine & Gundersen, 1995).

Physical conditioning can be measured as changes in VO_{2max} , exercise test time, submaximal heart rate response, or ability to perform a standard amount of exercise. Exercise, a common physiological stress, can elicit cardiovascular abnormalities not present at rest. Dynamic exercise is preferred for testing because it puts a volume stress rather than a pressure load on the heart and because it can be graduated. When dynamic exercise is begun or increased, oxygen uptake by the lungs quickly increases. After the second minute, oxygen uptake usually remains relatively stable at each intensity of exercise. During steady state of exercise, heart rate, cardiac output, blood pressure, and pulmonary ventilation are maintained at reasonably constant levels (Rowell, 1986).

The body's response to dynamic exercise consists of a complex series of cardiovascular adjustments to provide active muscles with the blood supply appropriate for their metabolic needs, to dissipate the heat generated by active muscles, and to maintain the blood supply to the brain and the

heart. As cardiac output increases with dynamic exercise, peripheral resistance increases in organ systems and tissues that do not function during exercise and decreases in active muscles (Higginbotham, 1988). Arterial blood pressure increases only mildly; thus, flow can increase as much as fivefold. The increase in flow is much more than the pressure that results in a decrease in systemic vascular resistance. An increase in heart rate due to a decrease in vagal outflow is an immediate response of the cardiovascular system to exercise; this increase is followed by an increase in sympathetic outflow to the heart and systemic blood vessels. During dynamic exercise, heart rate increases linearly with workload and O_2 . During low levels of exercise and at a constant work rate, heart rate will reach steady state within several minutes. As workload increases, the time necessary for the heart rate to stabilize will progressively lengthen.

Heart rate response is influenced by several factors, including age. There is a decline in mean maximum heart rate with age (Londeree & Moeschberger, 1984), which appears to be related to neural influences. Dynamic exercise increases heart rate more than isometric or resistive exercise. An accentuated heart rate response is observed after bed rest. Other factors that influence heart rate include body position, certain physical conditions, state of health, blood volume, and environment. Heart rate is acutely elevated immediately following a work bout (Fleck, 1988). Interestingly, in terms of chronic adaptations, there appears to be a reduction in heart rate from training, which is considered beneficial (Stone et al., 1991).

Blood pressure is dependent on cardiac output and peripheral resistance. Systolic blood pressure at maximum exertion or at immediate cessation of exertion is considered a clinically useful first approximation of the heart's inotropic capacity. The systolic arterial pressure is the peak pressure in the arteries, which occurs near the beginning of the cardiac cycle; the diastolic arterial pressure is the lowest pressure. The average pressure throughout the cardiac cycle is reported as mean arterial pressure (Poullis, 1999), which has physiologic and clinical importance since it represents the perfusion pressure and it is a factor utilised in the calculation of haemodynamic variables. These measures of arterial pressure are not static, but undergo natural variations from one heartbeat to another and throughout the day; they also change in response to stress, nutritional factors, drugs, or disease.

Systolic blood pressure rises with increasing dynamic work as a result of increasing cardiac output, whereas diastolic pressure usually remains about the same or may be heard to zero in some normal subjects. The slight decrease in diastolic blood pressure is due primarily to the vasodilation of the arteries from the exercise bout.

During exercise bout, systolic and diastolic blood pressures may show dramatic increases (Stone et al., 1991). The extent of the increase in blood pressure is dependent on the time and intensity of the exercise bout, and the amount of muscle mass involved (Fleck, 1988). More dynamic forms of training are associated with reductions in blood pressure.

The purpose of the present study was to elucidate the changes on heart rate and arterial blood pressure in response to active and passive stress among university handball players.

Methods and Procedures

Fifteen men handball players, those represented Annamalai University in the All India Inter University Handball Tournament volunteered as subjects as part of the expedition to an altitude of 2,200 metres above mean sea level. The selected subjects were in the age group of 20 to 25 years, and they were recruited for the purpose of the study with their informed consent.

The independent variables considered in this study were (i) active stress i.e., physical exercise (Cooper's 12 minutes run/walk) (ii) passive stress i.e., Sea Level (Chidambaram), 5.75 metres above mean sea level and Moderate Altitude (Ootacamund), 2,200 metres above mean sea level. The selected dependent variables were assessed using calibrated and standardized instruments and procedures before and after exercise at sea level and moderate altitude. The dependent variables and method used are presented in table 1.

Table-1: Dependent Variables

SL. No.	Variables	Method / Formula	Units of Measurement
1.	Heart rate	Oscillometric method	Number
2.	Systolic blood pressure	Oscillometric method	mmHg
3.	Diastolic blood pressure	Oscillometric method	mmHg
4.	Mean Arterial Pressure	MAP = $P_{DIAS} + 1/3 (P_{SYS} - P_{DIAS})$	mmHg

The initial test was carried out in Annamalai University, Chidambaram (5.75 m above MSL), the day before departure to Ootacamund. The subjects were transported by automobile from Chidambaram to Ootacamund, a trip of about 10 hours. The second test was conducted at the sixth hour of exposure in Ootacamund (2,200m above MSL). The testing of performance was carried out between 07.00 and 08.00 hours at both the venues, to avoid diurnal variations.

The digital wrist blood pressure monitor was used to detect the basal heart rate and arterial blood pressure, in the upright sitting position. Then, Cooper's 12 minutes run/walk was used to assess the influence of it, on the changes in heart rate and arterial blood pressure of the participants. The standard procedures were followed to administer the test as mentioned by Clarke (1976). The heart rate and arterial blood pressure were measured soon after the physical exercise.

Experimental Design and Statistical Techniques

Random group design involving fifteen subjects was used for the purpose of elucidating the influence of active and passive stress on heart rate and arterial blood pressure. To determine the significant variation, if any, the data collected before and after exercise at sea level and moderate altitude on selected dependent variables were subjected to statistical analysis using 'ANOVA', and whenever, the obtained 'F' ratio is significant, Bonferroni corrections was carried out as a post hoc test for multiple comparisons, since it reduces the type-I error. The level of significance was accepted at $P < 0.05$.

Results and Discussion

The age and weight of the selected subjects averaged 21.80 ± 2.01 yr and 64.6 ± 5.18 kg respectively. The analysis of variance of data collected on heart rate and blood pressure response at sea level and moderate altitude are presented in table 2.

TABLE - 2: Computation of Data on Heart Rate and Blood Pressure Response at Sea Level and Moderate Altitude

	Basal at Sea Level	After Exercise at Sea Level	Basal at Moderate Altitude	After Exercise at Moderate Altitude	Sources of Variance	Sum of Squares	Degrees of Freedom	Mean Square	'F' ratio
Heart Rate	55.47 ± 3.94	129.80 ± 20.24	72.93 ± 17.24	116.47 ± 24.18	Between	55719	3	18573	56.83*
					Within	18301	56	327	
Systolic Pressure	101.00 ± 5.35	117.93 ± 12.97	103.27 ± 8.00	113.33 ± 19.50	Between	2931	3	977	6.09*
					Within	8977	56	160	
Diastolic Pressure	67.87 ± 5.17	78.93 ± 5.20	69.87 ± 9.16	74.07 ± 6.73	Between	1082	3	361	7.88*
					Within	2563	56	45.77	
Mean Arterial Pressure	78.91 ± 4.71	91.93 ± 6.30	81.00 ± 8.04	87.15 ± 10.15	Between	1583	3	528	9.19*
					Within	3214	56	57.40	

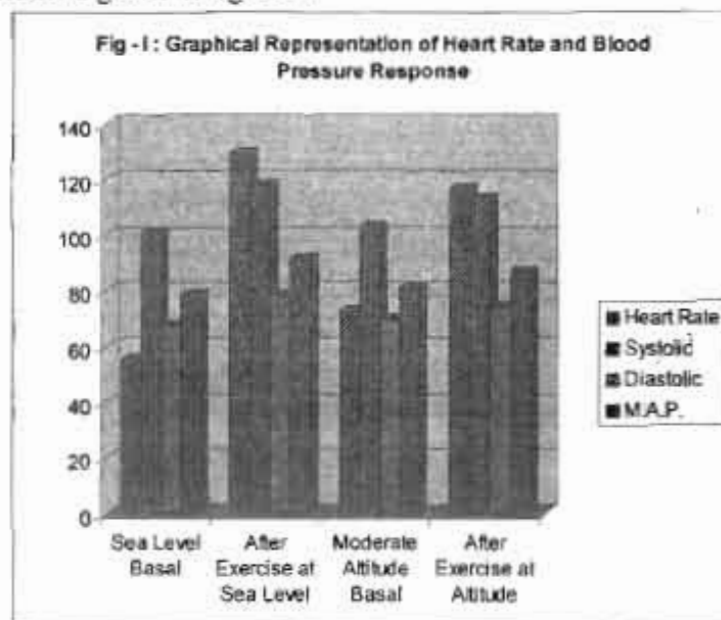
* Significant at 0.05 level

Required table value for significance at 0.05 level of confidence for df of 3 and 56 is 2.77

The findings of the study shows that there is a significant difference on heart rate, systolic pressure, diastolic pressure and mean arterial blood pressure among the basal and after exercise values at sea level and moderate altitude, since the obtained 'F' ratio of 56.83, 6.09, 7.88 and 9.19 is greater than the required table value of 2.77 for significance.

From the above findings, it is also observed that basal values of heart rate, systolic, diastolic and mean arterial blood pressure were lower than that those observed at altitude, whereas, after exercise response is lower at altitude than that of the sea level observations.

The graphical representation of the mean scores on heart rate and blood pressure at sea level and moderate altitude is given in figure-1.



The Bonferroni correction has been applied to find out the significant paired mean differences for those variables, which are found to be significant at 0.05 level of confidence, and it is presented in table - 3.

TABLE - 3: Multiple Comparisons for the Differences between Paired Means of Heart Rate and Blood Pressure

Dependant Variable	(I) Test	(J) Test	Mean Difference	Dependant Variable	(I) Test	(J) Test	Mean Difference
Heart Rate	1	2	74.33 *	Systolic Blood Pressure	1	2	16.93 *
		3	17.47			3	2.27
		4	61.00 *			4	12.33
	2	3	56.87 *		2	3	14.67 *
		4	13.33			4	4.60
	3	4	43.53 *		3	4	10.07
Diastolic Blood Pressure	1	2	11.07 *	Mean Arterial Blood Pressure	1	2	13.02 *
		3	2.00			3	2.09
		4	6.20			4	8.24 *
	2	3	9.07 *		2	3	10.93 *
		4	4.87			4	4.78
	3	4	4.20		3	4	6.15

* Significant at 0.05 level

1 – Basal values at Sea Level

2 – After Exercise at Sea Level

3 – Basal values at Moderate Altitude

4 – After Exercise at Moderate Altitude

Table-3 clearly specifies that the paired mean differences between basal values and also between after exercise on heart rate at sea level and moderate altitude didn't differ significantly. As such, systolic and diastolic blood pressures didn't vary significantly between basal and also between after exercise, while systolic and diastolic blood pressures observed after exercise at moderate altitude had not diverged itself from that of the basal values at sea level and altitude. In respect of mean arterial pressure, beside values between basal and between response to exercises, assessment between resting and after exercise at altitude as well didn't differ significantly.

The result of the study reveals that there is a significant changes on heart rate and blood pressure in response to active stress at sea level, whereas, at altitude the changes in response to active stress is significant only with heart rate. It also reveals that no significant changes were observed on heart rate and blood pressure between sea level and moderate altitude either during basal or after exercise.

Conclusions

The present investigation displays that active stress induces significant changes on heart rate and arterial blood pressure, whereas, in spite of no significant consequences, profuse acclimatization is required to cope with the passive stress to perform exercise prolifically.

References

1. Clarke, H. Harrison. (1976). *Application of Measurement to Health and Physical Education*, (5th ed.). New Jersey: Prentice Hall Inc.
2. Fleck, S.J. (1988). Cardiovascular Adaptations to Resistance Training. *Med Sci Sports Exerc.* 20(5 Suppl).
3. Higginbotham, M.B. (1988). Cardiac performance during submaximal and maximal exercise in healthy persons. *Heart Failure* 4: pp.68-76.
4. Levine, B. D., and Gundersen, J. Stray (1995). Exercise at high altitudes. *Current Therapy in Sports Medicine* (3rd ed.), St. Louis: Mosby-Year Book, pp.588-593.
5. Londeree, B.R. and Moeschberger, M.L. (1984). Influence of age and other factors on maximal heart rate. *J Cardiac Rehabil* 4: pp.44-49.
6. Poullis, M. (1999). New formula to calculate mean aortic pressure. *Lancet* 353: 2075.
7. Rowell L.B. (1986). *Human Circulation. Regulation During Physical Stress*. New York: Oxford University Press.
8. Stone, M.H. et al., (1991). Health- and performance-related potential of resistance training. *Sports Medicine*, 11, 210-231.

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A COMPARATIVE ANALYSIS ON PERSONALITY TRAITS OF INTER-VARSITY MALE AND FEMALE SWIMMERS

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Abstract

The aim of the study was to find out the gender difference in Personality traits of inter-varsity male and female swimmers with regard to neuroticism and extroversion. For this present study, 50 male and 50 female swimmers were selected as a subject.

The Eysenck Personality Inventory (E.P.I.) was used to measure extroversion and neuroticism of swimmers, t-ratios has been used to compare the significantly gender difference between male and female swimmers who had participated in All India Inter-Varsity Swimming Tournament held at Punjab University, Chandigarh from 04 October to 08 October 2006. While analyzing the differences of personality characteristics of male and female swimmers, gender differences on neuroticism was found between male and female inter-varsity swimmers ($t = 4.69, P < .01$), where the male swimmers was found to have less score on neuroticism. So, far extroversion was concerned, significant gender difference was found to the male and female Inter-varsity swimmers ($t=2.77, P<.01$), male swimmers has lower extroversion. Hence, female swimmer was more extrovert.

KEYWORDS : Neuroticism, Extroversion, Gender.

Introduction

Swimming has become a popular recreational activity as well as highly competitive sports. Sports performance has been found to be related to some personality variables. Extroversion and neuroticism are among the variables which influence by sports performance with addition to many other personality variables. Neuroticism is a minor mental disorder, characterised by inner struggles and discordant social relationship. According to Eysenck "Neuroticism refer to emotionality, initiated by the inherited differences in liability and excitability of autonomic nervous system. The extroversion is a personality traits. The extrovert person's orientation is towards the external world. He deals people intelligently in social situation. He is conventional, outgoing, social, friendly and free from worries. In Eysenck's term, extroversion stands for central excitatory / inhibitory level and sociability. Majority of the investigator have indicated that male swimmers differ from female swimmers on a number of personality traits and several investigator have tried to find personality differences between male and female swimmers, but not many studies have been made about personality characteristics of inter-varsity male and female with regards to neuroticism and extroversion, So the attempt has been made to conduct the study regarding neuroticism and extroversion of inter-varsity male and female swimmers.

Statement of the problem

A Comparative Analysis on personality traits of inter-varsity male and female swimmers.

Hypotheses of the study

The hypotheses of the present study are

- (i) There would be no gender differences in the neuroticism of the inter-varsity swimmers.
- (ii) There would be no gender differences in extroversion of inter-varsity swimmers.

Objective of the study

To find out the gender differences in personality traits of the inter-varsity male and female swimmers with respect to neuroticism and extraversion.

Methodology

In this section, Selection of subject, administration of the test, and statistical analysis procedure have been described.

Selection of Subjects

Total 50 male and 50 female swimmers from different University. Who had participated in All India inter-varsity swimming tournament held at Punjab University, Chandigarh 2006 were randomly selected as a subjects for the present study.

Administration of the test

EYSENCK'S Personality Inventory (E.P.I.) were distributed to the males and females swimmers, before filling the EPI, instruction were given by the investigator to the players.

Statistical analysis

t-ratio was computed to compare the significant differences between inter-varsity male and female swimmers. The data were analyzed in basic language of the computer Centre, Aurangabad, Maharashtra. All the analysis were used based on standard statistical packages.

Results and discussion

The results of the present study in statistical form are presented in Table I and II.

TABLE- I Mean scores, Standard Deviations and t-ratio of Neuroticism for Male and Female inter-varsity Swimmers.

Sr. No.	Swimmers	No.	Mean	S.D.	t-ratio
1.	Male	50	10.00	4.79	4.69*
2.	Female	50	13.57	2.56	

*Significant at .01 Level.

As Table-I shows a significant gender difference was found out in the neuroticism of the inter-varsity swimmers. ($t=4.69, P<.01$), the female having more neurotic as compared to males, which means that the male swimmers are having less neurotic tendency than female swimmers. Hence the results have failed to reject the first null hypothesis.

TABLE-II Mean scores, Standard Deviations and t-ratio of Extraversion for Male and Female inter-varsity Swimmers.

Sr. No.	Swimmers	No.	Mean	S.D.	t-ratio
1.	Male	50	18.70	2.33	2.77*
2.	Female	50	19.95	2.34	

* Significant at .01 Level.

As Table-II shows a significant gender difference was found out in the extraversion of the inter-varsity swimmers. ($t=2.77, P<.01$), the female having more extrovert as compared to males, which means that the male swimmers less extrovert than female swimmers. Hence the results have failed to reject the second null hypothesis of the study. These differences is probably due to emotional, biological and social differences between the male and female swimmers.

Conclusions

1. There are significant gender differences in neuroticism of inter-varsity swimmers, the males having less neurotic tendency than the females.
2. There are significant gender differences in extraversion of inter-varsity swimmers. The males are found to be less extrovert than the females.

Acknowledgements

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References

1. Eysenck, H. J. (1967) *Dimensions of Personality*, New York : Praeger.
2. Eysenck, H. J. (1967) *The Biological Basis of Personality*, Springfield, IL; Charles C. Thomas.
3. Eysenck, H. J. and Eysenck, S. B. G. (1969) *Personality Structure and Measurement*, London; Hodder Stoughton.
4. Eysenck, H. J. and Eysenck, S. B. G. (1975) : *Manual of the Eysenck Personality Questionnaire*, London; Hodder & Stoughton.
5. Eysenck, H. J. and Nias, D. K. B. & Cox, D.N. (1982) : *Advances in behaviour Research Therapy*, 4, No, 1, 1-56.
6. Mushier, C. L. (1972) : Personality and selected women Athletes. *International Journal of sports psychology*.
7. Rushall, B. S. (1967) : Personality profiles and a theory of behaviour modification for swimmers. *Swimming techniques*, 4 : 66-21
8. Singh, A Barar, R. S. (1987) A study of Extraversion, Neuroticism, and self concept of University Handball players. *Sports Science, Health, Fitness and Performance, Patiala IASSPE*, PP. 251-254,

"THE RELATIONSHIP BETWEEN ANXIETY AND PERFORMANCE" A COGNITIVE - BEHAVIOURAL PERSPECTIVE

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Introduction

The ability to cope with pressure and anxiety is an integral part of sports, particularly among elite athletes (Hardy, Jones, & Gould, 1996; Orlick and Partington, 1988). Researchers have reported that over 50 of consultations among athletes at an Olympic festival were related to stress or anxiety related problems (Onurphy, 1988). A great deal of research has been conducted examining the relationship between anxiety and performance within the field of athletics. This paper will review the relevant research from a cognitive behavioral perspective. Included is a discussion of the research findings of the relationship between the two constructs. In addition, the research that has examined the efficacy of cognitive behavioral treatment is also discussed. Although a great of information has been generated, the results are limited due problems in the terminology used by researchers. Therefore it is important to first examine the conceptualization of anxiety.

Theoretical Constructs of Anxiety

Previous research conducted relating to anxiety and performance in athletics has been difficult to synthesize for a variety of reasons including methodological flaws as a lack of clear operational definitions and a clear theoretical construct. This section will establish operational definitions for the terms that will be used throughout the rest of this paper. In addition, it will provide an overview of the theories that have been used by researchers who have attempted to clarify the relationship between anxiety and performance in athletics.

The main problems that research on the relationship between anxiety and performance has encountered is that researchers have not adequately operationally defined the construct of anxiety. Instead, terms such as stress, anxiety, arousal and activation have been used interchangeably. For the purposes of this paper the following operational definition as will be used for the terms anxiety and stress. Stress is a state that result from the demands that are placed on the individual which require person to engage in some coping behavior (Jones, 1990). Arousal can be considered to be a signal to the individual that he or she has entered a stressful state and is characterized by physiological signs (Hardy, 1996). Anxiety results when the individual doubts his or her ability to cope with the situation that causes him or her stress (Hardy, 1996). Another important point that needs to be clarified is the differences between state and trait anxiety (Spielberger, 1996). While state anxiety can be considered to be more situational in nature and is often associated with arousal of the autonomic nervous system, trait anxiety can be thought of as a world view that an individual uses when coping with situations in his or her environment (Spielberger, 1996). Trait anxiety influence performance in that individuals with high trait anxiety will attend more to information indicated that individuals with low trait anxiety who are state anxious will attend away from threat related information (Macleod, 1990). Within the context of sports, those individuals who are low trait anxious and experience high state anxiety would find it facilitative to a peak performance; but, those individuals with who are high trait anxious and experience state anxiety will find it debilitating to athletic performance (Hardy et al., 1996).

One of the earliest models that attempted to explain the relationship between arousal and performance was the inverted U hypothesis (Broadhurst, 1957, Hebb, 1955). It stated that a arousal increased performance would increased as well; but, if arousal become too great performance would deteriorate. In other words, as stress began to build an individual still felt confident in their ability to control it and performance would improve. However, once a stressor became so great that the individual started to doubt the ability to cope with performance began to decline. Although this model

some explanation as to why performances deteriorated when individuals felt, it did account for the differences in the performance of athletes who are exposed to the same stressor.

The differences observed between successful and unsuccessful athletes may be the result of their cognitive interpretation of their anxiety states. According to reversal theory (Apter, 1982) arousal is interpreted differently depending on their present state. In telic states athletes are focused on a goal and thus interpret their arousal as anxiety. However, in paratelic states performers are focused on their behavior and therefore interpret their arousal as excitement. Individuals can flip from one state to another quickly and therefore change their interpretation of the arousal that they experience which in turn affects their performance (Hardy et al., 1996). This theory attempts to incorporate both physiological and cognitive factors in its explanation of the relationship between performance and anxiety but fails to explain their relationship with performance adequately.

Multidimensional anxiety theory expended on reversal theory's inclusion of cognitive and physiological factors (Burton, 1988). In this model, cognitive anxiety has been found to have a negative linear relationship with performance (Burton, 1988). Self confidence has been found to have an inverted-u-shaped relationship with performance (Burton, 1988). Although this model incorporates many elements of anxiety, it still treats them as separate entities. The next model that arose looked at the interaction between two of those three factors.

The catastrophe model of anxiety and performance looks at the interactive effects of physiological arousal and cognitive anxiety upon performance (Fazey & Hardy, 1988, Hardy, 1990). Physiological arousal can influence performance as a result of the individual's interpretation of their physiological symptoms. According to the model as cognitive anxiety increases it will be beneficial to performance at low levels of physiological arousal but a detrimental effect at high levels of physiological arousal (Hardy et al., 1996). Upon performance however, as cognitive anxiety increases physiological arousal can have either a positive or negative effect on performance depending on how much arousal there is (Hardy et al., 1996). Once physiological arousal levels are too high there is a step drop in performance which can only be reversed by a reduction in physiological arousal (Hardy et al., 1996). Although the model fails to include a self confidence variable, its interactive approach seems to be the best explanation for observed behaviour. The competitive state anxiety inventory-2 (CSAI-2) developed Mortens, Burton, Vealey, Dump, and Smith (1990) seems to be the most widely used. It consists of three subscales cognitive anxiety (fear of anxiety and negative expectations), somatic anxiety (perceptions of physiological arousal) and self-confidence. Although self confidence not included in the catastrophe model, it has been found to be a separate anxiety from cognitive anxiety and will be discussed later in this paper. The sport anxiety scales was developed by Smith, Smoll, and Ptacek (1990). It measures trait cognitive anxiety, somatic anxiety and concentration disruption. Although it is not used as often, it is still a reliable instrument that also fits within the catastrophe model of anxiety and performance. Use of either of these scales by researchers would be a step in the right direction towards creating appropriate operational definitions. Let us now turn our attention to the research conducted on the relationship between anxiety and performance.

Effects of Anxiety in Athletes

A great deal of research has been devoted to the effect of anxiety on sports performance, researchers have found that competitive state anxiety is higher for amateur athletes in individual sports compared with athletes in team sports, (Simon, Martens, 1977). In addition participants in individual non-contract sports have been found to report lower levels of state anxiety than participants in individual contract sports (Lowe and McGrath, 1971). This section will review this research from the perspective of the theoretical models discussed above. Cognitive anxiety has been found to exert a powerful influence on performance. This statement holds true regardless of the individuals skill level. Participants in a collegiate softball tournament were put into one of two conditions high situation critically or low. While somatic anxiety did not differ in the two situations, those athletes in the high critically condition had significantly higher level of cognitive anxiety (Krone Joyce and Rafeld, 1994). Clearly the cognitive interpretations on individual gives to a situation exerts an effect. Researchers have found that athletes that are successful interpret arousal to be facilitative. Research conducted with

an elite group of swimmer found that anxiety intensity levels were higher in subjects who interpreted their anxiety as debilitate than those who reported it as being facilitative (Jones, Hanton and Swain, 1994). This has been found to be true of gymnasts (Jones, Swain and Hardy, 1993) as well as basketball players (Swain and Jan, 1996). Gould, Petrachlikoff, and Weinberg (1984) have reported that the strongest predictor of cognitive anxiety was years of experience such that the more experience an individual had the lower the level of cognitive anxiety. This was supported by research conducted with a group of tennis players.

Advanced subjects reported more facilitate interpretations of their anxiety than novices (Perry and Williams 1998) Perhaps this is due to previous experience with arousal and how to cope. This conclusion is supported by the research of Jones, Swain, and Cale (1990) found that cognitive anxiety was best predicted by an evaluation previous performances, individual perception of preparedness and goal setting. The amount of self-confidence that an individual possesses has been found to differ among elite and novice athlete. Research with a group of tennis players indicated that the advanced had significantly higher levels of self-confidence (Perray and Williams, 1998). This has been found to be true to gymnasts (Bejak and Haguet, 1996) as well as swimmers (Jones, Hanton and Swain, 1994). The predictors of self confidence identified by research are perception of preparedness and external conditions. Other researchers have found that the strongest predictor of self-confidence has been found to be the amount of ability that an individual believed he or she had (Gould, Pefrechlikoff, and Weinberg, 1984). This makes sense given an individuals previous experience in a given situation. Self-confidence has been found to account for a greater proportion of variance in performance than cognitive or somatic anxiety (Hardy, 1996). This suggests that the most powerful quality that elite performers possess is a high level of self-confidence which may act as a protective factor from cognitive anxiety.

Clearly, anxiety exerts a variety of effects on athletic performance. These effects vary based on sport, gender and level of experience. In order to facilitate peak performances by athletes. Sport psychologists must consider the three different facts of anxiety, cognitive anxiety, somatic anxiety, and self-confidence. Given the research that indicates that successful athletes who interpret their anxiety as being facilitative is characterized by high scores on self-confidence and low scores on somatic and cognitive anxiety. Sport among their clients, let us now turn our attention to the variety of treatment that are available for the treatments of anxiety within the athletic context.

Cognitive Behavioural Treatments in Athletes

The research cited so far in this paper clearly indicates that it is important for athletes to be able to control their anxiety if they are to produce peak performance at important times. A large discrepancy between performance in practice and in competition is indicative that the athlete is having a hard time achieving an appropriate level of arousal or may over arousal (Butler, 1996). Advances in the field of anxiety reduction in general have transferred over into athletics. Research in the field has identified the following strategies used by elite performers to control their anxiety: goal setting; though control strategies such as positive thinking and cognitive restructuring; relaxation techniques such as diaphragmatic breathing, imager, and preoperative muscle relaxation and focusing on the task and hard (Goed and Eckland and Jackson, 1993. Jones and Hardy, 1990, Orlick and Partington, 1988). This section will review research that has been conducted on applied treatments for anxiety reduction within the sporting context specific interventions and therapeutic considerations will also be discussed in this section.

In the past researchers have examined the effectiveness of cognitive-behavioral interventions with a variety of athletes. The treatments modalities that have been used have had considerable variability in content and in format. Early research in the field was based on work for anxiety reduction in clinical settings. Research conducted with two female collegiate basketball players who received training in relaxation, imagery and cognitive restricting had significant improvements in concentration problems interventions improved performance by reducing anxiety and improving self-esteem (Meyers, Schleser and Okwumabua, 1982), later research continued to demonstrate the efficacy of cognitive behavioral interventions in improving athletic performance. One study used the cognitive behavioral interventions mentioned above in 7 weekly 2 hour group sessions. The results indicated that in comparison to the no

treatment control group, the treatment group showed decreases in anxiety (Holm, Beck, Ehde, Pjinins, 1996). Another study using a multiple baseline design demonstrated that after a cognitive behavioural interventions there was a significant decrease in cognitive and somatic anxiety as well as an increase in self-confidence (Savoy, 1997). However the improvement in self-confidence may have been due to the individualized nature of the treatment provided. We now turn over attention to the specific techniques that generally comprise these treatment, relaxation cognitive imagery, and restructuring.

Relaxation is one method that has been discussed in the literature for reducing both cognitive and somatic anxiety. It is important since it can reduce the individual, Hardy, Jones and Gould, 1996). These two strategies have been used successfully in the treatment of clinical populations. While a discussion of the procedures used in these two treatments is beyond the scope of this paper, they are still an important component of any anxiety reduction intervention for the purpose of performance enhancement. Butler (1996) also notes that at times athletes have a hard time reducing their arousal levels once a competition has ended. Use of progressive muscle relaxation is recommended for this purpose and may be beneficial for athletes who have difficulty sleeping the night before a big competition (Bulter 1996). Although both of these interventions are beneficial for the purpose of anxiety reduction previous experience indicates that they initially work best when used in conjunction with imagery focusing on relaxation. As the athlete begins to master these techniques the relaxing imagery can be dropped off. Imagery and mental rehearsal of tasks is also beneficial for the individual seeking to improve athletic performance. It provides familiarity with the task at hand and also provides positive feedback of their imagined performance (Hardy et al., 1996). This intervention has been proven to be effective with collegiate athletes in all sports. Results of research indicate that individuals who were in the imagery intervention had significantly greater increases in sport performance and sport competition anxiety than did the delayed training control group (Lour and Scogin, 1998). Little is known about how imagery functions. However, researchers have identified visual imagery ability and motivational arousal imagery as predictors as cognitive state anxiety (Vodocz, Hall and Moritz, 1997). Visual imagery ability was also predictive of somatic state anxiety and motivational mastery imagery was predictive of self-confidence (Vadocz, Hall and Moritz, 1997). The researchers also found that imagery abilities was significantly related to imagery use such that as ability increased so did use identified the following components a being important to a successful imagery routine.

- Selection of a skill to be imagined. Visualization should be preceded by relaxation, visualization should also be as a realistic as possible incorporating the use of all senses and the venue of the athletic competition.
- The technique to be imagined should be brought into focus. An internal perspective in necessary. In addition an attempt to feel the movement is effective in enhancing the imagery exercise.
- Practice the skill in 'real time'. There is no need to speed up or slow the skill down inclusion of coaches in the development of an imagery routine is important since it incorporates their technical skill and helps to minimize the perception of psychologists as a threat by coaches. Butler (1996) concludes that imagery is on important component of an athletes pre-competition regimen if they are to be successful.

Cognitive restructuring is an important component of treatment since it allow individuals to have a different interpretation of the activation states they are experimenting and thus reduce cognitive anxiety. It can be beneficial for-de-emphasizing the importance of competitions which will allow an athletes true ability to come through. According to multidimensional anxiety theory elite performers will have peak performances as cognitive anxiety decreases and self-confidence increase. This suggests that an appropriate intervention might be to do-emphasize the importance of conceptions and try to achieve an intermediate level of somatic anxiety (Hardy et al., 1996). Goal setting is another important part of cognitive restructuring as well, it is important not to set goal that are too overwhelming for individuals since this in turn may result in increases in state anxiety (Jones, Swain Cale, 1990) which in turn may result in impaired performance, instead, it is recommended that a series of smaller goals be set for individuals that break the task down into its component part (Orlick, 1986).

Although relaxation, imagery, and cognitive interventions are each beneficial for the purposes of anxiety reduction in athletics. They are for more powerful when used in conjunction with one another. Butler (1996) suggests a nemonic device called pressure who have a hard time coping in competitions

that incorporates all three phases of interventions. The word can be broken down as follows.

- Prepare - Athletes must psychologically prepare for what they will face during the competition.
- Relax - Diaphragmatic breathing exercises, may be necessary prior to competition in order to prevent over arousal which would result in a deterioration in performance.
- Stay positive - Acknowledgement of the importance that individuals should have confidence in their abilities.
- Single minded - Stay focused on the task at hand. This can be both in training and competition.
- Unite - Particularly useful within the framework of teams sports, this component encourages athletes to consider what roles others will fulfill and the importance of working together as a team throughout the competition.
- Re-evaluate - How important is this event in the real world.
- Extend yourself - Give your best performance every time no matter how important, or unimportant, the competition is.

Use of this mnemonic device is warranted with individuals that have problems with the three components of athletic anxiety: cognitive, somatic, and self-confidence.

Even the amount of cognitive effort that is used by an individual to use these strategies as an effect on performance. Gould et al., (1993) reported that the differences between medal winners and non-medal winners at an Olympic wrestling competition was the degree to which the individuals used these interventions automatically such that winners were more likely to use the interventions automatically. Most elite level performers have already found ways of achieving the activation state that is necessary for the sport. One of the things that makes athletics so fascinating is the number of different demands that are placed on an individual throughout a competition. It is therefore unlikely that any one intervention will ever be able to be of benefit for everyone. Through assessment of the athlete's needs in therefore recommended.

Conclusion

The above research indicates that anxiety has a considerable impact on performance. Early research was limited due to a lack of clear operational definitions for the construct of anxiety. The development of the catastrophe model provides future researchers with a theoretical framework for better understanding the relationship between cognitive anxiety and somatic anxiety and their effect on performance. Further more we now have the tools for better understanding the components of anxiety in the athletic context. The development of the CSAI-2 and the SAS allows researchers to reliably measure the following constructs; cognitive anxiety, somatic anxiety, self-confidence, and concentration disruption, furthermore. The development and increased property of multiple baseline research designs provide a method for examining anxiety reduction interventions through cognitive - behavioural interventions with small sample size. Although anxiety can have a considerable impact on performance, it is important to consider other components of an athlete's functioning as well. The mental health model of performance (Morges, 1985) does this by using the profile of Mood States (McNair, Lorr Droppman, 1971). According to the model, peak performance are achieved by individuals who poses psychological states with high levels of vigour and low levels of tension, depression, anger, fatigue and confusion.

This is typically called the iceberg profile and is one method for differentiating between successful and unsuccessful performers. Although some research has indicated that this profile can not be used to differentiate between successful and non-successful athletes, evidence from Terry's meta analysis (1995) indicates that there is some validity to this profile if the sample is homogenous in ability and the sport they participate in. It is therefore necessary to consider all aspects of an individual's psychological functioning if sport psychology interventions are to have maximum impact.

References

1. Apter, M.J. (1982). The experience of motivation: The theory of psychological reversal. Academic press, London.
2. Broadhurst, P.L. (1957). Emotionality and the Yerkes - Dodson law. Journal of Experimental Psychology, 54, 345-352.

3. Burton, D. L. (1988). Do anxious swimmers swim slower. Reexamining the elusive anxiety - performance relationship, *Journal of Sport Psychology*, 10, 45-61.
4. Butler (1996). *Sport psychology in action*. Bulterworth, Heinemann, Oxford, England.
5. Fazey, J.A., and Hardy, L. (1988). The inverted - U-Hypotheses: A catastrophe for sport psychology. *British association of sport sciences Monograph No. 1*, National Coaching Foundation, Leeds.
6. Gould, D. Ecklund, R.C. and Jackson, S.A. (1993). Coping strategies used by U.S. Olympic Wrestlers. *Research Quarterly for Exercise and Sport*, 64, 83-93.
7. Hardy, L. (1996). A test of catastrophe models of anxiety and sports performance against multidimensional anxiety theory models using the method of dynamic differences. *Anxiety, stress and coping: An international journals*, 9, 69-86.
8. Hardy, L. Jones, G and Gould, D. (1996). *Understanding psychological preparation for sport: Theory and practice of elite performers*. Wiley, Chichester.
9. Jones G (1990). A cognitive perspective on the process underlying the relationship between stress and performance in sport, in G Jones D.L. Hardy (Eds.) *stress and performance in sport*, Wiley, Chichester, 17-42.
10. Jones, G Hontom, S. and Swain A.B.J. (1994). Intensity and interpretation of anxiety symptoms in elite and non-elite sports performers. *Person individual differences*, 17, 657-663.
11. Jones, G Swain, A.B.J., and Cale, A. (1990). Antecedents of multidimensional competitive state anxiety and self confidence in elite intercollegiate middle distance runners. *The sport psychologist*, 4, 107-118.
12. Jones, G Swain, A.B.J. and Hardy, L. (1993). Intensity and direction dimensions of competitive state anxiety and relationship with performance *Journal of sport sciences*, 11, 525-532
13. Krone, V. Joyce, D. and Rafeld J. (1994). Competitive anxiety, situation critically, and softball performance, *sport psychologist*, 8, 58-72.
14. Lohr, B.A. and Scogin, S. (1998). Effects of self-administered visuo-motor behavioural rehearsal on sport performance of collegiate athletes. *Journal of sport behaviour*, 21, 206-218.
15. Lowe, R. and McGrath, J.E. (1971). Stress arousal and performance, some findings calling for a new theory, project report, At 1161-67, AFOSR.
16. Macleod C. (1990). *Mood Disorders and cognition*. In M.W. Eysenck (Ed.) *Cognitive psychology: An international review*, Wiley. Chichester.
17. Martens. R. Burton, D. Vealey, R.S. Bump, L.A. and Smiths D.E. (1990). Development and validation of the competitive state anxiety Luventory-2. In R. Martens R.S. Vealey and D. Burton (Eds.), *Competitive anxiety in sport*, Human kinetics, champaign, IL, 117-190.
18. Morgan, W.P. (1985). Affective Beneficence of vigorous physical activity. *Medicine and Science in sport and exercise*, 17, 94-100.
19. Merrphy, S.M. (1988). The on-site provision of sport psychology services at the 1987 U.S. Olympic Festival. *The sport psychologist*, 2, 337-351.
20. Perry, J.D., and Williams, J.M., (1988). Relationship of intensity and direction of competitive trait anxiety to skill level and gender in tennis. *Sport psychologist*, 12, 169-179.
21. Savoy, C. and Beitel, P. (1997). The relative effect of a group/individualized program on state anxiety and state self-confidence, *Journal of sport behaviour*, 20, 364-376.
22. Simon, J.A. and Mortens. R. (1977). S.C.A.J. as a predictor of A-states in varying competitive situations. In D.M. Lenders and R.W. Christina (Eds.) *Psychology of motor behaviour and sport (Vol. 2)*, human Kinetics. Champaign's, IL, 146-156.
23. Smith, R.E. Smoll, F.L. and Ptacek, J.T. (1990). Measurement and Correlates of sports-specific cognitive and somatic trait anxiety. *Anxiety research*, 2, 263-250.

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24. Spielberger, C.S. (1966). Theory and research on anxiety. In C.S. Spielberger (Ed.), *Anxiety and Behaviour*, Academic Press, New York, 3-20.
 25. Swaim, A.B.J. and Jones, G (1996). Explaining performance variant, the relative contribution of intensity and direction dimensions of competitive state anxiety. *Anxiety, stress, and coping: An international journal*, 9, 1-18.
 26. Terry, P. (1995). The efficacy of mood state profiling elite performers: A review and synthesis. *The sport psychologist*, 9, 309-324.
 27. Terry, P., Coakley, L. and Karageorghis, C. (1995). Effects of interventions upon pre-competition state anxiety in elite junior tennis players: The relevance of the matching hypothesis. *Perceptual and motor skills*. 81, 287-296.
 28. Vadoz, E.A., Hall, C.R., and Moritz, P.S.E. (1997). The relationship between competitive anxiety and imagery use. *Journal of applied sport psychology*, 9, 241-253.

GENDER DIFFERENCES IN PERSONALITY CHARACTERISTICS OF INTER COLLEGIATE KHO-KHO PLAYERS.*Sinku Kumar Singh**Lecturer and Head**Department of Physical Education**Shri Sant Sawata Mali Gramin Mahavidhyalaya Phulambri,
Aurangabad, Maharashtra, India***Abstract**

The aim of the study was to find out the gender difference in Personality traits of Inter collegiate male and Female kho-kho players with regard to psychoticism, neuroticism, extraversion and lie score. For this present study, 50 male and 50 female kho-kho players were selected as a subject.

The Eysenck Personality Inventory (E.P.I.) was used to measure Psychoticism, extraversion and neuroticism of kho-kho players, t-ratios has been used to compare the significantly gender difference between male and female kho-kho players who had participated in Inter collegiate kho-kho tournament held at M.I.T. College, Aurangabad from 05 November-2007 to 07 November-2007. Gender differences on Psychoticism was found between male and female Kho-Kho players ($t = 2.05$; $P < .05$) where female players more psychotic than male. While analyzing the differences of personality characteristic of male and female kho-kho players, gender differences on neuroticism was found between male and female inter collegiate kho-kho players ($t = 4.69$, $P < .01$), where the male kho-kho players was found to have less score on neuroticism. So, far extraversion was concerned, significant gender difference was found to the male and female inter-collegiate kho-kho players ($t = 2.77$, $P < .01$), male kho-kho players has lower extraversion. Hence, female kho-kho players was more extrovert.

KEY WORDS :- Psychoticism, Extraversion, Neuroticism, Gender.

Introduction

Kho-kho is the most popular Indian game in Marathwada region of Maharashtra. The Indian games are simple in nature, easy to organise and less expensive. Hence Kho-Kho reach to common people and both sex. Sports performance has been found to be related to some personality variables. Psychoticism, extraversion and neuroticism are among the variables which influence by sports performance with addition to many other personality variables. Psychoticism is the tendency in a person to be not caring for people, trouble some insensitive and not fitting in any where lacking in feeling and empathy. Neuroticism is a minor mental disorder, characterised by inner struggles and discordant social relationship. According to Eysenck "Neuroticism refer to emotionality, initiated by the inherited differences in liability and excitability of autonomic nervous system. The extroversion is a personality traits. The extrovert person's orientation is towards the external world. He deals people intelligently in social situation. He is conventional, outgoing, social, friendly and free from worries. In Eysenck's term, extraversion stands for central excitatory / inhibitory level and sociability. Lie scale is refer to social desirability measures a tendency on the part of some individuals take good. Majority of the investigator have indicated that male kho-kho players differ from female kho-kho players on a number of personality traits and several investigator have tried to find personality differences between male and female kho-kho players, but not many studies have been made about personality characteristics of inter collegiate male and female with regards to psychoticism, neuroticism and extroversion. So the attempt has been made to conduct the study regarding neuroticism and extroversion of inter collegiate male and female kho-kho players.

Hypothesis of the study

There would be no significant gender difference with regard to (i) Psychoticism (ii) Neuroticism (iii) Extroversion (iv) Lie Score of the Male and Female inter collegiate Kho-Kho players.

Delimitations to the Study

The present study was delimited to only Four psychological variables. (1) Psychoticism (2) Neuroticism (3) Extraversion. and (4) Lie Scale.

Secondly, the study has been delimited to male and female inter-collegiate kho-kho players only.

Methodology

In this section, selection of subject, administration of the test, and statistical analysis procedure have been described.

Selection of Subjects

Total 50 male and 50 female kho-kho players from different college. Who had participated in collegiate tournament held at M.I.T. College, Aurangabad-2007 were randomly selected as a subjects for the present study.

Administration of the test

EYSENCK'S Personality Inventory (1985) were distributed to the males and females kho-kho players before filling the EPI, instruction were given by the investigator to the players.

Statistical analysis

t-ratio was computed to compare, the significant differences between inter-collegiate male and female kho-kho players. The data were analyzed in basic language of the computer Centre, Aurangabad, Maharashtra. All the analysis used were based on " Standard Statistical Packages "

Results and Discussion

The results of the present study in statistical form are presented in Table I and IV.

TABLE-I
Mean scores, Standard Deviations and t-ratio of
Psychoticism for Male and Female Kho-kho players.

Sr.No.	Kho-kho players	No.	Mean	S.D.	t-ratio
1.	Male	50	12.08	3.89	2.05*
2.	Female	50	13.21	4.16	

*Significant at .05 Level.

The findings of Table-I, reveals that there is significant gender difference between male and female inter-collegiate kho-kho players. ($t=2.05, P<.05$), in psychoticism dimension of personality. The female having more psychoticism as compared to males, which means that the male kho-kho player having less psychotic than female kho-kho players. Thus the hypothesis was not accepted. This may be due to nutritional habits, interest to participate in sports activities and parental motivation to involve sports activities of male and female kho-kho players.

TABLE-II
Mean scores, Standard Deviations and t-ratio of
Neuroticism for Male and Female Kho-kho players.

Sr. No.	Kho-kho players	No.	Mean	S.D.	t-ratio
1.	Male	50	8.33	2.58	4.97*
2.	Female	50	10.57	3.99	

* Significant at .01 Level.

As Table-II shows a significant gender difference was found out in the extroversion of the inter-collegiate kho-kho players. ($t=4.97, P<.01$), the female having more neurotic as compared to males, which means that the male kho-kho players less neurotic than female kho-kho players. Thus the hypothesis was not accepted. It may be due to physio-psycho differences between the male and female kho-kho players.

TABLE-III
Mean scores, Standard Deviations and t-ratio of
Extraversion for Male and Female Kho-kho players.

Sr. No.	Kho-kho players	No.	Mean	S.D.	t-ratio
1.	Male	50	16.08	2.13	3.36*
2.	Female	50	18.17	2.77	

* Significant at .01 Level.

As Table-III shows a significant gender difference was found out in the extraversion of the inter-collegiate kho-kho players. ($t=3.36, P<.01$), the female having more extrovert as compared to males, which means that the male kho-kho players less extrovert than female kho-kho players. Thus the hypothesis was not accepted. These difference is probably due to emotional, biological and social difference between the male and female kho-kho players.

TABLE-IV
Mean scores, Standard Deviations and t-ratio of
Lie Scale for Male and Female Kho-kho players.

Sr. No.	Kho-kho players	No.	Mean	S.D.	t-ratio
1.	Male	50	9.76	3.37	.17
2.	Female	50	9.68	3.34	

The findings of Table-IV, that there is no significant gender difference between male and female inter-collegiate kho-kho players. ($t=.17$). It may be due to similarity of the nature of game. Thus the hypothesis was accepted.

Conclusions

1. There are significant gender differences in psychoticism of inter-collegiate kho-kho players, the males having less psychotic than female kho-kho players.
2. There are significant gender differences in neuroticism of inter-collegiate kho-kho players, the males having less neurotic tendency than the females.
3. There are significant gender differences in extraversion of inter-collegiate kho-kho players. The males are found to be less extrovert than the females.
4. There are no significant gender differences in Lie-score of inter-collegiate kho-kho players.

References

1. Eysenck, H. J. (1967) Dimensions of Personality, New York : Praeger.
2. Eysenck, H. J. (1967) The Biological Basis of Personality, Springfield, IL : Charles C. Thomas.
3. Eysenck, H. J. and Eysenck, S. B. G. (1969) Personality Structure and Measurement, London; Hodder Stoughton.
4. Eysenck, H. J. and Eysenck, S. B. G. (1975) : Manual of the Eysenck Personality Questionnaire, London; Hodder & Stoughton.
5. Eysenck, H. J. and Nias, D. K. B. & Cox, D.N. (1982) : Advances in behaviour, Research Therapy, 4, No. 1, 1-56.
6. Eysenck, S.B.G, Eysenck, Eysenck H.J. and Barrett, P (1985). A revised version of the Psychoticism Scale. Personality and individual differences.
7. Mushier, C. L. (1972) : Personality and selected women Athletes. International Journal of sports psychology.
8. Rushall, B. S. (1967) : Personality profiles and a theory of behaviour modification for kho-kho players Swimming techniques, 4 : 66-21
9. Singh, A Barar, R. S. (1987) A study of Extraversion, Neuroticism, and self concept of University Handball players. Sports Science, Health, Fitness and Performance, Patiala IASSPE, PP. 251-254.

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P. 251-254.

Next Issue

INDIAN JOURNAL
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(Registration No. WBBIL/2007/22677, Office of the Registrar of News Paper for India, Government of India)

Volume: II

Number: II

November, 2008

Yoga

1. **The Effect Of Yoga On Balanced Aggressiveness Of Adults**
C. Pratheepa.
2. **Therapeutic Effects Of Yoga On Cases Of Obesity in Women**
Dr. M.Sundar, T. Bhanupriya
3. **Pregnancy And Wellness With Yoga And Exercise**
Dr. K.Jothi
4. **Effect Of Omkar Chanting On School Children**
N.Prem Kumar, A.Praveen

Exercise & Sport Science and Physical Education

5. **Critical Reflection On Psychological Status Of College Female Students During Menstrual Cycle**
Nimeshkumar D. Chaudhari, Prof. Jannadas K. Savalia
6. **Physical Growth Pattern Of Tribal Boys Aged Between 6 To 17 Years Of Chamba District Of Himachal Pradesh**
Dr. Y.P. Sharma, Dr. Lalit Mohan
7. **Concern for Quality Physical Education In Indian Universities**
Prof. Jannadas K. Savalia, Dr. P. B. Thumar, Milan P. Patel
8. **Dietary Preferences And Eating Habits Of State Level Hockey Players Of Vidarbha**
J.M.Chatur
9. **Survey Of Selected Health-Related Fitness Components Of High School Boys In Kerala, Madhya Pradesh, Punjab, Rajasthan, Maharashtra And Jammu & Kashmir**
Mandeep Singh, Nishan Singh Deol, Sukhdev Singh
10. **Construction And Standardization Of Skill Test For Badminton Players**
K. Dhilleswararao, Dr. P.Samraj
11. **Personality Traits Of Men Cricket Players**
Rajkumar Karve, Prof. Pratap Singh Tiwari
12. **Analysis Of Goal Scoring Pattern At Inter-Varsity Foot Ball Tournament 2003**
Oinam Jiten Singh, Dr. M.Rajashekaran